



## **DESCRIBING INDIANA PUBLIC LIBRARY E-GOVERNMENT SERVICES, COSTS, AND BENEFITS: AN EXPLORATORY STUDY**

### **FINAL REPORT**

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**EXECUTIVE SUMMARY**

**Importance of the Study**

At a time when public library e-government service provision continues to expand, it is critical for the Indiana State Library and Indiana public libraries to fully assess their role as e-government service providers in order to manage current needs and allocate financial and other resources for future e-government service development. While there is widespread realization that the public library community is expending considerable resources in order to meet demands for increased e-government services, there is limited information available on the estimated costs, broadband needs and obstacles, and the resulting benefits of this service role. Additionally, there is little guidance available for developing future opportunities including recommendations and next steps for more successful e-government service provision.

**Goals and Objectives**

This report provides findings of a study designed to assist the Indiana State Library in (1) identifying the range of costs public libraries incur in their provision of e-government services; (2) describing the benefits that result for Indiana residents, libraries, and government agencies; (3) evaluating access to high-speed broadband in libraries; (4) assessing the usability of the IN.gov web portal for e-government services; and (5) providing recommendations for how public libraries in Indiana can continue to improve their e-government service provision.

**Data Collection Activities**

The study team employed a multi-method research design in order to collect data for this project. These methods included:

- Web-based survey,
- Activity log case studies,
- Interviews with state agency representatives,
- Focus groups with library staff,
- Phone interviews with library directors, and
- A usability analysis of IN.gov.

The use of multiple methods was designed to ensure reliable data and a thorough representation of the diversity of Indiana public libraries. While not included in the original tasking, phone interviews and the usability analysis of the IN.gov web portal were included in order to strengthen the project's findings.

## **Key Findings**

The study finds that the situational nature of e-government service provisions varies library by library across the state and that estimates of the frequency of e-government transactions vary among different staff members in the same library system. However, study participants across the state agree that there is a definite need for additional training of both library staff and patrons about the range of issues involved with the provision of e-government services and resources, including access, legality, security, and general computer literacy.

Additionally, the study finds that both participating libraries and participating state agency representatives recognize that there are benefits from public library e-government service provision, such as free Internet access for patrons, increased visibility for libraries, and reduced staff and printing costs for agencies. Both libraries and state agencies would be willing to communicate more in order to improve the accessibility, usability, and quality of e-government services offered in Indiana, but both sides are uncomfortable initiating the process to build stronger partnerships.

The study also finds that many libraries fail to recognize that insufficient broadband connectivity is a barrier to providing adequate e-government services and they are unaware of existing discrepancies and connectivity issues identified through this research. Despite evidence that a large percentage of libraries are not experiencing the speeds their ISPs advertise at the workstation level, very few libraries identified broadband connectivity as an obstacle to providing good e-government service. Poor connectivity may be causing these libraries to offer less than ideal services for e-government activities and daily programming due to inadequate and underperforming broadband connections.

## **Key Recommendations and Next Steps**

The findings of this study demonstrate that there are several areas where Indiana's public library e-government service provision could be improved. These include addressing broadband connectivity issues, providing additional training to library staff, and building stronger relationships with state agencies for assistance with state-level e-government services.

While addressing broadband connectivity issues would require additional research and expanded broadband capacity planning, training needs could be addressed immediately through steps such as developing statewide training programs related to the provision of e-government services for selected state agencies, addressing communication issues between government agencies and public libraries by holding a statewide conference, and utilizing these relationships to develop agency-specific training modules for libraries on best practices for state-level e-government service provision. Additionally, the Indiana State Library can begin improving relationships with state agencies by establishing a set channel through which agencies can communicate with libraries, developing an outreach campaign to inform the public about e-government services offered at public libraries, and potentially developing an e-government service portal that includes resources, direct links, and contact information for relevant agencies.



### **Increased Applicability**

While this study was exploratory, it presents an opportunity for Indiana to serve as a national model and leader in the provision of public library e-government services. A significant amount of work has been completed to better understand Indiana public library e-government service provision, but this study only represents a starting point for future research, collaboration, and the continuation of statewide e-government research and activities. Although the results may not be generalizable beyond Indiana, the methods, findings, and recommendations have greater applicability for other state library agencies, other state agencies, and researchers. Most importantly, the results present an opportunity for Indiana to improve public library e-government service provision.

## **INTRODUCTION**

At the same time that federal and state governments are moving increased amounts of information to a digital format and reducing the number of employees available to provide government services, demand to access and use these digital government resources and services through public libraries continues to increase dramatically.<sup>1</sup> There is widespread realization in the public library community of the increased reliance on digital government information and services, demand on public libraries to access and provide e-government services and resources, and expenditure of considerable public library resources in attempting to meet this demand.<sup>2</sup> But, there is only limited, or, in some instances no, information available as to the costs, range of services, and resultant impacts and benefits from statewide provision of e-government services and resources through public libraries.

It is important for the Indiana State Library (the Library), Indiana public libraries, and others to understand how Indiana public libraries are involved in e-government service provision, the cost of that service provision, and the benefits that result from that provision. This understanding is essential to manage current e-government services, better meet existing user needs, and plan for future needs. This project is a first attempt to describe the e-government services provided by Indiana public libraries, the costs of those services to the libraries, and the benefits resulting from provision of those services for users, the libraries, and state agencies.

This final project report details findings from the Describing Indiana Public Library E-government Services, Costs, and Benefits study. The study employed a variety of methods: Web-based survey, activity logs (used as case studies), agency interviews, phone interviews with library directors, focus groups with library staff, and a brief usability analysis of the Indiana e-government portal, IN.gov. This report includes a review of selected literature on e-government service provision and costing of library e-government services, details on the research design, methodology, data collection, data analysis, detailed findings from all methods, synthesized findings, recommendations, and conclusions.

## **PROJECT PURPOSE AND GOALS**

The overall goal of this project was to better describe and understand the costs, services, and benefits related to public library provision of e-government services in Indiana. More specifically, the project had the following objectives:

- Identify and define the range of “costs” public libraries incur in their provision of e-government services;
- Identify and describe the range of e-government services that public libraries currently provide to Indiana residents;

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<sup>1</sup> Bertot, J.C., Jaeger, P.T., L.A. Langa, & McClure, C.R. (2006). Public access computing and internet access in public libraries: The role of public libraries in e-government and emergency situations. *First Monday*, 11(9), Retrieved from [http://www.firstmonday.org/issues/issue11\\_9/bertot/index.html](http://www.firstmonday.org/issues/issue11_9/bertot/index.html)

<sup>2</sup> American Library Association. (2011). *E-government* [website]. Chicago: American Library Association. Retrieved from <http://www.ala.org/ala/issuesadvocacy/advocacy/federallegislation/govinfo/egovernment/>

- Identify and describe the benefits that result to Indiana residents and to the Indiana state government as a result of public library provision of e-government services;
- Evaluate the extent to which Indiana public libraries have, or are planning to have in the future, adequate high-speed broadband to access and deliver a range of e-government resources and services; and
- Offer recommendations for how public libraries in Indiana can better leverage their knowledge of e-government to improve e-government services and better manage e-government costs in the state.

Ultimately, the project results in products that will assist the Indiana State Library and Indiana public libraries to develop and implement strategies for improved e-government service provision and to leverage and better manage associated costs of public library e-government service provision.

The three primary products from this study are (1) an estimate of the annual cost that Indiana public libraries incur providing e-government resources, equipment, and services/support, (2) a descriptive typology of the benefits that the provision of e-government services offers to key target audiences in the state, and (3) existing broadband use and future needs related to e-government services. Thus, it was necessary to develop a (1) cost model/approach to identify and define how costs were calculated for the provision of public library e-government services, (2) a typology of the benefits to key stakeholder groups resulting from this provision, and (3) an e-government broadband use and need model. Costs and benefits were calculated (to the extent possible) only on provision of state-level services and benefits related to Indiana e-government activities. Because this was done through a Web-based survey, it is understood that these calculations are *estimates* at best since it was difficult for librarians to separate out resources expended on state-level e-government services from federal-level (or local) e-government services.<sup>3</sup>

## **SELECTED KEY LITERATURE**

### **Context of E-government Service Provision in Indiana Public Libraries**

The Indiana government website (<http://www.in.gov>; IN.gov) demonstrates that Indiana is a state with considerable e-government services. Since its redesign in 2006, the IN.gov portal has provided public access to more than 100 websites and more than 180 Web and mobile applications representing all three branches of government. The IN.gov portal is visited over 75 million times annually and ranked 3rd in 2011 in the Best of the Web Awards for State Portal by the Center for Digital Government.<sup>4</sup> The IN.gov portal's success suggests that integrated government and private sector networks can work together to build digital relationships between Indiana citizens and the state government. Moving the administration of e-government services from the private to the public sector, though, offers even greater benefits to Indiana residents by

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<sup>3</sup> Phone interview and focus group participants detailed the challenges in separating out costs for e-government services from other library services. See Appendices J and K for more information.

<sup>4</sup> Arrowood, B. (2011, December 6). *State of IN.gov 2011*. Presentation at Indiana Government South Auditorium, Indianapolis, IN. Accessed at [http://www.in.gov/inwp/files/IN\\_gov\\_Presentation\\_December\\_2011-Final-A.pdf](http://www.in.gov/inwp/files/IN_gov_Presentation_December_2011-Final-A.pdf).

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saving users from having to pay access fees and bridging the technology divide by promoting free public use of libraries' public access computers (PACs).

Therefore, it is important for the Library, Indiana public libraries, and others to understand how Indiana public libraries are involved with e-government service provision, the cost of that service provision, and the benefits that result from that service provision. This understanding is essential to manage current e-government services, better meet existing user needs, and plan for future needs.

### Selected Public Library E-government Data and Literature

The Information Institute reviewed a number of datasets and literature discussing the background of public library e-government services. These resources included:

- Recent e-government literature, websites, and projects;
- Indiana *Public Library Funding and Technology Access Survey (PLFTAS)* e-government data,<sup>5</sup> data on Indiana public libraries' receipt and use of funds from the E-rate,<sup>6</sup> Broadband Technology Opportunities Program (BTOP) or the Broadband Initiatives Program (BIP),<sup>7</sup> Indiana State Library annual surveys,<sup>8</sup> and data and broadband pricing information from Education Networks of America (ENA);<sup>9</sup>
- E-government grant projects in Indiana that were funded by the Library Services and Technology Act (LSTA);<sup>10</sup>
- The 2011 Indiana Public Library Standards as described in the *Indiana Administrative Code*<sup>11</sup> (note that in the introduction to these standards they are referenced to "encourage libraries to maintain a minimum level of service");
- Locality designation studies including the Institute of Museum and Library Services (IMLS) *Public Libraries Survey (FY 2009)*,<sup>12</sup> the IMLS *Data File Documentation for*

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<sup>5</sup> Hoffman, J., Bertot, J. C., Davis, D. M., & Clark, L. (2011). Libraries connect communities: Public Library Funding & Technology Access Study 2010-2011. *American Libraries, Digital Supplement*, 1-102. Retrieved from: <http://viewer.zmags.com/publication/857ea9fd>

<sup>6</sup> Indiana State Library. (n.d.). *ISL: E-rate* [Website]. Indianapolis, IN: Indiana State Library. Retrieved from: <http://www.in.gov/library/erate.htm>

<sup>7</sup> Funded by the American Recovery and Reinvestment Act, BTOP and BIP were administered by the National Telecommunications and Information Administration and Rural Utilities Service, respectively, and provided funding for broadband infrastructure, public computing centers, and broadband training and outreach. For more information, see <http://www.broadbandusa.gov>.

<sup>8</sup> Indiana State Library. (2010). *2010 statistics*. Indianapolis, IN: Indiana State Library. Retrieved from: <http://www.in.gov/library/4300.htm>

<sup>9</sup> Education Networks of American. (2011). *ENA price list for ISL 2011*. Indianapolis, IN: Education Networks of America. Retrieved from: [http://www.in.gov/library/files/ENA\\_Price\\_List\\_for\\_ISL-2011.pdf](http://www.in.gov/library/files/ENA_Price_List_for_ISL-2011.pdf)

<sup>10</sup> Indiana State Library. (n.d.). *LSTA supports Indiana libraries* [Website]. Indianapolis, IN: Indiana State Library. Retrieved from: [http://www.in.gov/library/files/lsta\\_indiana.htm](http://www.in.gov/library/files/lsta_indiana.htm)

<sup>11</sup> Minimum Standards for Public Libraries, *Indiana Administrative Code*. 590 IAC 6.1.4 (2011). Retrieved from: <http://www.in.gov/legislative/iac/T05900/A00060.PDF>

<sup>12</sup> Manjarrez, C. A., Miller, K. A., & Swan, D. W. (2011, October). *Public libraries survey fiscal year 2009*. Retrieved from Institute of Museum and Library Services website: [http://www.ims.gov/assets/1/workflow\\_staging/AssetManager/1665.PDF](http://www.ims.gov/assets/1/workflow_staging/AssetManager/1665.PDF)

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*Public Libraries Survey (FY 2009)*,<sup>13</sup> the Purdue Center for Regional Development *What is Rural and What is Urban in Indiana?*,<sup>14</sup> the Indiana Office of Community and Rural Affairs website,<sup>15</sup> and the U.S. Department of Agriculture (USDA) Economic Research Service (ERS) state-level maps for Indiana;<sup>16</sup>

- A sampling of Indiana public library technology plans provided by the Library project liaison; and
- 95th Percentile data provided by the Library project liaison demonstrating the bandwidth usage of libraries in the Indiana Public Library Internet Consortium who have contracts with ENA for broadband service.

Discussion of these resources and literature is available in the *Describing Indiana Public Library E-government Services, Costs, and Benefits: Interim Report of E-government and Library Services Costing Literature*.<sup>17</sup>

### Determining Rurality

In order to assess the various types of localities (to categorize them as urban and rural) that house Indiana public libraries, the Information Institute first reviewed several locality designation studies including the IMLS *Public Libraries Survey (FY 2009)*, the IMLS *Data File Documentation for Public Libraries Survey (FY 2009)*, the Purdue Center for Regional Development *What is Rural and What is Urban in Indiana?*, the Indiana Office of Community and Rural Affairs website, and all available USDA ERS state-level maps for Indiana.

These documents alerted the Information Institute to the difficulties that exist in categorizing local municipalities in Indiana as urban or rural due to a large number of conflicting definitions of rurality, inapplicability of national measures to the unique topography and populations of the Midwest, and arbitrary thresholds set by various governmental agencies. The study team discovered additional challenges with locality designations once data collection commenced and had to make a necessary switch from outlet-level to system-level analysis. After re-evaluating the available information to adjust to this switch and discussing the desired outcomes of the project with the Library project liaison, the study team determined that the most appropriate way to designate Indiana public library systems as urban or rural would be following

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<sup>13</sup> Manjarrez, C. A., & Miller, K. A. (2011, July). *Data file documentation for public libraries survey fiscal year 2009*. Retrieved from United States Census Publications website: [https://harvester.census.gov/imls/pubs/Publications/fy2009\\_pls\\_database\\_documentation.pdf](https://harvester.census.gov/imls/pubs/Publications/fy2009_pls_database_documentation.pdf)

<sup>14</sup> Waldorf, B. S. (2007, March). *What is rural and what is urban in Indiana?* Retrieved from Purdue Center for Regional Development website: [http://www.pcrd.purdue.edu/documents/publications/What\\_is\\_Rural\\_and\\_What\\_is\\_Urban\\_in\\_Indiana.pdf](http://www.pcrd.purdue.edu/documents/publications/What_is_Rural_and_What_is_Urban_in_Indiana.pdf)

<sup>15</sup> Indiana Office of Community And Rural Affairs. (2011). *FAQs*. Retrieved from Indiana Office of Community and Rural Affairs website: <http://www.in.gov/ocra/2356.htm>

<sup>16</sup> USDA Economic Research Service. (2007). *Rural Definitions: State- Level Maps*. Retrieved from: <http://www.ers.usda.gov/data/ruraldefinitions/maps.htm>

<sup>17</sup> Guenther, D. M., McClure, C. R., Mandel, L. H., & Saunders, J. D. (2011). *Describing Indiana public library e-government services, costs, and benefits: Interim report of e-government and library services costing literature*. Tallahassee, FL: Information Use Management and Policy Institute, the Florida State University College of Communication and Information.

the county's rating in the Index of Relative Rurality (IRR), a robust locality designation system.<sup>18</sup>

### *The IRR*

Dr. Brigitte Waldorf of the Department of Agricultural Economics at Purdue University proposed the use of the IRR in Indiana in 2007 as a means of compensating for imprecise locality designation guidelines for Indiana counties. The IRR utilizes several classification schemes when determining the locality designation for a particular county including:

*Classification Scheme I:* Urban areas as defined by U.S. Census Bureau

*Classification Scheme II:* Core Based Statistical Area as defined by Office of Management and Budget (OMB)

*Classification Scheme III:* The Rural-Urban Continuum Code as defined by the USDA ERS

*Classification Scheme IV:* The Rural-Urban Density Typography as defined by Isserman<sup>19</sup>

These classification schemes are meant to reflect four dimensions of rurality, including population size, population density, percentage of urban residents, and the distance to metropolitan areas.<sup>20</sup> Instead of categorizing counties as “urban” or “rural,” the IRR categorizes counties according to how rural they are, or their relative rurality, according to a scale ranging from 0 (extremely low rurality) to 1 (extremely high rurality).

