

# Enhancing Digital Information Access in Public Libraries

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### Structured Abstract

#### *Purpose*

To explore the impact of public digital library resources on urban residents, to elucidate the current usage patterns of public digital library resources/services and levels of satisfaction with the resources/content in urban digital libraries and make recommendations as to steps that would improve service to this population.

#### *Design/Methodology/Approach*

We conducted an anonymous user-completed survey study of 6 urban libraries to collect demographic and information regarding satisfaction with Digital Library (DL) resource and patterns of use.

#### *Findings*

Our respondents represented a cross section of races, genders, ages, and educational backgrounds. Our results in this much-needed area of study demonstrate that libraries should plan to provide more access, less filtering, regular upgrades, and more training to use the resources.

#### *Practical Limitations/Implications*

Larger studies should be used to follow up this report, in order to be able to obtain a generalized understanding of overall patterns of urban residents using DLs in public settings. Recruitment techniques did not adequately sample potential (but not current) DL users.

### ***Originality/Value***

This study contributes to a scant empirical data set addressing the impact that access to public digital information and services have on urban residents. We offer new data and recommendations that will guide public library administrators in enhancing the impact, efficiency and value of public DL resources/services to improve the digital learning environment for life-long education at all levels in a broad community of urban users.

### **Introduction**

“Through its collection, media, services and programs, the library promotes literacy, reading, personal development and cultural understanding for the individual and the community at large” (NHFPL website mission statement).

The mission of public libraries in many American cities, and indeed many nations across the globe, share similar themes, in that they seek to equip patrons with “equal opportunity to access material recorded in all ways” and to provide that access for “continuous development of knowledge, personal skills and civic skills,...and for lifelong learning.” (Aabo 2005).

In recent years, increasing amounts of the information resources provided at public libraries is available in digital form, which in this paper we term Digital Library (DL) resources. This includes such diverse items as the card catalogs, many of which have been converted to OPACs, online databases, subscriptions to online periodicals, library portals, and myriad other resources of both text and non-text natures. Access to, and effective use of digital libraries is regarded in today’s world as essential to social and economic mobility and overall well-being. As more information becomes digitized, and in fact available only through the use of the Internet, e-government services and many internet-only media news resources for example, public libraries represent critical information access points for those populations that lack access to the World Wide Web elsewhere. For public libraries to meet their stated missions of serving patrons and fostering personal development and other informational needs, it is imperative that the DL resources are accessible and available to all who attempt to search for information at the library.

### **Literature Review**

#### ***Equity of Access to Digital Resources***

There has been a great deal of discussion about the need to make sure that everyone, regardless of economic or educational status, has access to digital libraries. The disparity between socio-economic groups with abundant access to online resources, and those with little or none, has been termed the “Digital Divide” (NTIA 1998), and has spawned a literature of its own. A 2001 study, “Public Libraries and the Digital Divide: How Libraries Help” (Heuret 2001), discusses how patrons access digital libraries and for what purposes. Though quality and content value of the information are crucial, the authors assert that access to DLs is the major issue facing people. They conclude that in this “information age” many people who do not have access to information via the Internet are being left behind. Other advocates believe that failure to provide such access will lead to an even wider economic and social gap between residents in America - the middle class and those on the lower economic ladder (McKissak 1998, Ratan 1995).

The National Telecommunications and Information Administration (NTIA) conducted a series of studies to document the levels of access experienced by different groups making up the US population (NTIA 1995, 1998, 1999, 2002, 2004).

Even as the NTIA reports have changed in tone, from recording an alarming gap in 1995, to declaring in 2002 that the gap was rapidly closing, other studies have shown that disparities indeed persist. Birdsall examined what percentage of the population has access to the Internet, termed “Internet connectivity at home,” by state, using data from the 2000 U. S. Census, and found large geographic differences in levels of access (Birdsall 2005).

Various attempts have been made to “bridge the divide” (Warschauer 2003), and from those data has dawned the knowledge that it is not enough to provide hardware and “access” without the skills, education, or training to use them. Schools and public libraries have been “wired” at huge public and private expense, yet although “nearly 100% of public schools had access” in Fall 2003 (Parsat and Jones 2005), the Internet has not become the universal educational tool that had been anticipated.

Warschauer documents several attempts to close the gap, and postulates that “the key issue is not unequal access to computers but rather the unequal ways that computers are used” (Warschauer 2003, p. 47). He concludes that a “framework that focuses on [physical] access issues alone fails to face these broader inequalities in technology use and learning” (Warschauer 2003, p. 47). Access, to be meaningful, must be reconceptualized to include not just the presence of the hardware, but actual usability, consisting of physical access plus the skills to use that access to serve a desired purpose (Warschauer 2002). This secondary level of disparity of access has been termed “the skills gap” (Warschauer 2003), “the second level digital divide” (Hargittai 2002), or “digital inequality” (DiMaggio et al 2001).

### ***The State of Libraries***

“In the past 10 years, libraries across the country have achieved a major success in connectivity; today, virtually all public libraries in the United States offer public access to the Internet.” (ALA 2006). This statement, in “The State of America’s Libraries,” illustrates the fact that currently available measures of digital access are largely uninformative. Most libraries offer public access to the Internet, indeed, but is the connection fast enough to be useful? Are there enough workstations to satisfy patron needs for access? Do users know how to find the information they seek? Do libraries have an established plan to maintain and/or upgrade hardware to keep up with needs?

Data published in *2004 Public Libraries and the Internet* survey, from the American Library Association and the Bill & Melinda Gates Foundation (Bertot et al 2005), notes that although their results document high levels of Internet access in public libraries, there are “signs of cracks in the quality of service and the ability to sustain programs.” This exhaustive survey compiles data from over 5000 libraries across the United States, in which survey questions were answered by library staff regarding the existence of Internet access and services and funding at their public libraries. A wealth of valuable data resides in this report, especially the illustration of national trends and disparities between libraries and the levels of access they are able to provide.