### Application of the IRR in Indiana

Waldorf found that most counties in Indiana have a medium rurality: between 0.4 and 0.7. No county in Indiana has a rurality score higher than 0.64, so the designation categories for locality for this project were set accordingly. As Waldorf (and by extension Indiana) set medium rurality as 0.4-0.7, the study team takes this range to be “rural” and anything below 0.4 to be “urban.” Table 1 demonstrates the thresholds for urban and rural library systems based on their county's IRR rating. These thresholds were used in analyzing survey and other data to allow for comparisons between rural and urban public libraries in Indiana.

Table 1: Locality Designation According to Relative Rurality Rating

<b>Urban</b>	≤ 0.39	Relative Rurality
<b>Rural</b>	≥ 0.40	Relative Rurality

### Justification for Selecting the IRR for This Study

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<sup>18</sup> Waldorf, B. S. (2007). *What is rural and what is urban in Indiana* (Research Report No. PCRD-R-4). Retrieved from the Purdue Center for Regional Development website:

[http://www.pcrd.purdue.edu/documents/publications/What\\_is\\_Rural\\_and\\_What\\_is\\_Urban\\_in\\_Indiana.pdf](http://www.pcrd.purdue.edu/documents/publications/What_is_Rural_and_What_is_Urban_in_Indiana.pdf)

<sup>19</sup> Isserman, A. M. (2005). In the national interest: Defining rural and urban correctly in research and public policy. *International Regional Science Review*, 28(4), 465-499.

<sup>20</sup> Waldorf, 2007.

After exploring numerous options, the study team has determined that this method is the most feasible for use when determining the locality designation of Indiana public library systems. The IRR allows for a more accurate representation of the topical and demographic conditions of each participating library system in Indiana and is a more robust method of evaluation for the purposes of the study. While other methods may be applicable on an outlet-level or state-level scale, at the system-level the IRR is the most credible, verified method of classification and produces a usable array of results for data extrapolation and analysis.

### **Calculating E-government Costs**

Based on a number of sources discussed later in this report, the following categories of costs were used as a basis for estimating the total annual costs incurred by Indiana public libraries in the provision of state and federal e-government resources, services, and support:

- *Resources*: The purchase of books, reports, and other related materials or items for the collection related to e-government, as well as supplies that support e-government activities;
- *Equipment*: The costs related to purchase and use of furniture, computers, software, telecommunications, telephones, and other equipment that support e-government service provision;
- *Services/support*: An estimate of staff time that is spent in the provision of e-government resources, services, and support; and
- *Broadband*: An investigation to determine whether Indiana public libraries have adequate high-speed broadband connections to provide access to e-government resources and services both now and in the future and to determine the costs of those connections.

Clearly, numerous other possible “costs” might have been included such as utilities, equipment depreciation, etc. For purposes of determining costs, however, the team included only those costs specified and was conservative in estimating total costs.

#### *E-government Service Costing Models*

When considering e-government service provisions in public libraries, there is a wealth of information available about potential funding sources, but very little about costing. One methodology mentioned in any detail that incorporates data reports and/or tracking technology is Activity Based Costing (ABC) to measure the costs of providing services for individual e-government programs.<sup>21</sup>

After ABC enjoyed an initial but brief period of popularity, critics complained that ABC was inaccurate for large public sector institutions due to a higher likelihood of multi-tasking,

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<sup>21</sup> Hadziliyas, E. A. (2005). A methodology framework for calculating the cost of e-government services. In *E-government: Towards electronic democracy, proceedings* (pp. 247-256). Lille, France: Institute For Scientific Information. Retrieved from <http://www.springerlink.com/content/meuqprahc2vt2a73/>



resource sharing, and incomplete data collection practices.<sup>22</sup> However, since 1999, when the United States Marine Corps began using ABC accounting to successfully trim its budgets, economists and information specialists have been discussing the return of the technique to better allocate funds during times of financial duress.<sup>23</sup>

With more advanced technology to track the amount of time library patrons use PACs to access individual e-government websites (such as IP and event logs<sup>24</sup>) and detailed data reports for services rendered (from staff logs and other surveys), the ABC technique has potential as an approach for costing library e-government services. ABC strategies provide an alternative to traditional cost accounting by (1) assigning resources to specific work activities (e.g., programs and services), (2) providing more accurate estimates for the cost of the work performed by accounting for both direct and indirect costs, and (3) producing a working budget for program products and services.

### *ABC Methodology*

In general, the ABC employs a four-step process:

1. Analysis of activities;
2. Cost collection;
3. Costs to activities assignment; and
4. Definition of output measures and cost calculation.

This basic approach can be expanded and or otherwise modified in a number of ways in light of project time and resources constraints.

### *Use of the Modified ABC Costing Model for This Project*

In order to provide costing estimates for this project, the Information Institute utilized a modified ABC methodology to meet the needs of the project and to use data collection tools efficiently. The project team modified each step as follows:

- Analysis of activities: Generally, using data collection methods and reports to provide estimates, the organization makes a decision if the library service in question is value-added or not, but with regard to e-government service provision, public libraries most likely are not able or willing to discontinue program offerings even if they are non-value added. Therefore, this step's only purpose is to distinguish programs that are successful from programs that are struggling and in need of attention/rehabilitation.
- Cost collection: During this step, the study team totaled all costs for e-government services within the categories identified earlier, including all of the resources, equipment,

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<sup>22</sup> Cooper, R., & Kaplan, R. S. (1988). Measure costs right: Make the right decisions. *Harvard Business Review*, 66(5), 96-103.

<sup>23</sup> Katz, D. M. (2002, December 31). Activity-based costing (ABC). Retrieved from CFO.com website: [http://www.cfo.com/article.cfm/3007694/c\\_2984393](http://www.cfo.com/article.cfm/3007694/c_2984393)

<sup>24</sup> The Information Institute was not able to obtain this data.



services/support, and bandwidth needs the Information Institute identified as indicators of costs.

- Costs to activities assignment: Here, the Information Institute used collected data to determine the costs for typical e-government services/programs, then multiplying this figure by the percent of time each division expended (e.g., library branch, staff member, etc.). This step identified and described the costs, but not their calculation; calculation of activity costs occurred in the next step.
- Definition of output measures and cost calculation: In this step, the study team calculated the actual program costs using data from the Web-based survey about the frequency of the provision of e-government services and the amount of time spent assisting patrons with those services. Then, the team multiplied the percent of staff time spent on these activities by a total cost estimate to determine the amount of funding required to offer that activity (i.e., e-government service or program). Also, the project team calculated cost estimates based on categories of population served (i.e., rural and urban).
- Indiana public library e-government services: After the Information Institute calculated each individual activity by population served categories, the team then extrapolated the sum of the estimates to estimate the operating cost for providing e-government services in Indiana public libraries.

Specific details on calculation of costs and the resulting numbers appears in the Findings section below.

## **Broadband and E-government**

As part of the project and to better understand the need for adequate broadband for the purpose of public library e-government service provision, the Information Institute conducted a brief literature review of relevant documents. While this review was not meant to be comprehensive, it does present an overview of published literature that evaluates bandwidth and connectivity needs and issues and it offers suggestions for increasing adoption and end user satisfaction.

A study by the Pew Research Center's Internet and American Life Project reports that while 66% of American adults have high-speed broadband connections at home, some areas still struggle to connect.<sup>25</sup> When the public's ability to access Internet-enabled services depends on public libraries, inadequate Internet bandwidth and connection speeds become even more problematic. For libraries providing e-government services, ubiquitous broadband is particularly important as the majority of e-government service transactions involve downloading or uploading forms, permits, licenses, or other documents, as well as account management services, all actions that are expedited by high-speed broadband Internet. When studies have been conducted to examine the effectiveness of e-government services based on user perceptions of the services in comparison to user perceptions of e-commerce services, connection speed

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<sup>25</sup> Smith, A. (2010). *Home broadband 2010*. Retrieved from Pew Internet and American Life Project website: <http://pewinternet.org/Reports/2010/Home-Broadband-2010.aspx>

normally is included among the variables considered.<sup>26</sup> Lower connection speeds almost always equated to lower user satisfaction.

Public libraries also are able to raise community awareness of high-speed broadband's usefulness through their own adoption of adequate broadband for e-government and other Internet services.<sup>27</sup> Additionally, when public libraries gain access to higher connectivity speeds and greater bandwidth, that access also extends into the community and benefits private homes and businesses through middle mile and last mile connections.<sup>28</sup>

Results of two studies of broadband connectivity and use at rural Florida anchor institutions agree with the Pew Research Center's survey findings.<sup>29</sup> In these reports, the Information Institute finds that many anchor institutions, including libraries, do struggle with adequate adoption and that multiple situational factors affect broadband adoption. These include administrative support, funding, broadband availability, and understanding the importance of broadband. This last factor is particularly important to successful adoption of broadband in order for communities to profit from broadband deployment.<sup>30</sup> The *National Broadband Plan* states that "ultimately, the value of broadband is realized when it delivers useful applications and content to end-users."<sup>31</sup> For libraries, this is particularly true as broadband services are required to support e-government service provision and provision of these services may be successful only if the libraries take advantage of broadband availability.

## **OVERVIEW OF RESEARCH METHODS**

This project employed a multi-method research design comprised of six methods. The goal of the multi-method approach was to gather data from a variety of sources and to allow the strengths of some methods to overcome the weaknesses of others. For example, a survey only

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<sup>26</sup> Steyaert, J. (2004). Measuring the performance of electronic government services. *Information and Management*, 41(3), 369-375. doi:10.1016/S0378-7206(03)00025-9; Morgeson, F. V., III & Mithas, S. (2009). Does e-government measure up to e-business?: Comparing end user perceptions of U.S. federal government and e-business Web sites. *Public Administration Review*, 69(4), 740-752.

<sup>27</sup> Alemanne, N., Mandel, L., & McClure, C. (2011) The rural public library as leader in community broadband services. *Library Technology Reports*, 47(6), 19-28.

<sup>28</sup> Gupta, A., Berejka, M., Griffin, T., & Boyd, P. (2009). *Comments of Microsoft Corporation before the Federal Communications Commission in the matter of a national broadband plan for our future*. Redmond, WA: Microsoft. Retrieved July 6, 2012, from <http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native-or-pdf=pdf&id=6520220228>

<sup>29</sup> McClure, C., Mandel, L. Alemanne, N., Saunders, J., Spears, L. & Bishop, B. (2011a). *Florida Rural Broadband Alliance (FRBA) Florida Rural Middle Mile Networks – Northwest and South Central Regions Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Fourth interim and final report*. Retrieved from Information Use Management and Policy Institute website: <http://frba.ii.fsu.edu/reports>; McClure, C. R., Mandel, L. H., & Alemanne, N. D. (2011b). *North Florida Broadband Authority (NFBA) Ubiquitous Middle Mile Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Final report of project activities*. Retrieved from Information Use Management and Policy Institute website: <http://nfba.ii.fsu.edu/reports>.

<sup>30</sup> Kolko, J. (2010). A new measure of US residential broadband availability. *Telecommunications Policy*, 34(3), 132-143.

<sup>31</sup> Federal Communications Commission (FCC). (2010). *Connecting America: The national broadband plan*. Retrieved from Federal Communications Commission website: <http://download.broadband.gov/plan/national-broadband-plan.pdf>, p. 15.

allows researchers to ask *what* questions, not *why* questions, but interview methods can provide data on the *why*, thereby strengthening the overall research. In this case, the research design included the following six methods:

- Web-based survey,
- Activity log case studies,
- Agency interviews,
- Focus groups with library staff,
- Phone interviews with library directors, and
- Usability analysis of IN.gov.

A brief description of each method follows, and more detailed descriptions of each method are available in Appendices A-F.

This study was exploratory in nature, meaning that it was designed solely to explore the topic of e-government service provision by Indiana libraries. The team made every effort to ensure valid and reliable data, adding a supplemental method (phone interviews) when it became clear that the activity logs were not experiencing an adequate response rate. The team also ensured representativeness of Indiana public libraries, surveying rural and urban libraries across the state and making sure that all methods included representation from all types of Indiana public libraries. As exploratory research, this study provides a first step at investigating public library e-government service provision in Indiana and suggests numerous areas for future research (see Recommendations and Next Steps section below).

### **Web-based Survey**

The goal of the survey was to evaluate e-government service initiatives in Indiana public libraries and to gather data to support exercises to estimate the cost of these activities (see Appendix A for more detail on the method). While the Information Institute study team initially requested that the survey be sent to a stratified sample of Indiana libraries (stratified by rurality), ultimately the team made the survey available to all Indiana library systems at the request of the Library. The study team determined that the most efficient way to conduct the survey would be to use an online survey format (in this case, using Survey Monkey Professional software) because an online survey is more easily accessible to respondents, reliable, and cost-effective to produce than a paper-based survey.

The survey was made available on January 30, 2012 and remained open until April 23, 2012. Ultimately, the study team sent the survey to all 238 library systems in Indiana, and 115 libraries responded, for a response rate of 48.3% overall. Respondents represented a wide range of urban and rural libraries all over Indiana. The survey population included 126 rural and 112 urban libraries, of which 63 rural and 52 urban libraries responded, for response rates of 50.0% for rural libraries and 46.4% for urban libraries.<sup>32</sup> The team coded quantitative variables for

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<sup>32</sup> The Information Institute was notified by the Indiana liaison that libraries were completing multiple surveys for various projects at the same time as the survey for this project. This may have affected the response rate for data collection.

descriptive statistical analysis and reported open-ended answers verbatim rather than analyzing them quantitatively.

### **Activity Log Case Studies**

The study team originally intended for Indiana public library professionals and paraprofessionals who regularly engage in e-government service provision to use the activity logs in conjunction with the self-reported survey data to report on e-government transactions conducted during a sample week. This activity was designed to support costing exercises by providing information on staff and equipment being used in the provision of e-government services in Indiana public libraries. The study team asked each library outlet to have one professional and one paraprofessional staff member complete the activity log (Appendix B), recording the frequency, length, and location of each e-government transaction, as well as the percentage of overall daily time that they spent on local, state, and federal e-government transactions.

Due to the low response rate for the activity logs and the number of incomplete logs that were submitted, the team chose instead to use the activity logs as case studies of e-government service provision in Indiana public libraries. The activity logs that were completed do contain valuable data as they demonstrate how e-government services manifest in Indiana public libraries and the number of e-government transactions that libraries complete during an average 5-day period. From the completed activity logs, the study team chose 10 to present in this report as case studies; five from urban libraries and five from rural libraries according to their IRR locality designation.

### **Agency Interviews**

The Information Institute study team in collaboration with the Library study team conducted interviews with selected Indiana government agency officials as part of a multi-method research approach to estimate the benefits and costs of providing e-government services to patrons at Indiana public libraries. The objective of these interviews was to determine the extent to which state agencies provide e-government services to state residents and their familiarity with the role public libraries play in the provision of those services. Agencies with significant digital exposure were selected for participation in the interviews. The Information Institute developed the script for the agency interviews (see Appendix C) and the Library project liaison interviewed 10 current government agency officials representing six Indiana agencies that provide online services. The agencies have high visibility and their staffs are either knowledgeable about the provision of e-government services to Indiana citizens or they work with public libraries in the provision of e-government services. Some interviews occurred face-to-face and others via the telephone.

### **Focus Groups**

The Information Institute study team, in collaboration with the Library study team, conducted regional focus groups with Indiana public librarians. The purpose of the focus groups

was to describe the experience of libraries as they provide e-government services to citizens and to gather the related details that fully describe the role that public libraries play in the provision of e-government services. The public librarian focus groups describe e-government service provision at the library reference desk, the impact of this activity upon traditional library operations, and possible areas for collaboration to improve services to state residents.

The Information Institute developed both the script for the focus group conversation (see Appendix D) and the questionnaires for the participants to take prior to and immediately following the focus groups (see Appendix D), and the Library project liaison conducted the focus groups. The Library project liaison scheduled and conducted focus groups on April 30, May 1, and May 3, 2012 (six total focus groups). A total of 17 library staff attended the six sessions, which were held in different regions around the state. Each session resulted in an audio recording, moderator notes, and completed pre- and post-group questionnaires.<sup>33</sup> A study team member compared the audio recordings to the moderator notes and found acceptable reliability between the two sets of data.

### **Phone Interviews**

The original research design did not include phone interviews with library staff. Low response rates for the activity logs and survey, and particularly incomplete data from the activity logs, suggested a need for follow-up telephone interviews with library directors to gather supplemental information to flesh out the data collected in the activity logs and survey. Interviews followed a set interview schedule (see Appendix E). The Information Institute study team conducted 17 follow-up telephone interviews with Indiana public library directors. Originally, the team planned to conduct 20-25 interviews, but after 15 interviews, the study team felt that the saturation point had been reached. The study team then conducted two additional interviews to verify that saturation had occurred, and analysis revealed that respondents provided the same answers to questions 5, 6, 7, and 8.

### **Usability Analysis**

The usability inspection provides a systematic and extensive testing of all navigation toolbars and features, links, help topics, search features, aesthetics of a website, and a review of the usefulness of page content. The usability inspection for this report assesses the effectiveness and efficiency with which the IN.gov website presents and provides access for users to the site's content and to state agency and other state websites' content (for more details see Appendix F).

Functionality is the degree to which all aspects of a website are functional and operate properly. The functionality testing process includes a systematic assessment of every page of the project's website. The study team utilized the expert testing approach for the functionality assessment, where the expert testers (i.e., study team members) designed and executed standard evaluation and testing approaches based on existing best practices. The study team designed the test based on an organized set of concise patterns created to assure that testers did not miss anything important.

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<sup>33</sup> One session held at Hamilton East Public Library did not produce an audio recording.

Accessibility is the level at which a technology can be used by individuals with disabilities. This can include having built-in accessibility features and working with adaptive technologies that individuals with disabilities may use. Accessibility testing is particularly important in government websites as access to many government services and resources are only offered online through agency sites. Website accessibility is commonly measured using two sets of standards—the World Wide Web Consortium (W3C) guidelines for accessibility (<http://www.w3c.org>) and the federal legal standards of accessibility established by Section 508 §1194.22 of the Rehabilitation Act (<http://www.section508.gov>).<sup>34</sup> Study team members evaluated the IN.gov website using selected criteria developed from section 508 accessibility standards. The criteria consist of eight questions that form the testing frame.

## **Data Analyses**

The study team analyzed data from each method individually, producing individual reports of findings (Appendices G-L). Then the team integrated the findings according to emergent key themes. The team used quantitative analyses for the majority of the survey questions, the pre- and post-focus group questionnaires, and some of the phone interview questions. All other data analysis was qualitative, employing thematic content analysis of interview transcripts, focus group moderator notes, and open-ended survey questions. Integration of the data also employed thematic analysis, with the team identifying emergent themes across the method-specific findings.

## **FINDINGS**

This section presents the integrated study findings, arranged by theme. Detailed findings from each method are available in Appendices G-L. The team identified eight broad themes across the study findings:

- The situational nature of e-government service provisions varies library by library and the local situation in each library likely is impacting the picture of e-government service provision;
- Study participants see a need for additional training for both library staff and patrons about a range of issues involving e-government services and resources;
- Both libraries and state agencies are willing to communicate more about public library e-government services but neither side seems willing to initiate contact;
- Both libraries and state agencies recognize benefits of public library e-government service provision;
- While the IN.gov site is popular for e-government services information and resources, librarians and the study team believe that improvements could be made to the Web portal for greater usability;

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<sup>34</sup> Section 508 §1194.22 of the *Rehabilitation Act Amendments of 1998* requires that Federal agencies ensure the accessibility of their web-based intranet and Internet information and applications.

- Many libraries fail to recognize that insufficient broadband is a barrier to quality public library e-government service provisions and are unaware of connectivity issues and existing discrepancies in their libraries;
- Libraries may be offering less than ideal service for e-government activities and daily programming due to taxed broadband connections and inadequate resources as a result of funding shortages; and
- Costing of e-government services is a complicated process due to reliance on self-reported data. The resulting costs are *estimates* only and additional research and analysis is advised.

Findings from each theme are detailed below.

### **Situational Nature of E-government Service Provision**

The activity log case studies show that there are differences between urban and rural libraries, differences among the rural libraries, and differences among the urban libraries. These differences include the total number of transactions, length of transactions, whether the majority of transactions are completed by professionals or paraprofessionals, and which equipment is used during the transactions. Library directors contacted via telephone interviews also identified that the time spent by library staff members assisting patrons with e-government requests varies from library to library.

Respondents provided various estimates of how frequently their libraries receive e-government assistance requests with 41.2% responding “somewhat frequently;” others responded with a range from “very frequently” to “none.” These responses demonstrate that while some libraries may be providing e-government services on a regular basis, there are locations that may not be engaging in e-government service transactions at all or not recognizing these transactions as part of their e-government service provision. Basically, the picture of e-government service provision in Indiana public libraries appears to vary library by library. That is, the local situation in each library likely is impacting the picture of e-government service provision.

Survey findings also point to situational differences between urban and rural libraries. For example, the survey responses indicate that urban library staffs (both professionals and paraprofessionals) dedicate larger percentages of their time to e-government service provision (approximately 40% of their time for all e-government transactions) than do their rural counterparts (approximately 15% of their time for all e-government transactions). While 40% of staff time may seem like a significant percentage, library directors said in phone interviews that e-government service provision does not demand significant amounts of library staff time. The majority of phone interview participants (76.5%) reported that, typically, their staff members dedicate less than 10% of their time to e-government assistance to patrons.

Resource and equipment costs also vary between urban and rural libraries, with urban libraries spending more than rural libraries on materials and computer equipment, but rural libraries spending more on furnishings and annual ISP costs. Meanwhile, even though rural libraries spend *less* on computer equipment, they have more desktop and laptop PACs, tablet personal computers (PCs), and staff desktop and tablet PCs than do urban libraries.





## **Need for Training**

The 2011 *PLFTAS* identifies lack of staff and lack of necessary expertise as two of the three leading barriers to sufficient e-government service provision in U.S. public libraries.<sup>35</sup> While 91.9% of Indiana public libraries report providing trained library staff persons who know how to access the Internet and assist patrons with e-government needs, only 35.7% report having at least one staff member who is an expert at providing e-government services.<sup>36</sup>

Nearly all participants identified a need for training of public librarians on e-government service provision, over a range of different topics. Although agency representatives acknowledged the fact that state residents use public libraries to access their online services, they have not yet offered formal, consistent training to public library staff. Public library directors who participated in phone interviews perceived a need for staff training about e-government services offered on agency websites and training on how to contact the agencies for further information. Survey respondents echoed this when identifying issues the libraries need to address to provide high quality e-government service: the number one response was inadequately trained e-government staff (63.0% of respondents). When asked for suggestions for the improvement of e-government services, survey respondents also requested additional training for staff and patrons to become more computer literate, and training for patrons on how to use government websites (sponsored by the library or government agencies).

Focus group participants agreed that they would welcome any agency-provided training. They suggested such topics as training by agencies on how to use their websites, how to respond to patron requests, and how to provide safe service and understand the limitations of legal and medical service provision; training on specific services such as unemployment filing through the Department of Workforce Development (DWD) site, use of the Internal Revenue Service (IRS) website, or the INSPIRE search engine (Google replacement advocated by school districts); and disaster preparedness training. They also suggested that librarians could accumulate Library Education Units (LEUs) for training on e-government services.

## **Library-Agency Relationships**

Both agency interviewees and library directors indicated that, currently, there is little agency-library interaction in the provision of e-government services to Indiana residents, but both sides *do* want to have interaction. Agencies are aware that state residents often use public libraries to access their online services, and even refer their customers to public libraries to access their websites. However, agency representatives acknowledge that the state provides online services to residents, independent of consultations with public librarians about issues surrounding online provision of government services, such as digital literacy competencies and

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<sup>35</sup> Bertot, J. C., Sigler, K., DeCoster, E., McDermott, A., Katz, S. M., Langa, L. A., & Grimes, J. M. (2011). *2010-2011 Public Library Funding and Technology Access Survey: Survey findings and results*. College Park, MD: Information Policy and Access Center. Retrieved from:

[http://www.plinternetsurvey.org/sites/default/files/publications/2011\\_plftas.pdf](http://www.plinternetsurvey.org/sites/default/files/publications/2011_plftas.pdf)

<sup>36</sup> Ibid.

that, while the agencies recognize the benefits public libraries provide state residents through the provision of e-government services, they have not trained librarians to improve those services.

Libraries also perceive a need for improved agency-library interaction, with lack of moral and financial support from state agencies cited by almost half of all survey respondents as issues that need to be addressed for libraries to provide high quality e-government service. Additionally, 34.2% of survey respondents were frustrated by their inability to contact state agency representatives and several suggested establishing a library e-government service liaison position to assist with facilitating communication. The e-government service model provoked surprise in each focus group. Participants stated that they did not know if agencies recognized libraries' roles in the process of e-government service provision. They were surprised to hear that agencies would care about libraries and were unaware that agency-library collaborative initiatives exist.

Opening the lines of communication may prove challenging as neither agencies nor libraries seem ready to originate the communication. This is despite the fact that state agency officials say they are willing to communicate more with public librarians to improve their services and public library directors perceive a need for improving staff communication with government agencies. During the phone interviews, all participants said that they would like to have set policies and procedures for contacting agency staff, contact information for every state agency, and better advertising by state agencies about what services are available through the library. Additional communication and cooperation with state agencies outweighed requests for more funding or additional staff with phone interview respondents.

### **Benefits of E-government Service Provision**

Telephone interviews with library directors indicate that public library directors do not perceive a tangible benefit to their libraries as a result of providing e-government service assistance. However, survey respondents identified a host of benefits to their libraries and communities, with the most frequently cited being increased use of the library (81.8% of respondents), increased visibility of the library (70.1%), patrons are more likely to value and support the library (70.1%), library staff have increased knowledge of e-government programs to assist patrons (64.9%), and patrons are more satisfied with their use of the library (50.6%). All five of these benefits are tangible benefits to libraries. Focus group respondents echoed these themes, identifying benefits such as increased visibility for libraries, libraries issuing more library cards, libraries seeing the return of patrons who had not been visiting the library for years, and opportunities for libraries to build rapport with patrons.

While agencies recognize the benefits public libraries provide state residents through the provision of e-government services, they did not necessarily enumerate specific benefits. There was consensus among the respondents though that library e-government services save agencies staff time and money, and that it is helpful to know that they can send citizens without home access to a computer or Internet to local libraries for some of the basic services that their agencies offer.

On the survey, libraries identified the top benefits to local, state, and federal agencies as reduced costs from providing paper-based forms, applications, and licenses (87.7%); reducing agency staff time in providing information to the public (75.3%); reduced technology costs (74.0%); continued use of e-government services by the public (63.0%); and reduced costs from closing local offices (60.3%). Four out of five of these are cost-saving benefits for agencies and one (continued use of e-government services by the public) is a benefit to the public.

Focus group participants also identified the cost-saving benefits to agencies from library e-government service provision saying, “Government saves money for it. We do not save money. We get some other benefits from it, but we don’t save money doing it.” The participants agreed that libraries bear costs for e-government service provision, especially for increased staff time and provision of forms, but they also acknowledge that the increased foot traffic is good for libraries.

### **Use of IN.gov and Agency Websites**

Interviewed agency officials report that Indiana residents use the IN.gov Web portal extensively. Also, agencies continuously improve their websites in response to residents’ criticisms, indicating an ongoing interest in improving e-government services for Indiana residents. However, focus group participants said that government agency websites are too complicated and this discourages many people. They agreed that government agency websites need to be standardized and the IN.gov search engine improved to facilitate ease of use.

Usability analysis indicates there are areas of strength and areas where improvements can be made. In general, navigation throughout the IN.gov site is relatively straightforward and user friendly and Web page content for each area is easy to locate and easy to read. What is primarily missing from site content is descriptive metadata to better inform visitors of the types of services and resources available through the IN.gov site. Functionality of the site is good overall.

There are some identified issues that, when fixed, will improve use of the site, such as the addition of anchor tags for linking to page headers located below the visible page window and the use of breadcrumbs to help visitors navigate through and back to IN.gov after leaving the site. Accessibility is marginally good overall due to a number of relevant issues to address, such as needing to add a narrator skip button to bypass unneeded narrated information and a lack of consistency in presentation across different browsers when users need to enlarge pages.

In an open-ended question, the survey asked respondents to list three suggestions for improvements that could be made to the IN.gov Web portal. The most popular suggestions included requests for a simpler design, a better directory to make it easier to find location and contact information, and a better search function that prioritizes Web pages instead of documents about the search term.

## **Broadband Capacity and E-government Service Provision**

There is a lack of consensus about the degree to which insufficient broadband is a barrier to quality public library e-government service provision, or its degree of impact compared to other barriers. The 2011 *PLFTAS* identifies lack of staff, lack of necessary expertise, and lack of sufficient PACs as the three leading barriers to sufficient e-government service provision in U.S. public libraries.<sup>37</sup> The participants in this study also report staff issues as barriers to sufficient public library e-government service provision, but they do not report the number of PACs or broadband connections as barriers.

Survey respondents identified the top two biggest challenges to high quality e-government service provision as inadequately trained staff (63.0%) and insufficient funding for e-government staff (49.3%). Telephone interviews found that public library directors perceived a need for staff training about e-government services and focus group participants identified one cost of e-government service provision as the time involved for staff to learn about new and revised e-government services. Librarians did not seem to perceive broadband capacity as a factor impacting e-government service provision.

Only 16.4% of survey respondents cited inadequate broadband capacity as an issue their library must address to provide high-quality e-government service (in fact, not counting “other,” this was the issue libraries cited least frequently). Broadband capacity was not mentioned as an issue to address for improvement of e-government services in either the focus groups or the phone interviews, although focus group participants noted that users experience slow Internet connectivity during peak library use hours and when patrons are downloading image-intensive files.

Meanwhile, there is a discrepancy between the connection speeds libraries think they get (advertised speeds) and the speeds they and their users experience at library workstations. After conducting speed tests, most libraries found they were realizing slower speeds than their Internet Service Provider (ISP) advertised speeds; while 33.7% of all libraries report an advertised speed above 10 Mbps (megabits per second), only 20.0% experience that speed downstream at staff workstations and 19.2% experience that speed downstream at PACs.

Libraries seem not to be cognizant of this discrepancy, or how it affects e-government service provision. For example, focus groups participants did not seem to realize that increasing the number of PACs on their network likely would have a negative impact on the speeds staff and patrons experience since more PACs on the same network will throttle speeds without a concurrent increase in the library’s bandwidth. Information Institute research demonstrates the importance of broadband as a tool that supports a variety of library services, including e-government, and there needs to be more awareness of the impact that broadband can have on the quality of e-government service provision. For example, insufficient bandwidth can lead to

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<sup>37</sup> Bertot, J. C., Sigler, K., DeCoster, E., McDermott, A., Katz, S. M., Langa, L. A., & Grimes, J. M. (2011). *2010-2011 Public Library Funding and Technology Access Survey: Survey findings and results*. College Park, MD: Information Policy and Access Center. Retrieved from: [http://www.plinternetsurvey.org/sites/default/files/publications/2011\\_plftas.pdf](http://www.plinternetsurvey.org/sites/default/files/publications/2011_plftas.pdf)

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slower speeds, more time spent on e-government activities, and in the case of libraries with computer time limits, incomplete e-government transactions.

### *Assessing a Library's Current Broadband Situation and Planning for Future Broadband Needs*

Based on the findings from this study and recent broadband needs assessments in Florida anchor institutions,<sup>38</sup> the Information Institute has created a model that could be used by the Library and public libraries to assess the current level of broadband capacity for their individual libraries, identify needed future capacity, and plan for that future (see Figure 1). The model suggests factors that should be taken into account when creating a broadband capacity planning strategy. Since each library is different and its situation is different, the model is descriptive rather than prescriptive. The model should be viewed as a *guide* for libraries concerning important issues to consider when expanding their broadband capacity and can be modified to fit specific libraries' needs.