A still-missing piece is the input from patrons in their experiences accessing the Internet from their public libraries, and using the DL resources that are available to the public. From a patron’s perspective, what cracks actually exist in the quality of services in urban New England, and how might they be remedied?

### ***Digital Library Resources in Public Libraries***

For the purposes of our study, we do not distinguish between types of digital resources, we use the term “Digital Library resources” as an inclusive term to refer to all of the publicly accessible digital information and services at the library. This includes all electronic information resources organized for services, as well as the computerized and networked online resources accessed through the public libraries, whether they are held by individual entities or freely available components of the Internet. DLs encompass a combination of computer and telecommunications systems used for collecting, storing, processing and communicating information.

We employ this definition in the study in order to assess use and usability of all the resources, as opposed to some specific subset. We did include some questions about specific subtypes, such as databases and periodical subscriptions held by individual public libraries, to tease apart usage trends.

### **Our Study**

In the literature, DL research concerned with the digital divide between information haves and have-nots has been focused primarily on the issues of providing access to technology and identifying populations that do not have access (Usherwood, 2001). Almost no empirical attention has been given to the impact access to DLs or services of DLs have had on urban residents, or measurement of the necessary skills to use such resources.

To promote the joint goals of accessibility and availability, we have conducted a survey study of urban library patrons in New England with the intention of gathering data regarding the users and usage of DL resources in those libraries. Data was gathered and analyzed to reveal trends in the characteristics of users and the patterns of information sought, in order to tailor services more efficiently, and to elucidate where to prioritize and improve services when making budget and/or personnel decisions. We provide this data here so that decision-makers, information architecture designers and collection/resources providers of public digital libraries may tailor their digital services to best meet the information needs of their urban residents, and ensure that digital resources are accessible and user friendly. Although digital library technologies and services have been available for a number of years, little is known about how or if urban residents interact with digital services available at public libraries, how they use the information gleaned from this technology, or if the information they receive is useful to them. Scant empirical attention has been given to these questions.

Qualitative, in-depth information from the public digital library users is rarely seen in the literature. Our study begins to remedy this lack as it attempts to (1) identify the patterns and the characteristics of use of public digital libraries in a cross-section of urban libraries in New England, (2) provide information on why these patrons use public digital libraries (3) gauge how effectively public digital libraries serve their patrons' needs, and (4) make recommendations on ways that public libraries might enhance services for this user population.

### ***Research/Study Questions***

We designed our survey and analysis in order to determine answers to the following set of research questions: Who are the potential or regular users of public DL resources? For what purposes do the residents use the DL resources? What kinds of information do users receive from DL resources? How do users benefit from information obtained through the public DL resources? What barriers to using DL resources do users encounter? What factors facilitate positive interaction between public DL's and users?

### **Methods**

The specific research methodology has been refined by the pilot study conducted at Southern Connecticut State University in Spring 2003, which was funded by a grant from the Connecticut

State University Faculty Research Grant program.

**Recruitment of Participating Libraries**

Libraries in urban New England cities (with populations greater than 100,000 people) were contacted by mail. The initial request letter was followed by email and phone queries until a response was obtained from each candidate library. Libraries that agreed to participate were then sent a packet containing surveys, an addressed stamped return envelope, and instruction sheets. Participation was completely voluntary, anonymous and confidential for all users. Other than those conditions, survey distribution was not necessarily uniform at all sites, since each participating library distributed them according to their own staff methods. This led to some problems, especially skewed sampling, as discussed later. The libraries that participated are listed in Table 1.

**Table 1. Participating Libraries**

“Library” lists the name and address of each participating library. “Population Served” lists the 2004 population of the city in which the library sits. “Annual Budget” refers to the budget listed in one or another of the sources cited for either 2004 or 2005; different sources had to be used to information items for each library, which are listed below. “Holdings” lists the number of holdings reported by each library in either 2003, 2004, or 2005. “#Branches” lists how many branches, in addition to the main library, each library reported in 2003, 2004 or 2005. “Colleges, Community Colleges, Universities” lists how many additional libraries were listed in each city that were associated with secondary schools.

<b>Library</b>	<b>Population Served</b>	<b>Annual Budget</b>	<b>Holdings</b>	<b># Branches</b>	<b>Colleges, Community Colleges, Universities</b>
Central Library 150 Empire St Providence, RI 02903	1,048,319 <sup>1</sup>	\$8,859,392 <sup>1</sup>	1,313,134 <sup>1</sup>	9 branches <sup>1</sup>	7 schools <sup>1</sup>
Hartford Public Library 500 Main St Hartford, CT 06103	123,850 <sup>3</sup>	\$4,865,670 <sup>3</sup>	586,400 <sup>1</sup>	9 branches <sup>1</sup>	4 schools <sup>1</sup>
Manchester City Library 405 Pine St Manchester, NH 03104	107,000 <sup>4</sup>	\$2,323,000 <sup>4</sup>	226,403 <sup>4</sup>	no branches <sup>1</sup>	5 schools <sup>1</sup>
New Haven Free Public Library 133 Elm St New Haven, CT 06510	130,474 <sup>1</sup>	\$3,091,278 <sup>2</sup>	587,447 <sup>3</sup>	3 branches <sup>1</sup>	4 schools <sup>1</sup>

Silas Bronson Library 267 Grand St Waterbury, CT 06702	108,000 <sup>3</sup>	\$2,500,000 <sup>1</sup>	240,000 <sup>1</sup>	1 branch <sup>1</sup>	3 schools <sup>1</sup>
Springfield City Library 220 State St Springfield, MA 01103	149,000 <sup>4</sup>	\$5,673,780 <sup>4</sup>	776,582 <sup>4</sup>	9 branches <sup>1</sup>	2 schools <sup>1</sup>

Sources:

1 *American Library Directory 2005-2006*, 58th edition. Medford, NJ: Information Today, Inc.

2 City of New Haven web site, Budget document:

<http://www.cityofnewhaven.com/Mayor/pdfs/FiscalYear2005-2006Budget.pdf> Retrieved on 4/3/2006.

3 Sprance, E. (Ed). 2004. *Official Directory of Connecticut Libraries and Media Centers 2005*. New York: LDA Publishers

4 *Statistical Report 2003 Public Library Data Service Special Section: Children's Services Survey*. Chicago: Public Library Association.

**Survey Distribution**

Surveys were distributed in 6 urban New England libraries during the months of April and May 2004. 146 responses were obtained and analyzed.

Paper copies of the survey questionnaires were distributed to individual patrons at each library site, where the patrons individually (anonymously) filled out and returned them to the library staff. At one site (Hartford), patrons sealed their responses into envelopes before returning them to the staff, to ensure confidentiality. Collected responses were then sent back to the research team by the participating libraries for tabulation and analysis.

**Survey Questionnaire**

The instrument used in the study, "The Public Digital Library Service Inquiry" consisted of two parts; an initial section for gathering "Demographic Information" using checkboxes, and a second section of "Survey Questions" which includes a mix of open-and closed-ended questions. A copy of the survey instrument, which was modified from those used in a 2003 pilot study, is included in the Appendix. The specially designed questionnaire ensured that no private information was asked of the participants.

**Results**

Four general types of information can be drawn from the results of our study. Data is described below regarding characteristics of the users who responded to the survey, patterns of usage they report, difficulties and limitations encountered, and how they learned/what they would teach others about using the DL resources.

***Who are the users of urban digital library services in New England?***

Responses to the following set of questions and demographic indicators describe characteristics of the participants who took part in the survey.

**Gender** Females made up 60% of respondents.

**Race** 67 respondents identified themselves as White, 38 as African American, 26 as Hispanic, 2 as Asian, and 3 as Native American. 14 respondents declined to answer the question, 2 indicated "other," and 6 participants chose multiple races to identify themselves (these were counted in each of the categories they selected). Almost half (45%) of our respondents identified themselves as belonging to races other than white.

**Age** 93 out of 145 or 64% of respondents who reported their ages were over the age of 30, predominantly between the ages of 31 and 50.

**Education** 90 out of 146 respondents (62%) reported that they had "some college" or even more years of education.

**Employment** Approximately half the respondents described themselves as "employed," while 35% said they were "unemployed." Students and retired persons made up 12% of the sample.



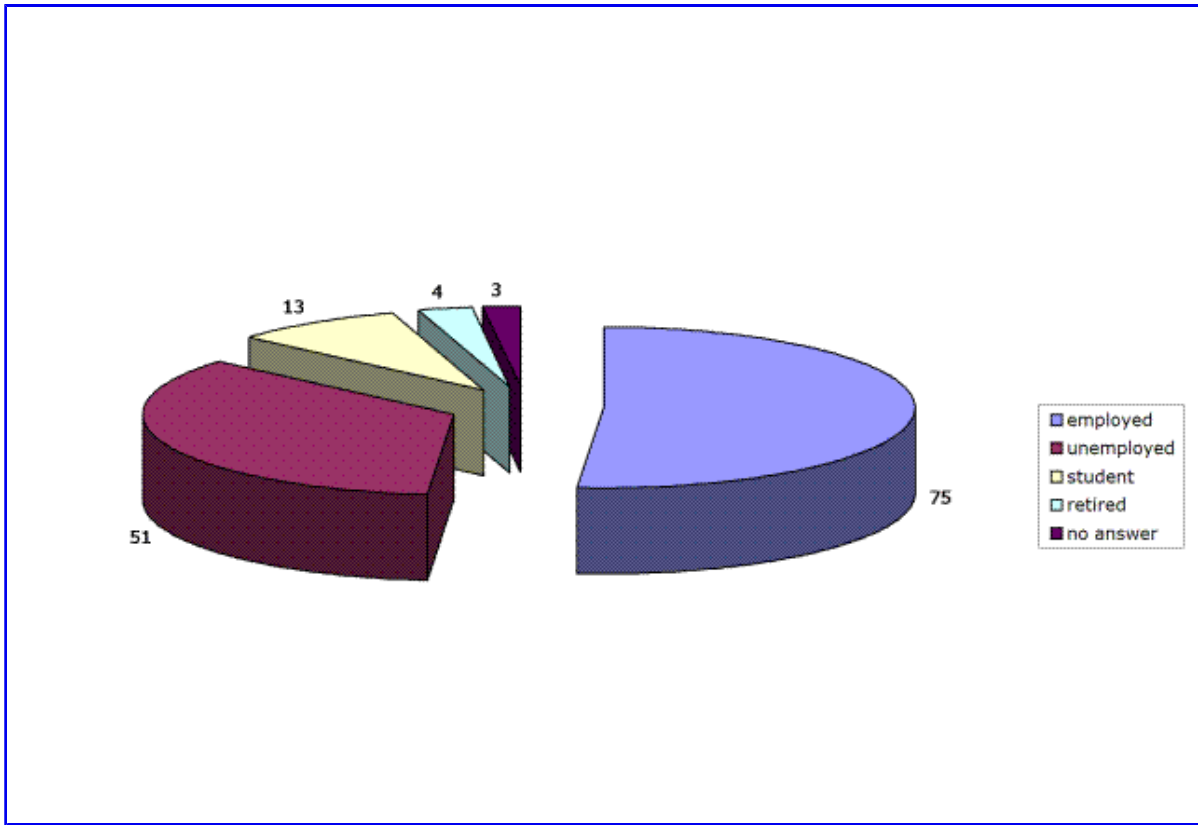


Figure 1. Employment status as reported by respondents.