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<sup>38</sup> McClure, C. R., Mandel, L. H., Snead, J. T., Bishop, B. W., & Ryan, J. (2009). *Needs assessment of Florida public library e-government and emergency/disaster management broadband-enabled services* (Technical report). Retrieved from: <http://ii.fsu.edu/content/download/18354/118602/FL%20Broadband%20#14%20Final%20Rrpt%20COMPLETE%20Sep14.09.pdf>; McClure, C. R., Mandel, L. H., Alemanne, N. D., Saunders, J., Spears, L. I., & Bishop, B. W. (2011). *Florida Rural Broadband Alliance, LLC (FRBA) Florida Rural Middle Mile Networks – Northwest and South Central Regions Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Fourth interim and final report* (Technical report). Retrieved from: <http://ii.fsu.edu/Research/Projects/Florida-Rural-Broadband-Alliance-Broadband-Needs-Assessment-and-Benchmarking-of-Anchor-Institutions-Reports/Florida-Rural-Broadband-Alliance-FRBA-Fourth-Interim-and-Final-Report>; and McClure, C. R., Mandel, L. H., Alemanne, N. D., Saunders, J., Spears, L. I., & Bishop, B. W. (2011). *North Florida Broadband Authority (NFBA) Ubiquitous Middle Mile Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Final report* (Technical report). Retrieved from: <http://ii.fsu.edu/Research/Projects/2010-Project-Details/North-Florida-Broadband-Alliance-NFBA-Final-Report>

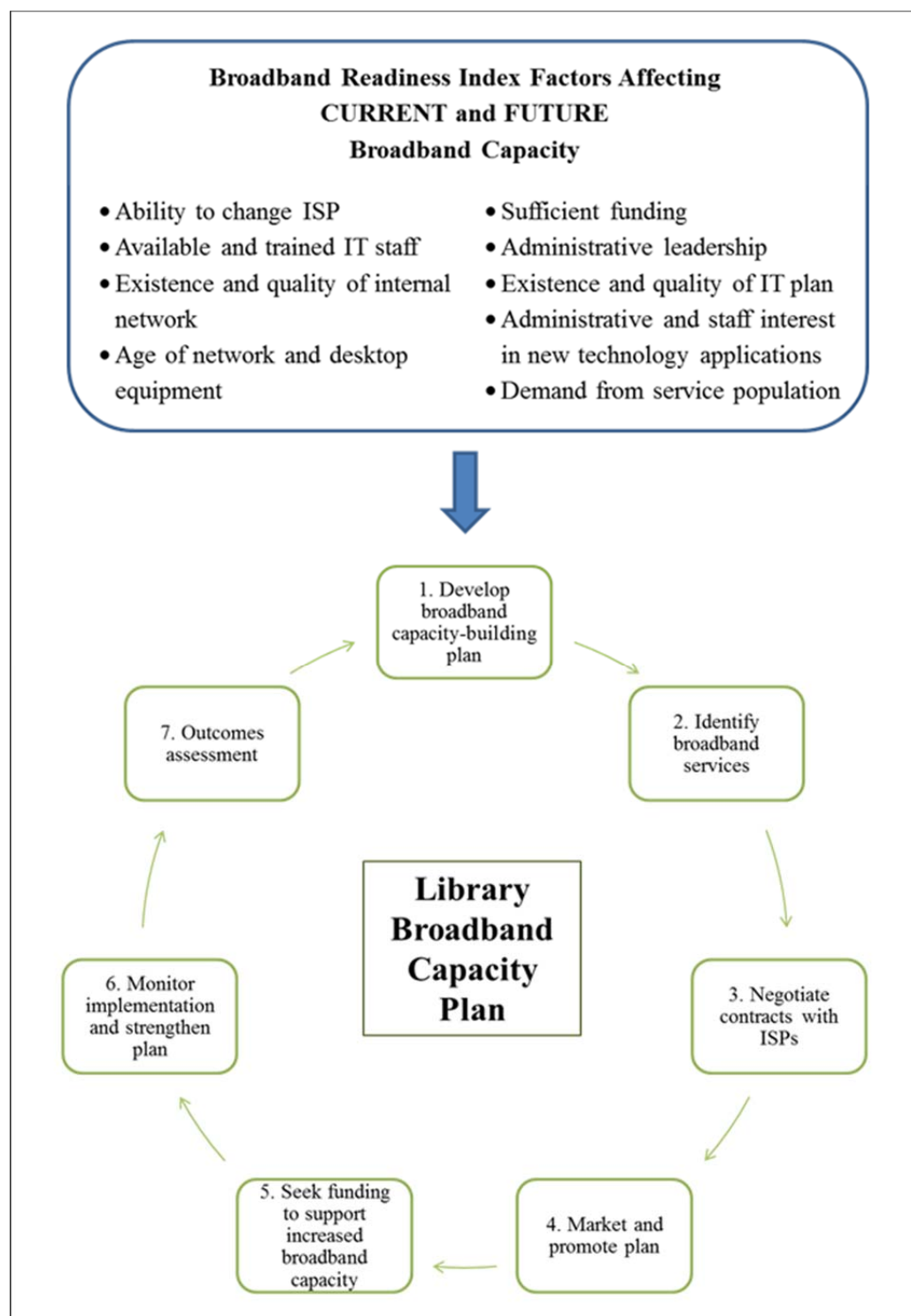


Figure 1. Model of a Broadband Capacity Planning Strategy

The model has two components going into a broadband capacity planning strategy: (1) a needs assessment process that identifies factors affecting a library's *current* and *future*

broadband capacity using the Information Institute-developed Broadband Readiness Index (BRI) and (2) development and implementation of a library broadband capacity plan. As evidenced from the findings described above, libraries often receive slower speeds than they pay for but do not perceive broadband as much of a factor in affecting quality of e-government service provision. Also, they are not cognizant of the impact of increasing the total computer load on one, shared network. Both components are critical for libraries to understand as many libraries do not understand their current capacity and the impact of increased numbers of computers and other equipment sharing the same, existing network. The next two sections address first the assessment of a library's current and future broadband capacity and second planning for the future.

### Identifying a Library's Current and Future Broadband Capacity

This section enumerates the factors that affect current and future broadband capacity, using as a guide the Information Institute-developed BRI.<sup>39</sup> The information provided here is an outline of the nine criteria and their indicators. Additional information is available on measuring criteria, such as speed test tools, standard information technology (IT) operating procedures, and technology planning tools at the Broadband Toolkit: <http://frba.ii.fsu.edu/toolkit>. The BRI includes nine criteria that take into account different situational factors under which libraries operate:

- Ability to change ISP: This criterion measures the degree to which:
  - The library can decide which ISP to contract with on its own or another, higher-level organization controls that decision,
  - There is a selection process, such as bidding or recurring evaluation of service quality, for selecting ISPs at the library,
  - The current contract allows for change,
  - ISP availability is the primary qualifier for making the selection, instead of a selection process, and
  - The current cost of service provision is higher than the expected cost of the new, higher-speed connection;
- Available and trained IT staff: Qualifiers for evaluating whether a library has available and trained IT staff include the degree to which:
  - The library has its own IT staff member,
  - The IT staff has sufficient years of experience and knowledge,
  - IT staff have input into decision-making about purchasing equipment, contracting with ISPs, etc.,
  - IT staff are responsive to network problems, and
  - IT staff have sufficient higher education and training to meet the library's needs;
- Existence and quality of internal network: Indicators for evaluating the existence and quality of a library's internal network include the degree to which:

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<sup>39</sup> The Information Institute developed the BRI from findings of the NFBA and FRBA needs assessment projects. For more information, see Carmichael, L. R., McClure, C. R., Mandel, L. H., & Mardis, M. A. (in press). Practical approaches and proposed strategies for measuring selected aspects of community-based broadband deployment and use. *International Journal of Communication*.

- A firewall impacts the speed of an internal network,
  - Schema with which workstations are configured on the network in a manner that positively or negatively impacts workstation speeds (for example, direct from the server to each workstation versus from the server to workstation A, then workstation B, etc.),
  - A local area network (LAN) exists for staff members, either hosted on their own server or another provider's servers,
  - The library uses its own servers, either physical or remote,
  - Wiring connecting equipment is organized to facilitate network traffic, and
  - A wireless connection is available;
- Age of network and desktop equipment: Determining the age of network and desktop equipment and the ability of the library to replace old equipment in a timely manner includes assessing the degree to which:
  - The majority of staff workstations are less than or equal to 3-5 years old,
  - The majority of staff workstations' operating systems are less than or equal to 3-5 years old,
  - Servers (if any) are less than or equal to 3-5 years old,
  - Routers, firewall, and switches are less than or equal to 3-5 years old,
  - Other application equipment, such as video conferencing equipment, is less than or equal to 3-5 years old, and
  - The library has the ability to maintain a 3-5-year replacement schedule for equipment;
- Sufficient funding: Qualifiers for determining the ability to procure adequate funding for broadband utilization include the degree to which:
  - Portions of the annual budget normally are spent on technology equipment,
  - The funding source is primarily through grants or is tax-based,
  - Current funding is adequate to switch to a broadband network or upgrade to a faster broadband connection,
  - The budget was cut or increased over last year and the impact of this on technology in the library, and
  - The library can redirect funding from other institutional expenses to technology if necessary;
- Administrative leadership: Factors for determining administrative leadership with regard to adopting new broadband enabled applications include the degree to which the administrator:
  - Takes an active role in acquiring new equipment,
  - Understands technology's role in the library's service provision as important and beneficial,
  - Is knowledgeable about possible broadband applications,
  - Has the ability to acquire funding for technology, and
  - Is willing to allocate funding from other institutional services to technology as needed;
- Existence and quality of IT plan: Indicators for determining the quality of a library's IT plan include the degree to which an IT plan:
  - Is current,



- Includes a detailed budget,
  - Includes an inventory of current equipment with the purchase date and a plan for upgrades,
  - Includes security procedures and requirements, and
  - Includes service quality evaluations of the network;
- Administrative and staff interest in new technology applications: Evaluating interest in new technology applications from library administrations includes the degree to which the library administration:
  - Actively monitors developing applications that might apply to better service provision,
  - Encourages staff involvement in professional organizations,
  - Encourages collaboration with similar institutions,
  - Evaluates current service provision methods, and
  - Explores potential cost saving applications; and
- Demand from service population: Qualifiers for evaluating demand among the library's service population for new technology service applications include the degree to which:
  - The library receives feedback from the service population about the need for better or expanded service,
  - Problems with service provision are obvious to clientele who report such issues to the library,
  - The service population is aware of new technology applications and mentions them to library staff,
  - The level of technology adoption among the service population is high, and
  - The service population requests additional services from the library

These factors, and the BRI as a whole, are meant to assist an organization assessing its current and future broadband capacities. There may also be other local or situational factors that can affect the assessment. Once libraries have a better understanding of both their current and future broadband needs, those components go into developing a broadband capacity planning strategy, out of which comes a capacity plan for the networked environment at the library.

### Planning for Future Broadband Needs

Once public libraries have reviewed the different situational factors under which their institutions operate and identified their libraries' capacities to meet current and future broadband needs relative to the nine criteria in the BRI, the next step is for libraries to determine how best to meet future broadband needs. Based on previous work on broadband needs assessments in Florida anchor institutions,<sup>40</sup> this study, and recommendations from the Virginia.gov Broadband Toolkit,<sup>41</sup> the Information Institute developed a model for libraries to plan for future broadband needs (see Figure 1 above). The model builds on the assessment of the library's capacity to meet current and future broadband needs envisions planning as a seven-step process (assuming the current and future broadband capacity assessments as inputs into the plan).

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<sup>40</sup> McClure et al. (2009); McClure et al. (2011a); and McClure et al. (2011b).

<sup>41</sup> Virginia Office of Telework Promotion and Broadband Assistance. (2011). *Broadband toolkit*. Retrieved from: [http://www.wired.virginia.gov/broadband\\_toolkit.shtml](http://www.wired.virginia.gov/broadband_toolkit.shtml)

The seven-step process proceeds as follows:

1. Develop a broadband capacity-building plan: Typical components of the broadband plan include (a) introduction and background, (b) characteristics and broadband-related needs of the library and its service population, (c) goals, objectives, and strategies, (d) evaluation process to be used, and (e) process to update the plan, but the components will change based on the various situational factors at work in the library developing the plan;
2. Identify broadband services: This includes services currently offered and services that the library *and its users and stakeholders* want to see the library offer in the future, either alone or in collaboration with other libraries or government agencies;
3. Negotiating contracts with ISPs: This step can be used to lower prices, increase connection speeds, or both;
4. Market and promote the plan: This is necessary to get buy-in from staff, users, and funding/governing agencies to support the plan and assist in its implementation;
5. Seek funding to support increased broadband capacity: Some of this can come from E-Rate, but libraries increasingly need to seek additional outside funding sources to support innovative efforts;
6. Monitor implementation and strengthen the plan: This step actually may occur throughout the process, as it is a type of formative assessment that evaluates current processes and informs modifications and future changes; and
7. Outcomes assessment: The library needs to evaluate the degree to which this planning process and the expanded broadband capacity it has after implementing the plan result in changes to the attitudes, skills, knowledge, or behaviors of its constituency (including staff).

Once a library reaches Step 7, it is not done with the process. Rather, as the model depicts, the process is cyclical, and upon reaching Step 7, a library should begin with the results of the outcomes assessment as inputs to completing the process again.

#### *Importance of Planning for Expanded Broadband Capacity*

Broadband is essential for improving education, economic development, telemedicine and health, emergency management operations, and quality of life. Public libraries also need broadband to be able to continue to provide e-government services to their users. Libraries need fast, reliable broadband to stay relevant and credible and to impact their communities. Librarians need be aware of how best to meet the exacting and continuous demands of library users now, and in the future. Most importantly, librarians need to look to the future to learn about possible broadband services, applications, and technological advances and draw on their libraries' current broadband capacity and what they can do now to be positioned to meet those future demands.

Especially important is to monitor carefully the e-government services and resources that state, federal, and local governments are developing. Previous Information Institute research clearly shows that government agencies will be moving more interactive e-government forms and services onto the Internet; they will be looking to make more efficiencies in the use of staff

and resources with an eye to saving money; and they will be providing less direct support in the use and understanding of these forms, services, and resources. Indeed, it is likely that a number of e-government forms, services, and resources may be available *only* over the Internet in the near future, resulting in the need for significantly increased public library broadband capacity.

Without a clear understanding of and planning for the future needs and demands that will be placed on the broadband infrastructures in public libraries, libraries will fail to provide sufficient e-government services to their communities. To prevent this from happening, it behooves librarians to take the time to become informed about the situational factors discussed in this analysis and to implement some of the procedures outlined here to determine their libraries' capacities to meet current and plan for future broadband needs. The approach outlined here to assess current and future broadband needs and then to develop a plan to meet future broadband demands allows each library to respond individually to the factors and criteria outlined above. Since one broadband "size" will not fit all public libraries, careful consideration of the current and future factors affecting broadband provision in a particular library is essential. In the assessment of library broadband, librarians also may discuss current and future broadband needs with their ISPs, staff at their state library agencies, and other sources noted in this section.

### **Inadequacy of Resources to Support Public Library E-government Service Provision**

This study found that, although libraries are doing what they can to meet patrons' demands for e-government services, they struggle due to inadequate resources, largely stemming from funding shortages. Inadequate technology is a significant barrier to public library e-government service provision. Many libraries are underserved by their land-based and wireless Internet connections. The majority of all libraries (59.2%) have advertised connection speeds above 5 Mbps, with less than one-third of libraries (31.2%) reporting maximum Internet speeds above 10 Mbps, and speeds experienced at staff and public workstations are slower than this. Only 40.0% experience these speeds downstream and 31.0% experience these speeds upstream at dedicated staff workstations and only 36.4% experience these speeds downstream and 27.3% experience these speeds upstream at PACs. In short, libraries are receiving slower connection speeds than their ISPs promise, and many find their wireless connections to be inadequate for staff and patron needs. Libraries may be offering less than ideal service for e-government activities and daily programming due to their taxed broadband connections.

Less than a third of libraries, both urban and rural reported they could maintain a 3-year replacement schedule "well" or "very well" (22.3%). The fact that fewer than one-third of all libraries are able to maintain a 3-year replacement schedule "well" or "very well" is detrimental to library e-government service initiatives as it endangers patrons' abilities to access important information and necessary benefits. It also burdens staff by leaving them to deal with outdated or ill-performing equipment. Libraries also report inadequate numbers of PACs with 65.7% of surveyed libraries reporting insufficient numbers of workstations. Library directors who participated in focus groups indicated that funding sources need to be identified or revised to support provision of a minimum standard of computer and broadband access to libraries.

Survey participants also noted that inadequately trained e-government staff was a prevalent obstacle to e-government service provision in urban (55.2%) and rural libraries (68.2%), as well as all libraries (63.0%). Staff first must be properly trained to address patron inquiries and utilize the resources available. Second, in order to train and maintain an adequate amount of staff for e-government service initiatives, funding must be sufficient to support the program. This is a challenge in Indiana, with respondents saying insufficient funding for e-government staff (49.3%) and lack of financial support from state (47.9%), federal (47.9%), and local (42.5%) agencies are issues that need to be addressed. Focus group participants identified that one challenge to addressing resource limitations is the intangible nature of many e-government-related costs, which makes them hard to track separately from the rest of reference service provision, so most libraries do not bother to do this.

### **Public Library E-government Costs**

As part of this project, the Information Institute estimated the costs of staffing support and equipment, materials, computers, and ISP expenditures for support of e-government service provisions in Indiana public libraries. These cost exercises included two sets of costs: (1) average costs for rural, urban, and all libraries and (2) total statewide costs for rural, urban, and all libraries. Calculating these estimates was a complicated process that relied on self-reported data and a set of assumptions, for example, that all professional staff work 40 hours per week. See Appendix M for details on the methodology and full findings from the salary costing exercises and Appendix N for details on the methodology and full findings from the equipment, materials, computers, and ISP expenditures costing exercises. The resulting costs are *estimates* only and are designed as a first attempt at describing these costs. It is likely that costing e-government services will require additional analysis and research in the future.

#### *Salary Cost Estimates*

Average statewide salary costs are included in Table 2. These figures assume that every library staff member is an e-government support staff member. With a total cost of \$70,423,374.30, the cost of providing salary support for Indiana e-government service provisions is lofty. This comprises 50.0% of the Salaries/Wages (Operating Budget 1) in 2010 (\$140,819,927).<sup>42</sup> While the salary cost estimate provided here is based on FY 2011 data and the Salaries/Wages data from the Operating Budget 1 category is from FY 2010 data, it is unlikely that salaries/wages rose substantially from 2010 to 2011 given external economic forces. Therefore, this comparison gives some idea of the large percentage of library staff costs that are dedicated to e-government service provision.