Income A large number of respondents (23%) chose not to report income levels. Participants who chose to respond overwhelmingly (88%) indicated income levels either below the median for CT (n = 50), or below national poverty standards (n = 49).

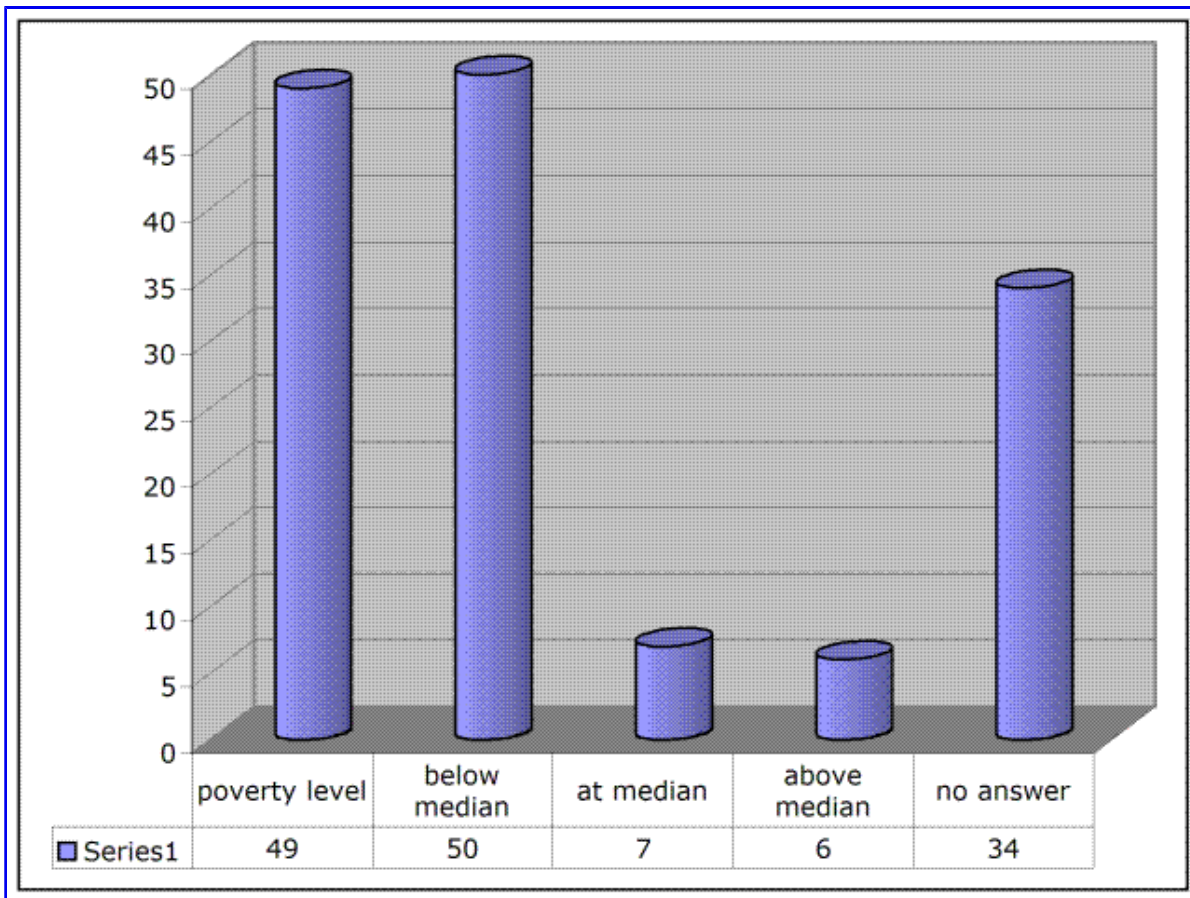


Figure 2. Income as reported by respondents.

Participants chose dollar amounts which are reported here after being grouped into the following categories: Below poverty standards, Below state median income, At state median income, Above state median income, and No answer given. Guidelines for poverty standards and median incomes are listed in the Appendix.

Comfort Level 90% of participants rated their comfort levels with the computer as “extremely comfortable” or “somewhat comfortable,” indicating that the users who participated in the survey feel generally comfortable using the resources.

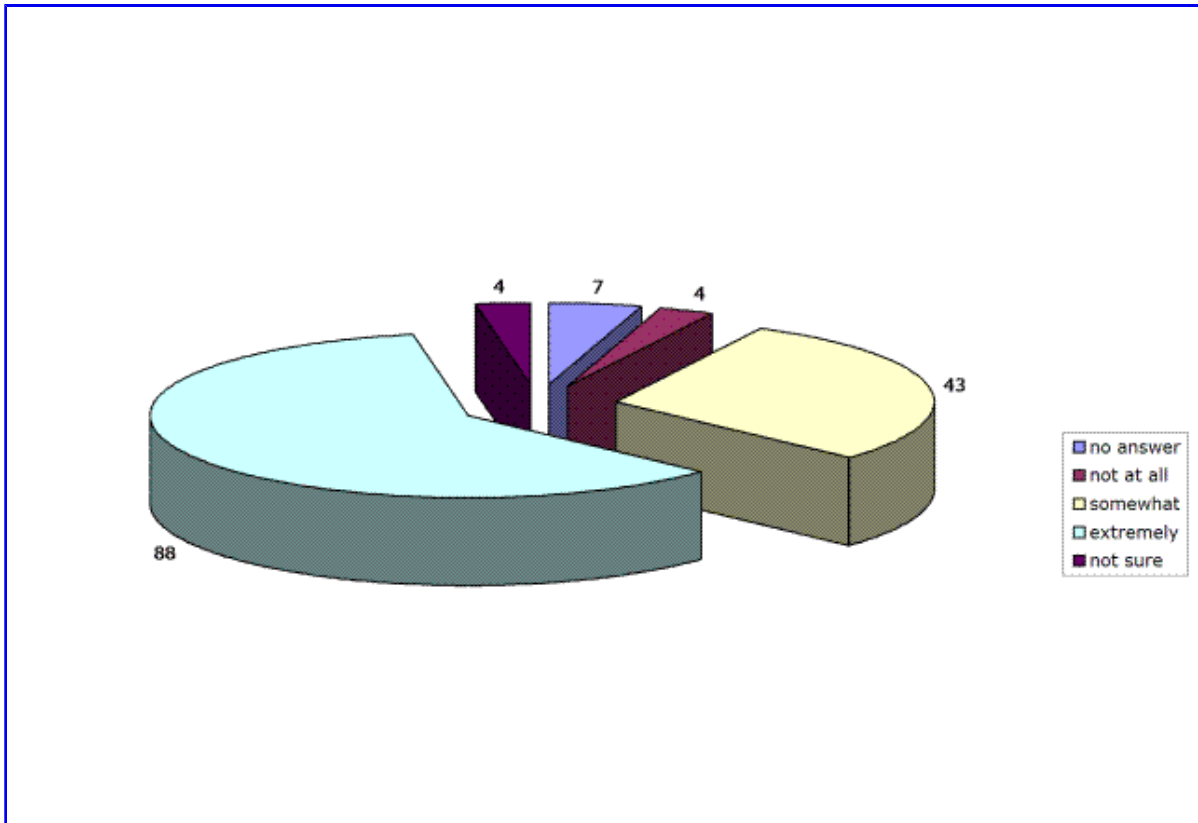


Figure 3. Comfort level of participants.

Participant responses to the question: “How comfortable are you with using the computer to search for information?”

Frequency of Use 43% of survey participants stated that they use the DL resources several times a week, indicating that heavy users made up a large proportion of respondents. 38% said they use the DL “once a week” or “several times per month”. Less frequent users made up the remaining 19%. A very few users indicated that they don’t use the resources at all, but this number is not informative, as patrons who avoid the DL resources were probably less likely to be involved in the survey, depending on the recruitment tactics employed at each location.

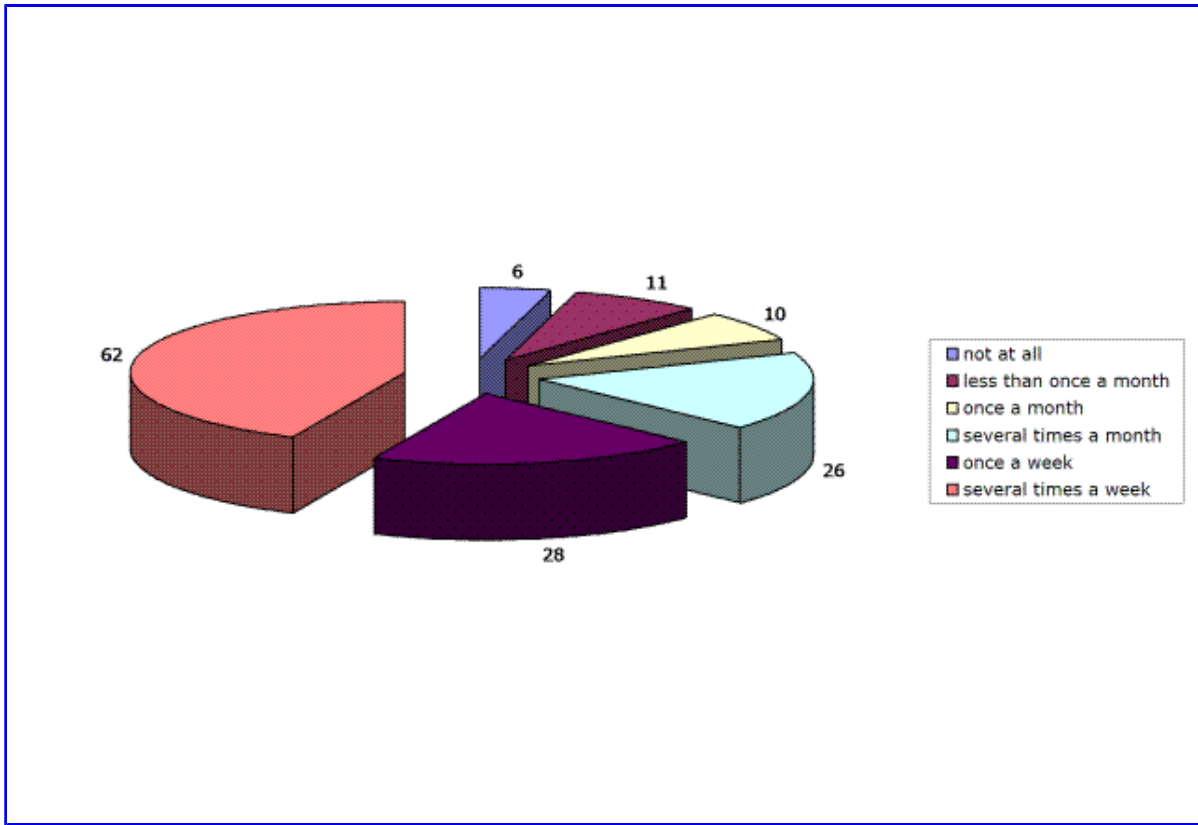


Figure 4. Frequency of use.

Complied answers to the question: “How often do you come in to the use the library’s digital library/website resources?”