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<sup>42</sup> Based on the 2010 Indiana Public Library Statistics, Table 6- Operating Expenditures. Accessed at <http://www.in.gov/library/4300.htm>

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Table 2: Total Statewide Staff Cost for E-government Services

<b>Staff Type</b>	<b>Transaction Type</b>	<b>Total Cost</b>
U-Pro	State	\$9,819,101.36
U-Pro	Federal	\$1,724,067.18
U-Pro	Local	\$7,233,000.59
U-Para	State	\$18,482,260.37
U-Para	Federal	\$4,796,922.54
U-Para	Local	\$21,162,893.55
R-Pro	State	\$928,561.88
R-Pro	Federal	\$241,426.09
R-Pro	Local	\$647,340.28
R-Para	State	\$2,755,537.24
R-Para	Federal	\$652,627.24
R-Para	Local	\$1,979,635.97
<b>All Staff</b>	<b>All Transactions</b>	<b>\$70,423,374.30</b>

Of the four types of staff discussed in this report, urban professionals (U-pro) and urban paraprofessionals (U-para) comprise the largest portion of libraries salary support costs for local, state, and federal costs combined with \$18,776,169.14 spent on U-pro's salaries and \$44,442,076.46 spent on U-para's salaries each year. Due to the total number of paraprofessional staff members reported, both urban and rural libraries spend more on paraprofessionals than professionals with urban libraries spending 70.2% of their total salary support costs on paraprofessionals and rural libraries spending 74.7% of their total salary support costs on paraprofessionals each year.

When multiplying the estimated yearly average costs for urban and rural libraries by the actual number of staff members, the figures begin to vary. Average salary costs indicate that urban libraries spend \$11,197.96 more per year (71.9% more) than rural libraries for dedicated professional staff and \$7,284.67 more per year (62.2% more) for dedicated paraprofessional staff. However, looking at total costs shows that urban libraries spend \$16,958,840.88 more per year (90.3% more) than rural libraries for dedicated professional staff members and \$39,054,276.01 more per year (87.8% more) for dedicated paraprofessional staff members.

*Equipment, Materials, Computers, and ISP Expenditures Cost Estimates*

Table 3 shows the average annual materials costs for urban, rural, and all public libraries in Indiana. These numbers demonstrate that of the four categories of costs discussed in this section, computer and ISP costs comprise the largest portion of libraries' equipment, materials, and computing costs. Computer costs are 50.1% of the average total resource costs for urban libraries, 43.6% for rural libraries, and 46.5% for all libraries. ISP costs are 40.7% of the average total resource costs for urban libraries, 48.1% for rural libraries, and 44.9% for all libraries. Together these costs equal over 90% of the average total resource costs for all libraries. There does not appear to be much discrepancy in the resource costs for urban versus rural libraries, with urban libraries spending more on average for materials and computers costs, but

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rural libraries spending more on average for equipment and ISP costs. On average, urban libraries spend \$3,163.62 more than rural libraries on resource costs (about 10% more).

Table 3: Estimated Average Equipment, Materials, Computer, and ISP Yearly Costs for Indiana Public Libraries

Type of Resources	Locality Designation		
	Urban (n=30)	Rural (n=45)	All Libraries (n=75)
Equipment	\$896.63	\$922.18	\$911.96
Materials	\$1,715.43	\$1,148.89	\$1,375.51
Computers	\$14,201.67	\$10,987.51	\$12,273.17
ISP	\$11,534.90	\$12,126.43	\$11,858.96
<b>Total Resource Costs</b>	<b>\$28,348.63</b>	<b>\$25,185.01</b>	<b>\$26,419.60</b>

When multiplying the estimated yearly average costs for urban and rural libraries by the actual number of libraries, the figures begin to vary from the results discussed in Table 3. While urban libraries continue to spend more on materials and computers and rural libraries spend more on equipment and ISPs, the total amount by which urban libraries outspend rural libraries for total resource costs plummets (Table 4). Instead of spending \$3,163.62 more per library, the urban library collective only outspends the rural library collective by \$1,736.56 per year (about 0.05% of total resource cost spending).

Additionally, where individual urban libraries spend 97.2% of what rural libraries spend for equipment, the urban library collective spends 86.4% of what the rural library collective spends on equipment. For materials, individual rural libraries spend 66.9% of what urban libraries spend for materials, but the rural library collective spends 75.3% of what the urban library collective spends on materials. For computers, individual rural libraries spend 77.4% of what urban libraries spend for computers, but the rural library collective spends 87.0% of what the urban library collective spends on computers. Finally, for ISP costs, individual urban libraries spend 95.1% of what rural libraries spend for ISP costs, but the urban library collective spends 84.6% of what the rural library collective spends on ISP costs. While these differences do not affect the total yearly statewide equipment, materials, computer, and ISP costs, they are interesting figures to consider when comparing spending for rural and urban libraries in Indiana.

Table 4: Estimated Total Equipment, Materials, Computers, and ISP Costs

Type of Resources	Locality Designation		
	Urban (n=112)	Rural (n=126)	Average All Libraries (n=238)
Equipment	\$100,422.93	\$116,194.40	\$108,308.67
Materials	\$192,128.53	\$144,760.00	\$168,444.27
Computers	\$1,590,586.67	\$1,384,426.40	\$1,487,506.53
ISP	\$1,291,909.23	\$1,527,930.00	\$1,409,919.62
<b>Total Resource Costs</b>	<b>\$3,175,047.36</b>	<b>\$3,173,310.80</b>	<b>\$3,174,179.08</b>

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The numbers in Table 5 demonstrate that of the four categories of costs discussed in this section, computer and ISP costs continue to comprise the largest portion of libraries' equipment, materials, and computer, and ISP costs (a trend first observed in Table 3). Computer and ISP costs are 46.9% and 44.4% of the total statewide resource costs for libraries, respectively. Together these costs equal over 90% of the average total resource costs for all libraries. Equipment costs are only 3.4% of the total statewide resource costs and materials are only 5.3% of the total statewide resource costs for equipment, materials, computers, and ISP. With a total resource cost of \$6,348,358.16, the cost of providing equipment, materials, computers and ISP for Indiana e-government service provisions is a lofty one.

Table 5: Estimated Total Statewide Equipment, Materials, Computer, and ISP Costs

Type of Resources	All Libraries (n=238)
Equipment	\$216,617.33
Materials	\$336,888.53
Computers	\$2,975,013.07
ISP	\$2,819,839.23
<b>Total Resource Costs</b>	<b>\$6,348,358.16</b>

### Comparing Study Data to Selected Other Sources

Because this study is exploratory in nature, the study team compared the resulting data to other selected sources. For this purpose, the study team examined the 2010-11<sup>43</sup> and 2011-12 *PLFTAS*<sup>44</sup> data and the 2010 U.S. Census data on computer and Internet use.<sup>45</sup> While the findings of this Indiana e-government study cannot be generalized beyond Indiana, utilizing these resources as a quality check for our data resulted in comparisons that re-enforced both the importance of the study and several of the key findings related to the provision of e-government services by public libraries in Indiana and nationwide.

The 2011-12 *PLFTAS* demonstrates a continued need for and provision of e-government services in Indiana. In every surveyed service activity type, the need for staff assistance with e-government services has grown since the previous year's report. In 2011-12, 95.1% of surveyed Indiana libraries report that their staff have provided assistance to patrons for understanding how to access and use e-government websites (up from 93.0% in 2010-11), 98.7% have assisted with applying for or accessing e-government services (up from 88.0%), and 83.3% have assisted

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<sup>43</sup> Bertot, J. C., Sigler, K., DeCoster, E., McDermott, A., Katz, S. M., Langa, L. A., & Grimes, J. M. (2011). *2010-2011 Public Library Funding and Technology Access Survey: Survey findings and results*. College Park, MD: Information Policy and Access Center. Retrieved from: [http://www.plinternetsurvey.org/sites/default/files/publications/2011\\_plftas.pdf](http://www.plinternetsurvey.org/sites/default/files/publications/2011_plftas.pdf)

<sup>44</sup> Bertot, J. C., Sigler, K., DeCoster, E., McDermott, A., Katz, S. M., Langa, L. A., & Grimes, J. M. (2012). *2011-2012 Public Library Funding and Technology Access Survey: State Level Details for Indiana*. College Park, MD: Information Policy and Access Center. Retrieved from: [http://www.ala.org/research/plftas/2011\\_2012/in](http://www.ala.org/research/plftas/2011_2012/in)

<sup>45</sup> U.S. Census Bureau. (2012). *2010 Census Data: Computer and Internet Use*. Retrieved from: <http://www.census.gov/hhes/computer/>.

patrons with completing government forms (up from 78.0%).<sup>46</sup> Additionally, e-government service provision occurs more frequently in Indiana than in other states with the national averages for the same activities showing that only 50.0% of national respondents have assisted patrons with understanding how to access and use e-government websites, only 96.6% have assisted with applying or accessing e-government services, and only 70.7% have assisted patrons with completing government forms.<sup>47</sup>

The 2011-12 *PLFTAS* results also confirm that Indiana has a higher e-government presence overall with 95.1% of libraries providing e-government assistance versus the 91.8% national average.<sup>48</sup> These figures demonstrate that Indiana is, in fact, a leader in the provision of e-government services and that the need for public library provision of e-government services continues to be significant in Indiana.

The 2011-12 *PLFTAS* demonstrates that while Indiana has made strides in providing adequate technology and connectivity to support e-government services and other daily Internet activities, libraries still struggle. For example, only 47.5% of libraries report that they always have a sufficient number of Internet workstations (up from 34.0% in 2010-11) and only 62.9% report that they always have an adequate connection speed (down from 68.0%).<sup>49</sup> These relatively low percentages are especially problematic when considering that in Indiana, 58.1% of libraries say that they offer the only free access to computers/Internet in their communities and 54.5% of library outlets report that use of their public Internet workstations has increased since the previous year.<sup>50</sup>

With a growing population of patrons turning to public libraries for Internet access to utilize e-government services, an inadequate supply of workstations and insufficient connectivity could lead to less than ideal service and affect public library e-government service provision. Connectivity speeds are also a continuing problem as demonstrated in the *PLFTAS*, with the majority of libraries in Indiana (64.1%) reporting a maximum Internet connection speed less than 10 Mbps.<sup>51</sup> The need for high-speed broadband to support existing and future e-government service provisions was also discussed in the study key findings.

The 2011-12 *PLFTAS* demonstrates that many libraries nationwide struggle with providing adequately trained staff for e-government services as well as IT staff to support their technology infrastructure. Data analysis for this study demonstrates a need for additional staffing and training at Indiana public libraries in support of e-government service provision. The *PLFTAS* demonstrates that a shortage of properly trained e-government services professionals is a nationwide problem. Only 23.6% of libraries overall report having at least one staff member with significant knowledge and skills in provision of e-government services,<sup>52</sup> and the study identifies lack of staff and lack of necessary expertise as two of the three leading

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<sup>46</sup> Bertot, et al., 2012

<sup>47</sup> Ibid.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Ibid.

<sup>52</sup> Ibid.



barriers to sufficient e-government service provision in U.S. public libraries.<sup>53</sup> Additionally, more libraries nationwide (88%) are using non-IT specialists as sources of IT support, and a lack of available IT staff to install, maintain, and update public access computers is ranked as a leading factor affecting libraries' ability to add workstations to meet growing patron needs.<sup>54</sup>

Finally, the 2010 U.S. Census data, while two years older than our study and the *PLFTAS*, shows similar results regarding computer and Internet usage as this study. Census Table 3A demonstrates that while 59.2% of Indiana residents access the Internet at home, 36.6% access the Internet from some location outside of the home such as a public library.<sup>55</sup> Additionally, Census Table 3B shows that only 74.7% of Indiana residents live in a household with a computer. This is less than the national average of 81.4%.<sup>56</sup> This finding supports this study's reported need for more workstations and improved Internet access at public libraries in order to assist patrons who lack home access to information technology and infrastructure.

Overall, the 2011-2012 *PLFTAS* and the 2010 U.S. Census data support the data quality and findings of the Indiana e-government study. Moreover, comparing these data sources provides a bigger picture to describe Indiana e-government services from the state's public libraries and indicates a number of areas where e-government services by public libraries in Indiana are very strong and where they can be strengthened.

### **Summary of Key Findings**

This project identified eight broad themes related to public library e-government service provision in Indiana:

- The situational nature of e-government service provisions varies library by library and the local situation in each library likely is impacting the picture of e-government service provision;
- Study participants see a need for additional training for both library staff and patrons about a range of issues involving e-government services and resources;
- Both libraries and state agencies are willing to communicate more about public library e-government services, but neither side seems willing to initiate contact;
- Both libraries and state agencies recognize benefits of public library e-government service provisions;
- While the IN.gov site is popular for e-government services information and resources, surveyed librarians and the study team believe that improvements could be made to the Web portal for greater usability;
- Many libraries fail to recognize that insufficient broadband is a barrier to quality public library e-government service provisions and are unaware of connectivity issues and existing discrepancies;

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<sup>53</sup> Bertot, et al, 2011.

<sup>54</sup> Bertot, et al, 2012.

<sup>55</sup> U.S. Census Bureau, 2010. *Table 3A*

<sup>56</sup> U.S. Census Bureau, 2010. *Table 3B*

- Libraries may be offering less than ideal service for e-government activities and daily programming due to taxed broadband connections and inadequate resources due to funding shortages; and
- Costing of e-government services is a complicated process due to reliance on self-reported data. The resulting costs are *estimates* only and additional research and analysis is advised.

Detailed findings by method are available in Appendices G-L, with further detail on costing exercises in Appendices M and N.

## **RECOMMENDATIONS AND NEXT STEPS**

Based on the findings discussed above and the detailed findings in Appendices G-L and Appendix N, the Information Institute identifies the following next steps for training efforts, working with state agencies, and additional research. These next steps are designed to position Indiana libraries as models of e-government service providers for other libraries in the U.S. to follow.

### **Training**

Responses from participating library directors make it clear that, while more funding and/or more staff are helpful, there are other factors that could improve e-government service provisions at their public libraries, most notably training. Agency representatives also indicated that training is important to improving e-government service provision in Indiana. Based on the preliminary findings, the Information Institute study team offers the following recommendations to the Library:

- Develop a statewide training program related to the provision of e-government services for selected state agencies that can be offered through various media and via assorted methods.
- To facilitate development of that program, hold a statewide conference to discuss measures for identifying and addressing problems of communication between government agencies and public libraries.
- Develop agency-specific training modules for librarians on best practices for providing state-level e-government services based on input from state agency representatives.

These activities are based on input from state agency representatives and library directors. Both groups indicated that training is a critical component to quality provision of e-government services. Such training can increase library staffs' awareness of e-government services and issues, comfort with and capability in providing e-government services, and the overall user experience with e-government service provision in Indiana.

### **Working with Indiana State Agencies**

Responses from participating agencies make it clear that they are actively engaged in providing e-government services to Indiana residents. This does not, however, involve much

interaction or collaboration with public libraries, and agencies are willing to engage in such collaborative efforts if libraries initiate them. Based on the study findings, the Information Institute study team proposes these activities to the Library:

- Determine a target group of state agencies with which the Library and public libraries could collaborate, based on factors such as the agencies' level of desire to work with libraries, degree to which libraries engage in the provision of services for the agencies, and degree of difficulty of providing services for the agencies.
- Develop a strategy for soliciting their input, such as holding a statewide conference to discuss measures for identifying and addressing problems of communication between government agencies and public libraries and actively recruit agency participation in this conference.
- Establish a set channel through which agencies can communicate changes in government policy to public library staff quickly and easily. A possible mechanism to do this is the establishment of a library e-government council or working group that collaborates and communicates with a group of agencies that are determined to be interested in working closely with public libraries in the provision of e-government services. Another possible mechanism is for the Indiana State Library to serve as the liaison/collaborator with other state agencies, with the Library then pushing information out to individual libraries.
- In collaboration with IN.gov, develop an outreach campaign to inform the public about which e-government services are available at public libraries, potentially including a public library e-government service portal that includes resources for librarians and the public.

These activities are based on the data gathered directly from the interviews with state agency representatives and library directors. Agency representatives noted that public libraries assist with e-government on a regular basis and their agencies are willing to communicate with public librarians to increase the level of e-government services currently available to Indiana residents. Forging working relationships between agencies and libraries (as a group or individually) will position Indiana as a model of e-government service provision, as well as improving library staffs' and agencies' ability to provide high quality e-government services to Indiana residents.

### **Additional Research**

There are myriad areas for future research. Some areas for future research are:

- User satisfaction research to identify whether (to what degree) users are satisfied with public library e-government service provision and if increased resources to public libraries could improve users' satisfaction with public library e-government service provision;
- Pre- and post-training evaluation to evaluate the degree to which training programs are effective (either training for librarians or training for the public);
- Conducting observations of e-government transactions at select libraries during sample time periods to (a) determine more precisely the amount of time libraries are spending on e-government service provision, (b) better understand the types of transactions that occur

and the interactions between library staff and patrons, and (c) assess the e-government information needs of users;

- Efforts to define and operationalize “better” e-government resources and services as the agencies indicated a need for “better” resources and services, but there is no clear definition of what “better” means or how to operationalize it for measuring progress toward the goal of “better” resources and services;
- Delving further into costing of e-government services, such as how much does each transaction cost (a) in the traditional paper format, (b) online directly through an agency website, and (c) online with help from a public library with the resulting numbers compared to determine cost savings of e-government versus paper government transactions in general and of e-government transactions through a public library versus e-government transactions directly through an agency website;
- Although it is clear that patrons are aware of some e-government services they can access in libraries, they likely are not aware of the full breadth and extent of services and it is clear that agencies are not aware of the extent of public libraries involvement in e-government service provision, so it would be useful to investigate how best to market public library e-government services to patrons and agencies, and use the results of that market research to develop a marketing plan.