Reasons for Use While 13% of participants stated that they use the DL resources at the public library because it is their only internet access point, many more (38%) state their reasons as “convenience” “speed” or “easy access.”

Types of Information Sought Respondents selected as many categories as applied. Responses in the top three categories chosen: “news” (72) “employment/jobs” (61) and “education” (60), made up 35% of the total responses.

What information were you unable to find? The majority of respondents (69%), when asked what they were unable to find, responded “nothing.” Some went so far as to state that they felt all possible information was available using these resources. For example, one response read: “I can’t think of anything. With the internet available, how can there be unavailable information?”

There were 20 responses detailing specific items that could not be found, but no obvious trends emerged as to the types of missing information. The instances mentioned ranged from very specific topics like “geneologies” and “antique silver markings,” to very general, such as “health and diet.”

Are you able to find information with the DL that you cannot find elsewhere? 77 people (53%) indicated that they were able to find information with the DL that they felt was unavailable elsewhere, or that they had not been able to find using other resources.

Table 2. Importance of various factors.

Surveys asked: “On the following scale (with 1 being not at all important and 5 being extremely important) please rate how important the following factors are, when you use the digital resources here at the library”

Factor	Number of responses	Average response
Speed of connection	132	4.45
Reliability of connection	132	4.55
Use of printers	131	3.96
Organization of resources (Library portal/guide/gateway)	126	4.02
Ability to save information or download	128	3.91
Access to subscriptions/databases held by library	126	3.71
Wireless connection	127	3.36
Availability of computers/Waiting times	130	4.16
Time limits/Length of time you are allowed to use	128	4.28
Help from a librarian	132	4.02

Multimedia interface design	116	3.47
Online instruction	129	3.67

## Findings

### ***Who are the potential or regular users of public DL resources?***

Our pool of respondents represented both genders and a variety of races, predominantly between the ages of 31 and 50, half were college-educated, and half described themselves as employed. Most (88%) described their incomes as below poverty, or below median income levels.

Nearly all participants described themselves as at least “somewhat comfortable” using the DL resources at their library. Our sample largely represented frequent users (once a week or more), which made up 81% of the responses. Less frequent users, and potential users, were probably undersampled.

### ***For what purposes do the residents use the DL resources?***

The questions “Why do you use the digital library resources to search for information?” “What would you miss most about digital library access if it were no longer available here?” and “Are you able to find information with the digital library that you cannot find elsewhere?” generated responses that start to answer this question.

Speed and convenience 38% of participants said that they use the DL at the public library for the reasons of “speed” “easy access” and “convenience.”

Internet connection 13% of respondents cite the public DL as their only internet access.

Information unavailable elsewhere 53% of users indicated that they were able to find information using the DL that they felt was unavailable elsewhere, or that they had not been able to find using other resources.

### ***What kinds of information do users receive from DL resources?***

Three categories of information types were chosen 35% of the time, those being “news” “employment/jobs” and “education.” Responses included all the offered type choices though, and even the least frequently selected category, “parenting/family issues” was checked 18 times. Every category was sought at least 3% of the time, indicating that a wide variety of information types is regularly sought.

### ***How do users benefit from information obtained through the public DL resources?***

When users were asked “What would you miss most about digital library access if it were no longer available here?” they tended to say “Everything!” or an equivalent global answer: “Helps loneliness.” “My source of information. Ties me into the world.” “Everything. I would especially miss being able to research each week’s Torah reading portion, and checking my e-mail.” “The free internet.” “I guess id be lost.”

Other respondents detailed more specific items: “...met my girlfriend online.” “A big part of my education. I won’t be able to get the right information I need.” “Amazon’s recommendations and employment pages.” “Job listings.” “State job listings.” “The ability to have internet access to apply to grad school online.”

**Connectedness** Taken together, these answers illustrate the important connection to the internet, to the world, and to the information, that these patrons feel is available through their DL. They detailed both emotional benefits, such as romantic partners, or feeling connected to the world and other people in it, as well as the more traditional concrete positive effects.

**Self Improvement** Job searches and education were often listed as specific benefits users derived from the availability of the DL resources.

**Democratic Participation** The fact that many responses included “news” and “government forms/contact information” reinforces the notion that publicly available resources enhance democratic participation, making it a critically important asset in the public sphere.

### ***What barriers to using DL resources do users encounter?***

Several of the questions were answered in ways that illustrated the frustrations of users, and the limitations to the resources that they found.

**Lack of equipment or enough time to use it** Most comments responding to the questions “What do you find difficult about using this libraries digital resources?” or “What would you change, if you could, about the way you try to find information with the digital resources available at this library?” centered on physical access to the hardware. Users asked for more computers, more computers with internet access, longer hours of library operation, longer windows of use time, and access without any personal identification required (like a library card).

**Filters** The next most common frustration mentioned involved the use of firewalls or content filters: “CyberPatrol can be oversensitive.” “Doing away with that annoying Cyber-lock - not all of us are under the age of 12.” “Fire wall hinders a lot of my searches.”

**Lack of enough assistance** Users often mentioned the fact that library staff was stretched too thinly and too pressed for time, or “trying to do too many things.”

Generalized OPACs Another recurring answer centered on the issue of frustration with finding listings in the OPAC that the local library does not have. Patrons repeatedly stated that they wanted a way to find only what was locally available, they did not want to “bother looking up information for a book that the library does not have on-hand,” and “It would be nice to have an easy way of finding books available in this particular library.”

### ***What factors facilitate positive interaction between public DL’s and users?***

Reliability and Speed “Reliability of connection” was ranked by users as the most important factor, when they were asked to rank the importance of 12 factors in using DL resources. “Speed of connection” ranked second.

Availability “Time limits on use” and “Availability of Computers/Waiting times” were ranked as the next two most important factors to users.

Library staff and expertise “Help from a librarian” and “Organization of resources (Library portal/guide/gateway)” tied for 5th place in the ranking.

Factors rated as less important “Use of printers,” “Ability to save/download,” “Access to subscriptions/databases,” “Online instruction,” “Multimedia interface design,” and lastly, “Wireless connection.”

Two of the open-ended survey questions were particularly useful in shedding light on the way that respondents had learned to use the resources, or would start to teach others:

How did you learn to use the DL resources here at the library? Self taught: almost half (48%) of the responses to this question indicated that users had taught themselves to use the DL resources.

Staff taught: The next most common type of response indicated that a librarian or other library staff member had taught them to use the DL (26%). Included in responses to this and some of the other open-ended questions were very numerous comments praising the library staff and their knowledgeability and helpfulness, stating that the staff is “top notch” “great” or “very friendly and helpful.” Responses stating the high value that patrons place on library staff were scattered throughout the questions, although no direct question regarding the staff was asked at all.

Other responses were grouped into the categories “library class” “friend/family member” “school” and “other,” each of which made up 10% or less of the total responses. Some respondents indicated more than one category.

What tips would you give someone trying to find information using the digital library resources? Respondents offered various kinds of advice, which were categorized into 5 types, the most common of which was “ask a librarian.” Library staff were considered very valuable helpmeets



and are mentioned often, in several of the question responses. The next most popular advice was “ask google,” “try yahoo,” or a similar reference to one or another of the popular search engines. The next most common response advised to “be patient” or “keep trying.” Several users offered very practical and savvy advice about the search for information itself, with entries such as “be very specific” “use Boolean search terms” and “check your spelling.” Two respondents recommended that it would be helpful to “take classes.”

Responses to various question sometimes included advice on how the library could make the resources more understandable to users, suggesting “tip sheets,” “booklets,” and “three steps or less instruction on how to get into system.”

## **Recommendations**

Although the respondents to the survey represented a range of races, genders, educational backgrounds, employment statuses and ages, half represented their incomes as below federal poverty standards or state median income levels. This is an important data point, in that public libraries are serving the needs of a population that may have limited opportunities for paid personal internet access at another location. These libraries are indeed serving an impoverished population of patrons.

Responses to questions concerning patterns of usage were very revealing also, in that a large number of users reported seeking common types of information, namely “news” “employment/jobs” and “education.” These top three responses illustrate that the DL resources are indeed crucial to meeting the mission statements of most public libraries, that of equipping patrons with the resources to improve their own lives and fully participate in our democracy, or providing a “safety net” for citizens in danger of falling into a digital divide.

### ***More access***

Our top response to questions regarding difficulties experienced by patrons, and two of the four top-rated factors that matter to patrons involved time constraints and waiting times to get computer access. These are strong indicators that current levels of access are inadequate. Patrons in many situations are restricted to shorter-than-necessary windows of access time, or subject to long waits before getting to use a computer.

This corresponds to the trend found in Bertot et al, in which “85% of libraries report not being able to meet demand for computers consistently” (p. 3). Remedies to this problem may be difficult due to several constraints, such as funding and space, but more workstations and longer hours of access would be goals to pursue.

### ***Less filters***

In our study, the presence of filters was the second most common frustration documented by survey respondents. Again, this meshes with the data reported by Bertot et al, which found that 40% of libraries employ filters, “thus limiting access to a variety of Internet-based content” (p. 5). Health related information, for example, is notoriously prone to filtering problems, so that the presence of filters in the public library is preventing the goal of patron access to critical information.

It has been argued that such filtering, by “reducing access to a range of Internet services and information for both children and adults,” may put the public library in a position of exacerbating the digital divide, rather than closing it (Bertot et al 2005).

The other edge of the sword, of course, is that presence of filters is required in order to qualify a library for federal E-rate funding for Internet access. While the ultimate goal would be to lobby lawmakers to change this policy, each library must currently solve the dilemma for themselves, given the budgets they are authorized to work within. It must be kept in mind that patrons see the presence of filters as a significant hardship, according to our findings.

### ***Plan for equipment upgrades***

Our top-rated factors affecting users of DLs were found to be reliability and speed of the connections. Both of these factors require maintenance and upgrades, given that the information sought by users comes in ever-more information-rich forms, requiring broader band-widths of access and updated applications, at the minimum. As critical sources (government health and safety guides for example) increasingly offer streaming, interactive, and multimedia aspects to their resources, patrons will be at an increasing disadvantage if systems are not regularly upgraded. Such upgrades require funding and planning.

The Bill and Melinda Gates Foundation survey reports that 13.3% of libraries had a decrease in their technology budgets from the previous year, while 50.6% had technology budgets which were unchanged, with no increase for inflation (Bertot et al 2005). They also report that 96.4% of libraries in the survey have no set schedule for upgrading connection speed, and nearly 70% have no plan for upgrading hardware. It is critical to turn this trend on its head and ensure that libraries make plans for upgraded access.

An interesting result of our survey is the lack of importance patrons assign to wireless connection. The Gates Foundation survey reports “nearly 18% of public libraries already having wireless Internet access, and 21% planning wireless access within the next year” (p. 3). It may be wiser to spend funds on upgrades other than wireless access, according to our study.

### ***More Staff/More Training***

A particularly interesting result of our survey study is the fact that so many patrons found a way to praise the library staff as a response to one or another of the questions, although we failed to directly ask them any questions about personnel. From this, it is obvious that the availability and talents of library staff are a highly valued resource to the users who participated in the study, in regards to the DL. This value comes in different forms, although the most commonly mentioned were teaching patrons about the resources, and trouble-shooting or helping with problems that users encounter. It was often noted, however, that patrons would have preferred more access to help and expertise than they were able to get.