This list is by no means exhaustive. It is provided as a starting point for discussion with the Library. The goal of any future research would be to position Indiana as a model of e-government service provision that other states and regions could emulate.

A significant amount of work has been done in 2011-2012 related to public library provision of e-government services by Indiana public libraries. This work was essential as it identified a range of areas where specific strategies can be implemented to improve significantly the provision of e-government services by public libraries in Indiana. Indeed, building on that work with follow-up strategies and efforts is the single best approach to leveraging the findings from the original study.

The proposed activities are meant to provide the Library with ideas on the best strategies for moving Indiana public library e-government initiatives forward. E-government will be increasing in the future, and libraries are well-positioned to expand e-government services and demonstrate value to communities. The Library clearly is supportive of these efforts, the idea of collaborating with state agencies to facilitate service provision, and the goal of positioning Indiana public libraries as models of e-government service provision for other states to emulate. The Information Institute proposes continuing statewide e-government research and activities to develop agency-library collaborations, improve e-governments services, and expand the position of Indiana public libraries within the larger U.S. library community. The Information Institute can propose more detailed activities to address the above during 2012-2013.

## **CONCLUSION**

This multi-method study provides a first effort at a comprehensive, statewide view of public library e-government services. The data collected here from an online survey, activity log

case studies, phone interviews with library directors, interviews with agency officials, focus groups with library staff, cost analysis, and a brief usability analysis of IN.gov provide an overview of the picture of public library e-government service provision in Indiana. The study (1) identified the range of costs public libraries incur in their provision of e-government services; (2) described the benefits that result for Indiana residents, libraries, and government agencies; (3) evaluated access to high-speed broadband in libraries; (4) assessed the usability of the IN.gov web portal for e-government services; and (5) provided recommendations for how public libraries in Indiana can continue to improve their e-government service provision. The data also provided a base from which Indiana libraries can move forward to continue to improve public library e-government services.

The study finds that the situational nature of e-government service provisions varies library by library across the state, as well as in estimates of the frequency of e-government service transactions among different staff members in the same library system. However, study participants across the state agree that there is a definite need for additional training for both library staff and patrons about the range of issues involved with provision of e-government services and resources, including access, legality, security, and general computer literacy.

Additionally, the study finds that both participating libraries and participating state agency representatives recognize that there are benefits from public library e-government service provision, such as free Internet access for patrons, increased visibility for libraries, and reduced staff and printing costs for agencies. Both libraries and state agencies would be willing to communicate more in order to improve the accessibility, usability, and quality of e-government services offered in Indiana, but both sides are uncomfortable initiating the process to build stronger partnerships.

The study also finds that many libraries fail to recognize that insufficient broadband connectivity is a barrier to providing adequate e-government services and are unaware even of existing discrepancies and connectivity issues identified through this research. Despite evidence that a large percentage of libraries are not experiencing the speeds their ISPs advertise at the workstation level, very few libraries identified broadband connectivity as an obstacle to providing good e-government service. Poor connectivity may be causing these libraries to offer less than ideal services for e-government activities and daily programming due to inadequate and underperforming broadband connections.

The study was exploratory in nature, and may not be generalizable beyond Indiana, but the findings from this study can be useful to other state library agencies, library systems engaged in e-government services, and researchers. Other research on e-government services has not been done on such a large (i.e., statewide) scale. This study can serve to showcase Indiana as an excellent example of public library e-government service provision, and continued work in this area can develop Indiana as a model for other states to follow in this arena.

## **APPENDICES**

## **APPENDIX A: WEB-BASED SURVEY METHOD**

### **Population and Sample**

While the Information Institute study team initially requested that the survey be sent to a stratified sample of Indiana libraries (stratified by rurality), ultimately the team made the survey available to all Indiana library systems at the request of the Library. After much discussion, the study team agreed that distributing the survey to all libraries would create more opportunities for the Library to encourage participation through e-mail reminders and lead to a larger survey response in order to portray the costs, types of services, and benefits of Indiana public library e-government service provision more accurately.

### **Survey Design**

Information Institute study team members drafted the survey and the Indiana State Library approved it. The study team determined that the most efficient way to conduct the survey would be to use an online survey format, using a hosting site (in this case, Survey Monkey Professional software). The study team decided that an online survey would be more easily accessible to respondents, reliable, and cost-effective to produce. Further, the Information Institute could administer the online survey from Florida without putting the burden of postage costs on participating libraries in Indiana.

The team designed survey questions to obtain data that would meet the goals of the project: (1) to gather estimates for costing exercises, (2) to gather information about e-government services and broadband needs for e-government services, and (3) to gather information about the perceived benefits of Indiana public library e-government service provision. The study team first drafted a set of questions, and then revised these based on feedback from the Library liaison and pretest participants in both Florida and Indiana.

After entering the survey into Survey Monkey, both the Information Institute study team and the Library reviewed and pre-tested the functions of the electronic survey, correcting any errors in skip patterns, etc. before making the survey live. The full survey is available upon request.

The initial collection period for the survey was meant to be November-December 2011 with analysis following in January 2012, however, due to time constraints and a prolonged drafting and pretesting period, the study team modified the tasking schedule with consent from the Library to extend the survey collection period. The survey was made available on January 30, 2012 and remained open until April 23, 2012.

Both the study team and the Library decided that participation would be higher and the survey more successful if the Library distributed materials and encouraged participation, rather than the Information Institute. The Library liaison recruited participants for the survey through e-mails to the directors of all Indiana public library systems send through an administrative listserv. Additionally, the study team made the availability of the survey known to individual

outlets in the instruction section on the Activity Logs (see Appendix B: Activity Log Case Studies Method).

The survey ran in conjunction with the activity logs, which the Library emailed to all Indiana public libraries on January 30, 2012. The activity log packets included the link to the survey. A subsequent email on February 6, 2012 informed libraries that the survey was live and available through the project website. The Library liaison sent reminder emails to Indiana public library directors in the following months to encourage participation. The study team remained active in troubleshooting technical issues with the survey and addressing participant inquiries throughout the collections process.

### **Survey Response Rate**

Ultimately, the study team sent the survey to all 238 library systems in Indiana, and 115 libraries responded, for a response rate of 48.3% overall. Respondents represented a wide range of urban and rural libraries all over Indiana. The survey population included 126 rural and 112 urban libraries, and 63 rural and 52 urban libraries responded, for response rates of 50.0% for rural libraries and 46.4% for urban libraries.

### **Survey Data Analysis**

In order to process the survey data, the study team first developed a codebook. The codebook identified each variable with an alphanumeric code (e.g., V1, V2, V3, etc.), and coded quantitative variables for descriptive statistical analysis. The team reported open-ended answers verbatim rather than analyzing them quantitatively. In order to report data for all libraries, urban libraries, and rural libraries, each responding library was identified as either urban or rural according to the locality designations established by the IRR (see *Describing Indiana Public Library E-government Services, Costs, and Benefits: Methodology Addendum: Locality Designation Methodology*).

The survey instructions encouraged directors (or their assigned proxies) to begin the survey with the completed activity logs on hand and asked them to include cost estimates based on their knowledge of their libraries' operating budgets and their own experiences. However, many respondents initially left their surveys incomplete and submitted a second, more complete survey at a later date. This led to duplicate submissions from some libraries. For these duplicates, the study team utilized the more complete submission for data analysis and omitted the incomplete versions. Survey findings are available in Appendix G.



## APPENDIX B: ACTIVITY LOG CASE STUDIES METHOD

### Population and Sample

While the Information Institute study team initially requested that the activity log be sent to a stratified sample of Indiana libraries (stratified by rurality, the same as for the survey), ultimately the team made the activity logs available to all Indiana library systems at the request of the Library. After much discussion, the study team agreed that distributing the activity logs to all libraries would create more opportunities for the Library to encourage participation through e-mail reminders and lead to a larger response in order to portray the costs, types of services, and benefits of Indiana public library e-government service provision more accurately.

The study team originally intended for Indiana public library professionals and paraprofessionals who regularly engage in e-government service provision to use the activity logs in conjunction with the self-reported survey data to report on e-government transactions conducted during a sample week. The study team asked each library outlet to have one professional and one paraprofessional staff member complete the activity log (Figure B-1), recording the frequency, length, and location of each e-government transaction, as well as the percentage of overall daily time that they spent on local, state, and federal e-government transactions.

<i>Recipient of Services</i>	<i>Type of Equipment</i>	<b>&lt;5 Minutes</b>	<b>6-10 Minutes</b>	<b>11-15 Minutes</b>	<b>16-20 Minutes</b>	<b>&gt;20 Minutes</b>
<b><i>Patrons</i></b>	<i>Reference Desk</i>					
	<i>PACs</i>					
	<i>Library Laptop</i>					
	<i>Personal Laptop</i>					
	<i>Other Electronic Equipment (e.g. tablets)</i>					
	<i>No Electronic Equipment</i>					
<b><i>Staff</i></b>	<i>Personal Computer</i>					
	<i>PACs</i>					
	<i>No Equipment</i>					

*Time Spent on E-government Service Transactions*

Figure B-1. Activity Log Worksheet

This activity was designed to support costing exercises by providing information on staff and equipment being used in the provision of e-government services in Indiana public libraries. The resulting cost estimates then would be used for the first stage of the modified ABC Costing Method utilized for this project (see Literature Review above). However, due to the low response

rate for the activity logs and the number of incomplete logs that were submitted, the exercise failed to provide sufficient data to support this purpose.

The study team believes that the activity logs that were submitted incomplete are due to participants misunderstanding the instructions. Pretesting, however, did not reveal any problems with the instructions. Both the Information Institute and the Indiana State Library pre-tested the activity logs and did not find pre-testers struggling to understand the instructions, therefore the activity logs went out with the original instructions, and by the time incomplete logs were submitted, it was too late in the data collection process to alter the instructions or log sheets.

The activity logs that were completed do contain valuable data for consideration as they demonstrate how e-government services manifest in Indiana public libraries and the number of e-government transactions that libraries complete during an average 5-day period. From the completed activity logs, the study team chose 10 to present in this report as case studies; five from urban libraries and five from rural libraries according to their IRR locality designation (See the *Methodology Addendum: Locality Designation Methodology*). These activity logs were chosen according to the criteria detailed below:

1. The activity log must contain both a professional and paraprofessional packet;
2. The activity log must contain the library outlet's name (both on the professional and paraprofessional packets);
3. The activity log must contain the professional title of the participant (both in the professional and paraprofessional packets); and
4. The activity log must be completed for all five days (both in the professional and paraprofessional packets).

The 10 libraries included in this report were chosen as case studies because they meet these criteria for completion and demonstrate the variety of e-government service provision that exists in both urban and rural library systems across the state. While the study team cannot guarantee that they are accurate examples, the self-reported data on these activity logs appears to meet the parameters of the project and the expectations for this exercise. Activity log case study findings are available in Appendix H.

## **APPENDIX C: AGENCY INTERVIEWS METHOD**

### **Introduction**

The Information Institute study team in collaboration with the Library study team conducted interviews with selected Indiana government agency officials as part of a multi-method research approach to estimate the benefits and costs of providing e-government services to patrons at Indiana public libraries. The objective of these interviews was to assist the Library in determining the extent to which state agencies provide e-government services to state residents and their familiarity with the role public libraries play in the provision of those services.

The agency interviews were one of several data collection efforts that provided the Library with information about how state agencies view the role of libraries regarding e-government services and to identify possible areas for collaboration to improve services to state residents. As with the local and regional focus groups, the Information Institute developed the questions for the interviews and a member from the Library study team conducted the interviews. One aspect of the interviews was to ask agency representatives their views of the Information Institute-developed E-government Service Roles Model (Figure C-1).

### **Sample**

Agencies with significant digital exposure were selected for participation in the interviews. The Library project liaison interviewed 10 current government agency officials representing six Indiana agencies that provide online services. The agencies have high visibility and their staffs are either knowledgeable about the provision of e-government services to Indiana citizens or they work with public libraries in the provision of e-government services.

### **Data Collection**

The Library project liaison contacted agency officials using a form letter drafted by the Information Institute. Interviews occurred in the agency offices and were not recorded. The study team decided not to record the interviews to increase agency representatives' comfort in participating. The Information Institute study team provided the Library project liaison with moderator instructions and the interview schedule (see below), including a copy of the E-government Service Roles Model (Figure C-1). Some interviews occurred face-to-face and others via the telephone. Agency interview findings are available in Appendix I.

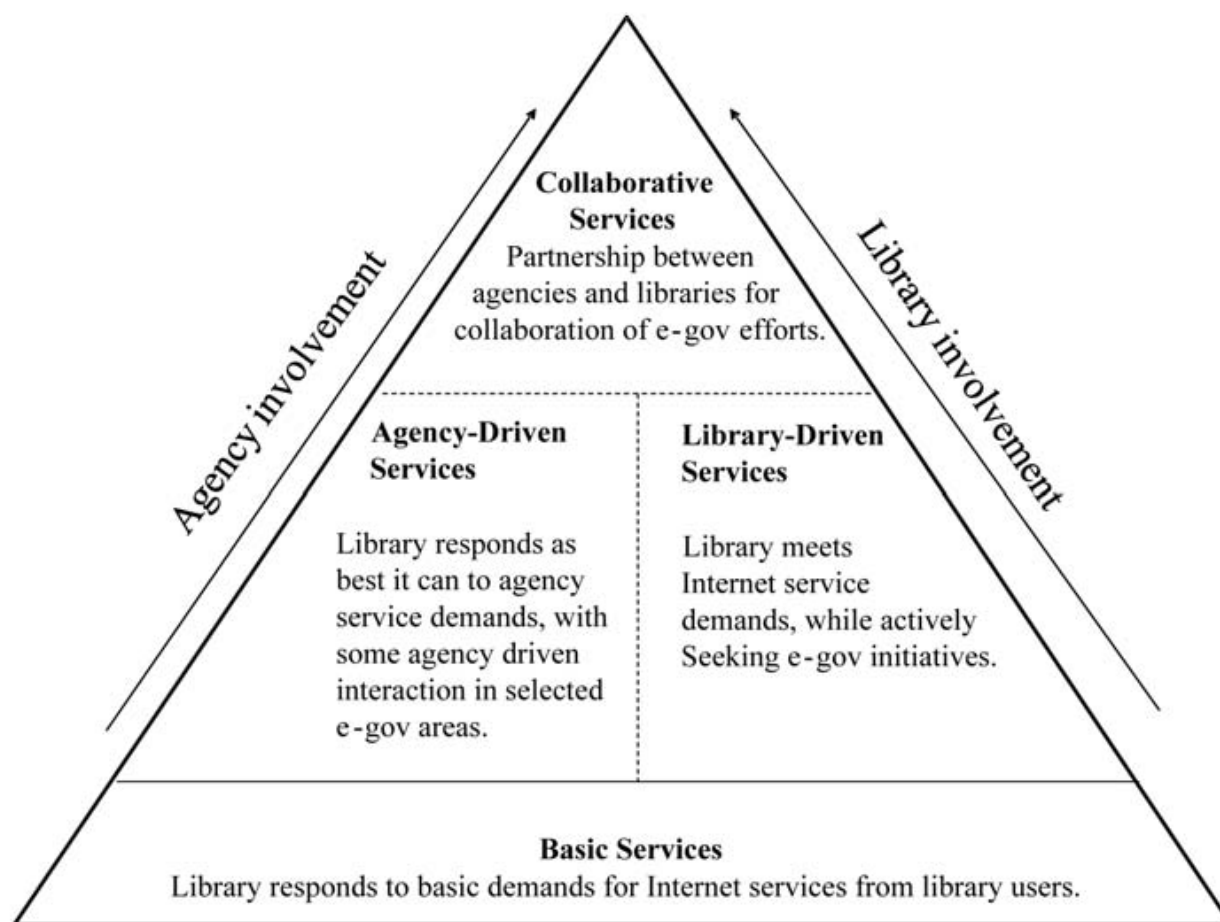


Figure C-1. E-government Service Roles Model

*Agency Interview Script*

1. Please describe your agency's activities and involvement in providing e-government services to state residents.
2. Please describe your specific activities and experiences in providing e-government services.
3. Have you worked directly with public librarians in the provision of e-government services?
  - a. If yes, what were positive aspects, if any, of these experiences?
  - b. If yes, what were negative aspects, if any, of these experiences?
4. Can you describe the role and extent of e-government services that typically are provided by public librarians?
  - a. Demonstrate specific examples of public library e-government services for reactions.
  - b. Do staff members in your agency ever refer individuals to libraries for assistance, retrieval of resources, computer use, etc.?
5. Please review the attached e-government service role model. Do you find it an accurate description of e-government services? Why or why not?

6. Would it be useful to your agency to have regular, ongoing, communication with the Indiana State Library regarding the provision of e-government resources and services with public libraries?
  - a. How might this be useful for your agency?
  - b. What issues do you believe might hinder regular communication with ISL?
7. How successful is <http://www.in.gov/> in disseminating e-government resources and e-government services for your agency?
  - a. Why is it successful or not successful?
  - b. What might make it more successful?
8. Do you expect that your agency will add additional e-government resources and services for state residents in the near future?
9. How can your agency better provide e-government resources and services to state residents?
10. Does the provision of e-government services through libraries save your agency staff time or other resources? If yes, can you give examples?

## **APPENDIX D: FOCUS GROUPS METHOD**

The Information Institute study team, in collaboration with the Library, conducted regional focus groups with Indiana public librarians as part of a multi-method research approach to estimate the benefits and costs of providing e-government services to patrons at Indiana public libraries. The public librarian focus groups are one of several data collection methods used to describe how librarians view their roles as providers of e-government services, building upon the findings from the study's interim report.<sup>57</sup>

The purpose of the focus groups was to describe the experience of libraries as they provide e-government services to citizens and to gather the related details that fully describe the role that public libraries play in the provision of e-government services. The public librarian focus groups describe e-government service provision at the library reference desk, the impact of this activity upon traditional library operations, and possible areas for collaboration to improve services to state residents. The Information Institute developed both the script for the focus group conversation (see below) and the questionnaires for the participants to take prior to and immediately following the focus groups (see below).

### **Data Collection**

The Library project liaison conducted the focus group conversations and administered the pre-group and post-group questionnaires. As with the agency interviews, a feature in each focus group was the review of the Information Institute-developed E-government Service Roles Model (Figure C-1 in Appendix C).<sup>58</sup> The moderator asked librarians for their views of this model, and, despite their initial surprise at the illustration of organizational relationships, the participants quickly embraced the model as a useful depiction of e-government services.

The Library project liaison scheduled and conducted focus groups on April 30, May 1, and May 3, 2012 (six total focus groups). She sent an email solicitation to all Indiana public libraries inviting library staff to register using a provided URL. A total of 17 library staff attended the six sessions, which were held in different regions around the state. Each session resulted in an audio recording, moderator notes, and completed pre- and post-group questionnaires.<sup>59</sup> A study team member compared the audio recordings to the moderator notes and found acceptable reliability between the two sets of data.

The script (see below) allowed for some flexibility in data collection by providing themes for discussion, rather than specific questions. The pre-focus group questionnaire (see below) provided participants with the study topic and gauged each participant's awareness of e-government services. The post-focus group questionnaire (see below) offered the opportunity

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<sup>57</sup> Guenther, D.M., McClure, C. R., Mandel, L. H., & Saunders, J. D. (2011). *Describing Indiana public library e-government services, costs, and benefits: Interim report of e-government and library services literature*. Tallahassee, FL: Information Use Management and Policy Institute, College of Communication and Information, The Florida State University.

<sup>58</sup> Bishop, B. W., McClure, C. R., & Mandel, L. H. (2011). E-government service roles for public libraries. *Public Libraries*, 50(3), 32-37.

<sup>59</sup> One session held at Hamilton East Public Library did not produce an audio recording.

for each participant to provide additional comments on improvements that could be made to e-government service provision. Focus group findings are available in Appendix J.

*Focus Group Script*

1. Please discuss how you define e-government services for your library system (types of activities and transactions).
  - a. Do you think that staff members in your library system are able to identify e-government inquiries (separate from general reference inquiries)?
  - b. Do you think that staff members in your library system are able to differentiate between local, state, and federal e-government inquiries?
2. Please describe your experience and activities regarding the provision of e-government services in your library system.
3. Please describe the types of costs related to the library system's provision of e-government services.
  - a. Do you have specific examples of these costs?
  - b. Can you offer an estimate of the actual amount of these costs?
4. Please describe the types of benefits that result to the library, users, and government agencies because of your library system's provision of e-government services.
  - a. Do you have specific examples of these benefits?
  - b. Do you think users of your library system's e-government services save time or other resources by coming to the library rather than dealing with government agencies directly? Any examples?
5. Please discuss the type of broadband capacity your library has.
  - a. What is the degree to which the broadband, internal networks, and public access workstations are adequate to support user's access to and use of e-government resources and services?
  - b. If inadequate, how often does your broadband capacity fail to support user's access or your own ability to engage in e-government service transactions.
6. Please review the attached e-government service model. Do you find this an accurate description of e-government services? Why or why not?
7. What specific improvements can be made to increase the success with which users obtain high quality e-government services from your library?
8. What kind of training opportunities could be utilized to increase the success of your library's e-government service provision?
9. Do you have any other comments or information you would like to add about the public library's successful provision of e-government services?

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*Pre-Focus Group Questionnaire*

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Name of public library outlet: \_\_\_\_\_

Name of public library system: \_\_\_\_\_

Job title: \_\_\_\_\_

How much do you know about e-government services?

Nothing

☐

Very little

☐

Some

☐

A lot

☐

Can you provide an example of an e-government service that your library offers?

\_\_\_\_\_

*Post-Focus Group Questionnaire*

Please briefly describe the three most important improvements that could be made to improve your public library system's e-government services:

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## **APPENDIX E: PHONE INTERVIEWS METHOD**

### **Introduction**

The Information Institute used a mixed methods research approach to study cost estimates for providing e-government services to patrons at Indiana public libraries. The data collection instruments used in the cost estimate study included content analysis of activity logs, online surveys, and follow-up telephone interviews. The Information Institute and Library project liaison developed and pre-tested activity logs used by library staff to keep track of the time they spent on e-government service transactions over the course of an average work week. The activity logs also were designed to help provide more accurate answers to the follow-up survey. In addition to the activity log and follow-up survey, the Information Institute study team developed scripts for the Library study team to use during interviews with state government agencies and librarians.

Preliminary results from the activity logs showed limited data collection on the provision of e-government services at Indiana public libraries. This was due to some surveys which were not completed fully. It is possible that misunderstanding the instructions to first fill out the activity log and then complete the online survey could have contributed to the low survey completion rates. Incorrect estimates from the activity logs were transferred by respondents to the surveys, resulting in inaccurate and unusable data. Limited and incorrect activity logs precipitated the need for additional data collection. The Information Institute study team suggested conducting telephone interviews to augment the data collection process. The following sections detail the method for the phone interviews.

### **Recruitment Strategy**

The Information Institute study team recruited 17 participants for telephone interviews from Indiana public library systems that had not completed or had partially completed the survey. If the Information Institute study team had not been able to recruit these participants, recruitment would have expanded to include library systems that had completed the survey. Given the number of library systems that had not completed or had partially completed the survey, generating 17 telephone interviews was a realistic goal. The study team observed that after 15 interviews the responses were repetitious and concluded that the point of saturation had been achieved. Two additional interviews were conducted to verify saturation of data. Given the complexity of the survey data gathered, interviewees were either professional or paraprofessional librarians with system level knowledge of e-government service provision at their libraries. It was assumed that the director had system level knowledge.

### **Data Collection**

Participants were not questioned on skill level or ability. Questions focused on:

- The frequency of e-government transactions,
- Type of e-government transactions,

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- Estimated amount of time spent on e-government questions,
- Estimated amount of time spent on local, state, and federal e-government transactions,
- The benefits to the library of e-government transactions,
- The benefits to government agencies of e-government transactions at the library, and
- How to improve e-government services at the library in a typical work week.

The eight brief interview questions focused on the number, frequency, and complexity of e-government transactions performed at the library. The majority were open-ended questions with some multiple choice questions. Interview questions follow. Phone interview findings are available in Appendix K.

### *Phone Interview Script*

1. How would you describe the frequency of requests for e-government related assistance in a typical work week?
  - None
  - Very rarely
  - Somewhat frequently
  - Frequently
  - Fairly frequently
  - Very frequently
  - Other, please describe
2. Which of these service types do patrons ask for assistance with over the course of a typical work week? [Examples found in Survey]
  - Unemployment benefits and workforce development
  - Business services
  - Tax services
  - Social services
  - Public access to information
  - Bureau of Motor Vehicle services
  - Healthcare services
  - Immigration services
  - Other, please describe
3. What would you say is the e-government service patrons most request help with in a typical work week?
4. What percent would you say most accurately describes the typical percentage of time spent in a typical work week helping patrons with e-government questions or other assistance?
  - Less than 10%
  - 11-15%
  - 16-20%
  - 21-25%
  - 26-30%
  - More than 30%
  - Other: \_\_\_\_\_

5. Of the total time spent on e-government transactions/questions in a typical work week how would you break down the percentages spent for:
  - Local e-government services
  - State e-government services
  - Federal e-government services
6. What would you say are the major benefits to the library from providing e-government services? [Increased use/visibility, greater patron satisfaction, opportunity for partnerships with government agencies and other organizations, patrons value the library more, the staff as an increased understanding of government programs to seek additional funding opportunities, staff has increased knowledge of government programs to inform patrons qualifying for services, provides an avenue to complain about poor government programs and services]
7. What would you say are the major benefits that local, state, and federal agencies receive from public library e-government services? [reduction in costs from closing offices/no more paper forms, better communication about government programs, increased use of government programs, improved public understanding of government programs, improved ability to respond to problems/comments for the public, improved understanding of problems facing local residents, reduced technology costs through referral of clients to the library]
8. What are three things that could improve e-government services at your library?

## **APPENDIX F: USABILITY ANALYSIS METHOD**

### **Background**

The purpose of usability, functionality, and accessibility testing presented here is to gain an understanding of the state of Indiana's IN.gov Web portal. Findings of usability, functionality, and accessibility testing are presented by test type where tests include:

- Usability Inspection: assessment of the effectiveness and efficiency of content access throughout the site, use of the site, and usefulness of site content;
- Functionality Testing: assessment of the degree to which all aspects of the website are functional and operate properly; and
- Accessibility Testing: assessment of the level at which the website can be used by individuals with disabilities.

Findings presented include recommendations to improve the website. Testing of the Web portal occurred between June 11 and June 25, 2012. During this time period, the study team was informed by the Library liaison that the IN.gov web portal is in the process of being re-designed. While this does not affect the validity of the usability analysis, the study team acknowledges that that the interface is a work in progress and some issues noted may be the result of this construction. Usability analysis findings are available in Appendix L.

### **Usability Inspection Method**

The usability inspection provides a systematic and extensive testing of all navigation toolbars and features, links, help topics, search features, aesthetics of a website, and a review of the usefulness of page content. The usability inspection for this report assesses the effectiveness and efficiency with which the IN.gov website presents and provides access for users to the site's content and to state agency and other state websites' content. Aspects of the usability inspection include:

- Toolbars that consist of key site topics on tabs located at the top or either side of a page where all toolbar content is always visible on each Web page;
- Page headers and descriptive metadata that identify each page as the targeted page;
- Links and anchor tags, located with care and clearly visible to users on Web pages and embedded in Web page content to alert and help users navigate through long Web pages;
- Breadcrumbs and/or other navigation features that help users maneuver through the websites (i.e., features that provide a progressive trail of active page links from a site's homepage to each Web page users' view during navigation of the site and navigation back to the homepage);
- Search features; and
- Support features.

Areas included in the usability assessment are based on general information seeking behaviors and needs of users and generally accepted usability testing procedures. Assessments occurred through the Internet Explorer and Firefox browsers using tabletop PCs and Mac laptops.

### **Functionality Testing Method**

Functionality is the degree to which all aspects of a website are functional and operate properly. Functionality testing helps assure that a system performs as expected and as such it is an ongoing process that should be conducted on a scheduled and regular basis. Testing insures that a website provides access to the intended services and resources needed by the targeted population of users. Functionality testing helps provide a product with a minimal amount of problems. Functionality testing for this assessment includes:

- Metadata links;
- Links from headers, navigation bars, and task bars to areas in the website;
- URL links in reference and resource lists; and
- Other links to sources or resources listed in pages of the website, internal and external.

The functionality testing process includes a systematic assessment of every page of the project's website. The study team utilized the expert testing approach for the functionality assessment, where the expert testers (i.e., study team members) designed and executed standard evaluation and testing approaches based on existing best practices. The study team designed the test based on an organized set of concise patterns created to assure that testers did not miss anything important.

### **Accessibility Testing Method**

Website accessibility is commonly measured using two sets of standards—the W3C guidelines for accessibility (<http://www.w3c.org>) and the federal legal standards of accessibility established by Section 508 §1194.22 of the Rehabilitation Act (<http://www.section508.gov>).<sup>60</sup> Study team members evaluated the IN.gov website using selected criteria developed from section 508 accessibility standards. The criteria consist of eight questions that form the testing frame. Accessibility testing for IN.gov occurred June 13-14, 2012.

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<sup>60</sup> Section 508 §1194.22 of the *Rehabilitation Act Amendments of 1998* requires that Federal agencies ensure the accessibility of their web-based intranet and Internet information and applications.

## **APPENDIX G: WEB-BASED SURVEY FINDINGS**

### **Introduction**

As a part of the multi-method project, the Information Institute study team conducted a Web-based survey of Indiana public libraries. The goal of the survey was to evaluate e-government service initiatives in Indiana public libraries and to gather libraries' estimates of their e-government service costs in order to estimate the costs of these e-government service initiatives in Indiana. The survey was made available on January 30, 2012 and remained open until April 23, 2012. Information Institute study team members drafted the survey and the Library approved the final draft that was made available online through Survey Monkey software. The survey was sent to all 238 libraries in Indiana (126 rural and 112 urban), and 115 libraries responded (63 rural and 52 urban), for a response rate of 48.3% overall (50.0% for rural libraries and 46.4% for urban libraries). These rates indicate a representative response.

In order to facilitate costing exercises, the study team analyzed the survey by rural and urban libraries, with locality designations determined by the IRR (see the *Methodology Addendum: Locality Designation Methodology* for explanation of the IRR and why it was chosen for this project). While the response rate differed for each question on the survey, the overall pool of participants included 63 rural libraries and 52 urban libraries.

### **Findings**

The survey had several main sections of inquiry including internet services, staff support, equipment costs, IT support, obstacles, material costs, e-government activities, benefits, and suggested improvements. While library directors completed most surveys, some directors designated administrative proxies who completed the surveys for them. The following sections report findings by survey question, provide a brief analysis of these findings, and identify emergent themes and recommendations. The final report will include further analysis and discussion of survey findings in the context of findings from the other data collection methods.

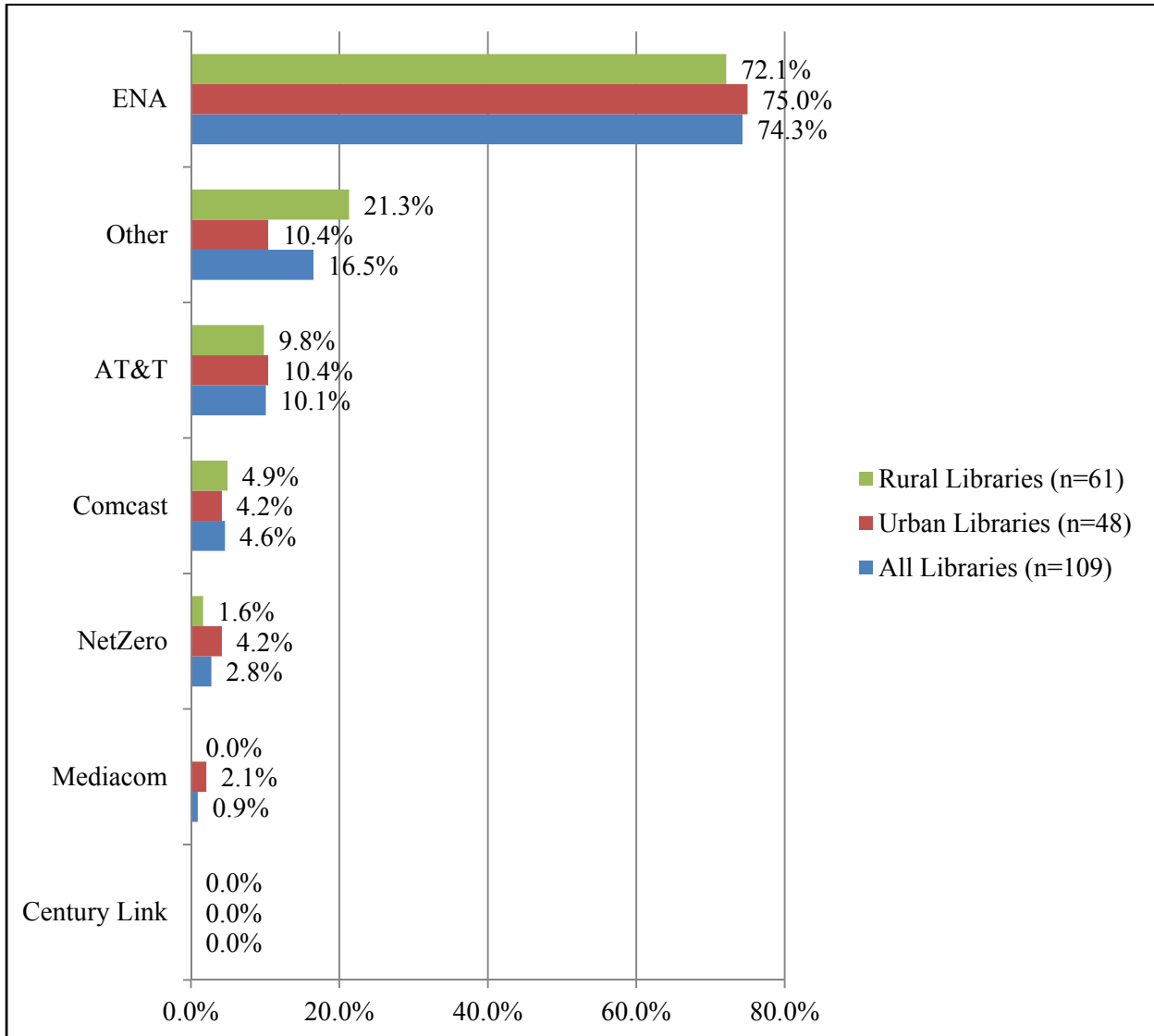
#### *Internet Service*

The first section of the survey asked respondents to provide information about their libraries' ISPs, average yearly expenditures for Internet service, advertised speed of their connections, actual upstream and downstream speeds experienced on staff workstations and PACs, and the availability of wireless access in their libraries. For the ISP question, respondents were able to choose more than one answer since a library may utilize different ISPs for wired and wireless connections or a library may require multiple connections to meet patron needs (for example, if a connection shared with another agency is not strong enough to meet the library's broadband needs).