Five of the six library systems involved in our study list training classes on their webpages, some branches offering classes in both English and Spanish. Classes were mentioned by survey respondents as one of the ways in which they learned to use the resources, and in fact closing the digital divide will require continued efforts by libraries in this direction. Bertot et al found that 64% of urban libraries offer training on a scheduled basis, so our New England sample seems to be doing a better job of this than the national average.

### ***Specific Hurdles to Finding Relevant Information***

Spelling problems, lack of coherent search strategies, and an inability to distinguish between types of digital resources were all obvious in the open-ended answers in many of the responses submitted. Training, guides, portals, and on-demand instruction would all go a long way toward resolving those difficulties in patrons who are unable to find the information they seek.

For example, one response stated the user was unable to find “health information” and it leads us to wonder how effectively the patron’s search was. Did he/she need some very obscure piece of health information that is not available? Was this person able to find the abundant resources that exist? Did they misspell the search terms? Did they ask a librarian? We cannot know from the survey response what strategies were exhausted in this particular search, but it seems possible that awareness and search skills may have been lacking.

### **Problems**

The survey was a success, yielding much-needed data in a crucial area of study. There were several problems with the study however, that should be addressed in the next, larger study, which is still badly needed.

### ***Changes in library recruitment***

Many libraries did not respond at all to our query, and several responded but were not interested

in participating. Ideally we need to recruit a much larger sample of libraries, to make the results more generalizable. Perhaps this could be achieved with greater monetary rewards, or with more aggressive recruitment of a much larger number of candidate libraries.

### ***Changes in participant recruitment***

A factor missing in our data is the gap that exists between physical access to the internet connection and the knowledge/skills necessary to effectively use those resources. Our sample appears to be skewed towards those who already possess the skills, whether they describe themselves as “self-taught” or they learned from another source. This is likely due to the nature of the survey recruitment, in that patrons for our sample were, apparently, largely those who were currently able to make use of the resources, as opposed to a population of potential users who lack the requisite skills, and therefore might not attempt to use the DL resources that are available. This pool of potential users was not adequately represented in our study. We are unable, therefore, to assess how effectively public libraries are addressing the skills gap contributing to the digital divide. That said, there were a fair number of survey respondents who reported they had been taught to use the DL resources by library staff, which is an indicator that at least some portion of the patron population has been equipped with the necessary skills through the efforts of library personnel.

Survey participant recruitment must include a more diverse set of public library patrons, including those who are not necessarily headed toward or already using the computers and Digital Library resources present. Our survey did not include enough of those patrons, and we lost valuable information about the pool of potential (but not actual) users.

### ***Changes to questions***

Some of our survey queries need to be reworded to elucidate more informative answers. Some of the open-ended questions, we determined through this study, were too vague, and could be answered in ways that gave no insight as to the questions we wanted to answer. An example of this problem is illustrated in the responses to our question, “How and when did you first become interested in the digital library resources at this library?” Responses ran a wide gamut, from “since I moved to this city,” to “many years ago,” to “my mother showed me.” It would make more sense in the next survey to ask several questions, perhaps a closed-ended question regarding the “when” and another question or two about who may have acted as a guide, and other reasons the resources became apparent to the user. Interesting data came from the responses to this question, but they were not terribly useful because they did not tend to spread across much of the data set, since different participants essentially answered different questions, and those responses cannot now be relevantly compared.

It is also clear from our gathered responses that the terminology and structure of some of the

questions must be clarified to distinguish between types of digital resources. Our respondents did not distinguish between such disparate entities as the library OPAC, library-subscribed external information sources, and the World Wide Web itself in their survey answers. In fact, those distinctions may not be understood by the patrons who took the survey, as illustrated in some of the responses. Restructuring of questions and methods would be necessary to glean information pertinent to those distinctions.

## Conclusion

Overall, it is obvious that our sample of users places a very high value on the availability and quality of DL resources and services at their public library. While only 13% of our survey respondents stated that the public library is their only access to digital information, 43% use the DL at the public library several times a week, indicating many of the heavy users actually have access elsewhere, yet choose to use what is available at the public library very often as well. The reasons they listed for using these resources at the public library were convenience, speed, and ease of access.

The patterns of use observed in our study show that users employ the resources in a wide array of uses, including but not limited to accessing information in the categories of news, employment/jobs, education, entertainment, books, health and government forms/services. Also frequently mentioned were the social connections users found through the use of the DLs, whether they were encountering far-flung individuals who shared some common interests, using online dating services, or connecting with friends through email.

High quality, fast, reliable access to digital information forms is therefore valuable and important to urban populations, whether or not they have access elsewhere. We have made recommendations based on the ratings and suggestions of our users, in the hope that the administrators and decision makers in public libraries will find them useful to the goal of enhancing the impact, efficiency, and value of DL resources/services in regards to the needs of this urban patron population.

The very high value that patrons place on the availability of access was clear. This response to "What would you miss most...if it were no longer available..?" says it well:

"The info, man, the info."

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## Appendix

### *Income category resources*

Poverty federal threshold as defined by US Census Bureau for the 2004 census

<http://www.census.gov/hhes/www/poverty/threshld/thresh04.html>

1. 9,645
2. 12,334
3. 15,067
4. 19,307
5. 22,831
6. 25,788
7. 29,236

### *Median as defined for CT 2004*

<http://www.census.gov/hhes/www/income/medincsizeandstate.html>

Connecticut Estimate Lower Bound Upper Bound

Total: 73,458 71,525 75,391

2-person families 61,374 59,130 63,618

3-person families 76,506 72,521 80,491

4-person families 88,276 84,197 92,355

**5-person families 90,881 83,315 98,447**

**6-person families 89,313 77,511 101,115**

**7-or-more-person families 89,644 63,657 115,631**