Figure G-1 shows the percentages of libraries subscribing to various ISPs (note that because libraries could select multiple responses, percentages do not total 100%). The majority of Indiana public libraries receive their Internet through ENA (74.3% of all libraries; n=81).

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This may not be surprising as ENA is the managed ISP for the Indiana Public Library Internet Consortium. The second largest category of responses is from libraries that reported an “other” ISP (16.5% of all libraries; n=18). Several of the rural libraries who chose “other” as their ISP reported that they shared an Internet connection with their local school district or another institution or agency.



*Response rates differed for each question on the survey; the response rate for this question was n=109. Does not add to 100% because institutions reported in multiple categories.*

**Figure G-1. Indiana Public Library ISPs**

In addition to identifying which ISPs Indiana public libraries currently have contracts with, the survey asked them to report their total annual cost for Internet service (for the previous year, FY 2011) in order to calculate the average annual cost across all Indiana public libraries, \$11,858.96 (Table G-1). Utilizing the reported figures, the study team then calculated an

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average annual cost for rural libraries (\$12,126.43) and urban libraries (\$11,534.90). For this question, some libraries reported that they spent \$0 for Internet service in the previous year. The study team included these values in the average annual cost calculations since it is possible that some libraries may not have paid ISP fees out of their budgets, for example if they shared a connection with another local institution or agency.

Table G-1: Average Annual Cost for Internet Service

	<b>All Libraries (n=115)</b>	<b>Urban Libraries (n=52)</b>	<b>Rural Libraries (n=63)</b>
<b>Cost</b>	\$11,858.96	\$11,534.90	\$12,126.43

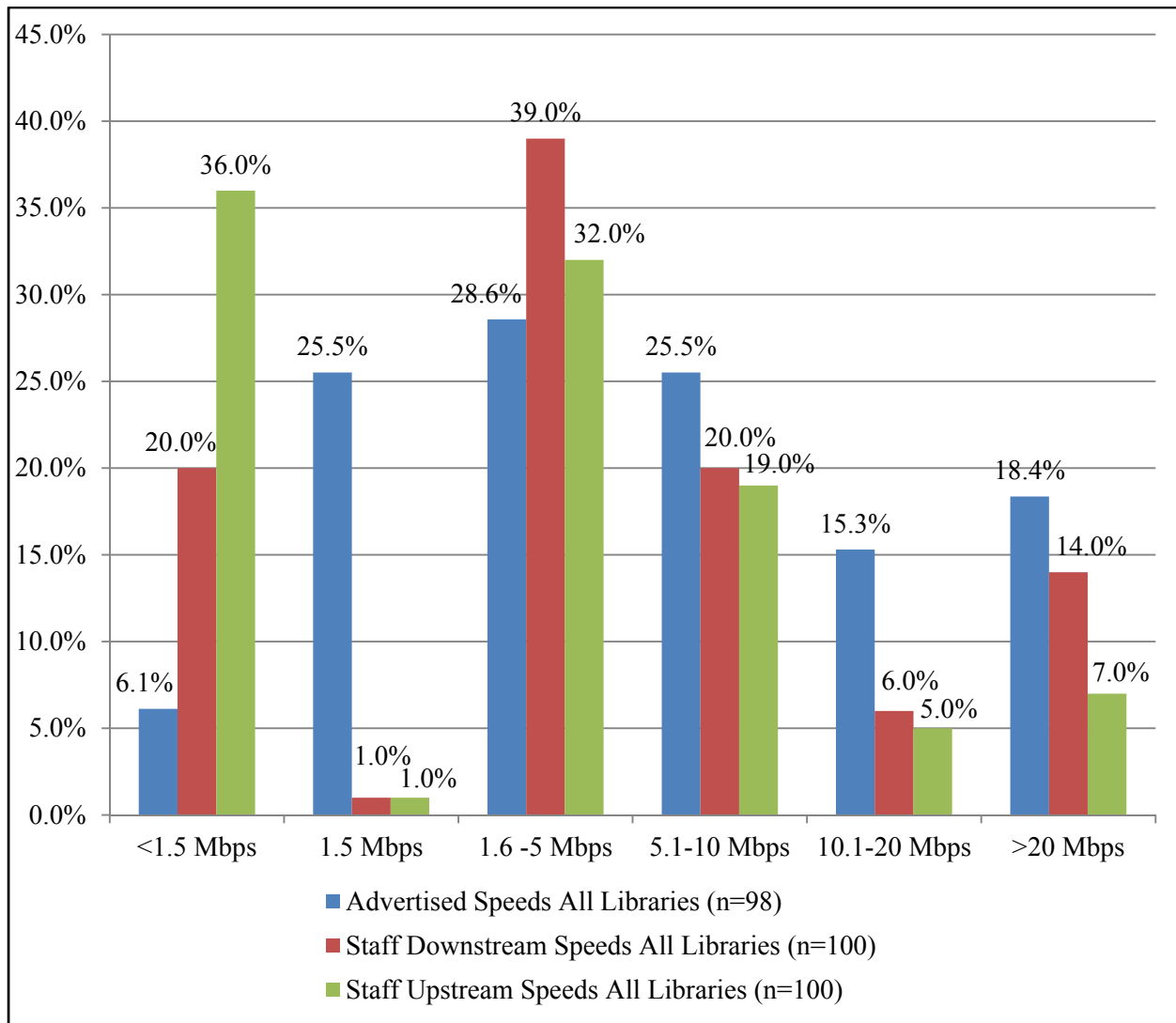
*Response rates differed for each question on the survey; the response rate for this question was n=115.*

The survey included several questions related to the speed of the libraries' Internet connections: advertised speed, upstream and downstream speeds at a staff workstation (calculated using <http://speedtest.net>), and upstream and downstream speeds at a PAC (calculated using <http://speedtest.net>). Figure G-2 and Tables G-2 and G-3 compare the reported advertised speeds to reported upstream and downstream speeds measured on staff workstations for Indiana libraries. Figure G-3 and Tables G-4 and G-5 compare the reported advertised speeds to reported upstream and downstream speeds on PACs.

The results in Figure G-2 indicate that many libraries whose contracts advertise speeds greater than 5.1 Mbps are in fact experiencing much slower speeds. The majority of all libraries (59.2%; n=58) have advertised connection speeds above 5 Mbps, yet only 40.0% (n=40) experience these downstream speeds and 31.0% (n=31) experience these speeds upstream at dedicated staff workstations. The fact that more libraries experience speeds below 1.5 Mbps than report advertised speeds below 1.5 Mbps is another indicator of the fact that libraries experience far slower speeds than advertised. While, only 6.1% (n=6) of libraries report paying for speeds below 1.5 Mbps, in actuality, 20.0% (n=20) of libraries experience downstream and 36.0% (n=36) experience upstream speeds below 1.5 Mbps at a staff workstation.



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*The ns varied for these questions as follows: for advertised speed the total n=98; for actual speeds (from speed tests) the total n=100.*

**Figure G-2. Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on Staff Workstations at All Libraries**

Tables G-2 and G-3 show that these patterns also hold true for urban and rural libraries. For example, 71.2% (n=32) of urban libraries report an advertised speed above 5 Mbps, but only 39.9% (n=18) experience that speed downstream and 33.3% (n=15) experience that speed upstream at a staff workstation. Also, 49.0% (n=26) of rural libraries report an advertised speed above 5 Mbps, but only 40.0% (n=22) experience that speed downstream and 29.1% (n=16) experience that speed upstream at a staff workstation. Overall, Figure G-2 and Tables G-2 and G-3 show that fewer libraries experience speeds above 10 Mbps than are paying for them and thus are not receiving the advertised speeds that they were promised.

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Table G-2: Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on Staff Workstations at Urban Libraries

<b>Speed Categories</b>	<b>Advertised Speeds Urban Libraries (n=45)</b>	<b>Staff Downstream Speeds Urban Libraries (n=45)</b>	<b>Staff Upstream Speeds Urban Libraries (n=45)</b>
<1.5 Mbps	2.2%	17.8%	33.3%
1.5 Mbps	13.3%	2.2%	2.2%
1.6 -5 Mbps	24.4%	40.0%	31.1%
5.1-10 Mbps	28.9%	22.2%	20.0%
10.1-20 Mbps	15.6%	4.4%	2.2%
>20 Mbps	26.7%	13.3%	11.1%

*Response rates differed for each question on the survey; the response rate for this question was n=45 for urban libraries.*

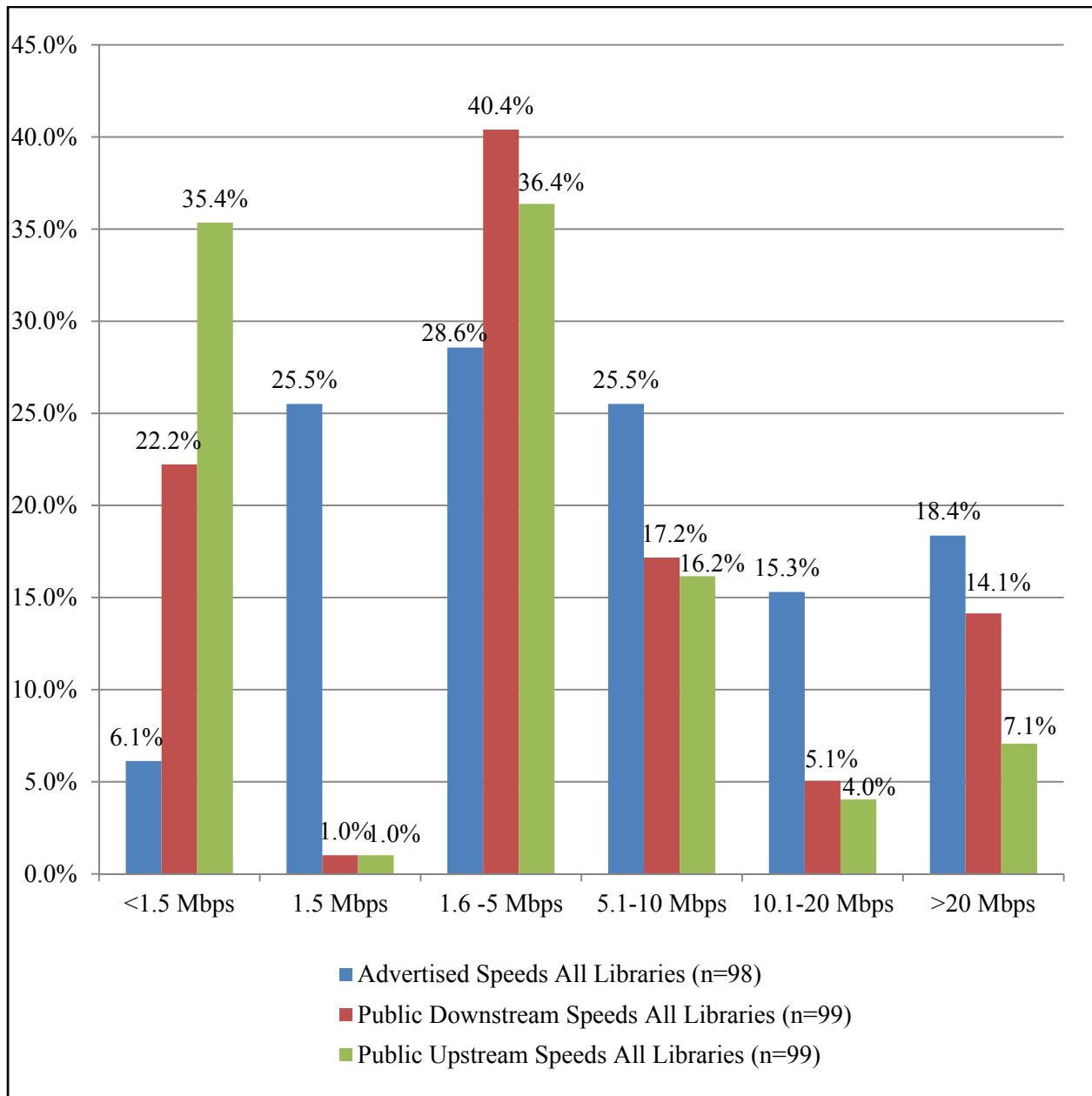
Table G-3: Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on Staff Workstations at Rural Libraries

<b>Speed Categories</b>	<b>Advertised Speeds Rural Libraries (n=53)</b>	<b>Staff Downstream Speeds Rural Libraries (n=55)</b>	<b>Staff Upstream Speeds Rural Libraries (n=55)</b>
<1.5 Mbps	9.4%	21.8%	38.2%
1.5 Mbps	35.8%	0.0%	0.0%
1.6 -5 Mbps	32.1%	38.2%	32.7%
5.1-10 Mbps	22.6%	18.2%	18.2%
10.1-20 Mbps	15.1%	7.3%	7.3%
>20 Mbps	11.3%	14.5%	3.6%

*The ns varied for these questions as follows: for advertised speed rural n=53; for actual speeds (from speed tests) rural n=55.*

Figure G-3 and Tables G-4 and G-5 shows that the discrepancy between advertised speeds and actual speeds reported on staff workstations also appeared when looking at PACs. Here too, 59.2% (n=58) of the libraries have advertised connection speeds above 5 Mbps, yet only 36.4% (n=36) experience these speeds downstream and 27.3% (n=27) experience these speeds upstream at PACs (Figure G-3). The fact that more libraries experience speeds below 1.5 Mbps than are paying for those speeds is another indicator of the fact that libraries experience far slower speeds on PACs than advertised. While 6.1% (n=6) of libraries are paying for connections below 1.5 Mbps, 22.2% (n=22) of libraries experience downstream and 35.4% (n=35) experience upstream speeds below 1.5 Mbps on PACs.

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*The ns varied for these questions as follows: for advertised speed the total n=98; for actual speeds (from speed tests) the total n=99.*

**Figure G-3. Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on PACs at All Libraries**

Tables G-4 and G-5 demonstrate that the patterns observed with regard to staff workstation speeds at urban and rural libraries (Tables G-2 and G-3) hold true when looking at speeds experienced on PACs at urban and rural libraries. These tables highlight the fact that there is a discrepancy between advertised speeds and actual speeds measured on PACs. For example, 71.2% (n=32) of urban libraries report an advertised speed above 5 Mbps, but only

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34.1% (n=15) experience that speed downstream and 31.9% (n=14) experience that speed upstream at PACs. Also, 49.0% (n=26) of rural libraries report an advertised speed above 5 Mbps, but only 38.2% (n=21) experience that speed downstream and 23.7% (n=13) experience that speed upstream at a PAC. Tables 4 and 5 show that both urban and rural libraries are not receiving the advertised speeds that they were promised, but there is greater discrepancy between advertised and experienced speeds in urban libraries than rural libraries.

Table G-4: Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on PACs at Urban Libraries

<b>Speed Categories</b>	<b>Advertised Speeds Urban Libraries (n=45)</b>	<b>Public Downstream Speeds Urban Libraries (n=44)</b>	<b>Public Upstream Speeds Urban Libraries (n=44)</b>
<1.5 Mbps	2.2%	20.5%	27.3%
1.5 Mbps	13.3%	2.3%	2.3%
1.6 -5 Mbps	24.4%	43.2%	38.6%
5.1-10 Mbps	28.9%	15.9%	20.5%
10.1-20 Mbps	15.6%	2.3%	2.3%
>20 Mbps	26.7%	15.9%	9.1%

*The ns varied for these questions as follows: for advertised speed urban n=45; for actual speeds (from speed tests) urban n=44.*

Table G-5: Comparison of Advertised Speeds and Upstream and Downstream Speeds Measured on PACs at Rural Libraries

<b>Speed Categories</b>	<b>Advertised Speeds Rural Libraries (n=53)</b>	<b>Public Downstream Speeds Rural Libraries (n=55)</b>	<b>Public Upstream Speeds Rural Libraries (n=55)</b>
<1.5 Mbps	9.4%	23.6%	41.8%
1.5 Mbps	35.8%	0.0%	0.0%
1.6 -5 Mbps	32.1%	38.2%	34.5%
5.1-10 Mbps	22.6%	18.2%	12.7%
10.1-20 Mbps	15.1%	7.3%	5.5%
>20 Mbps	11.3%	12.7%	5.5%

*The ns varied for these questions as follows: for advertised speed rural n=53; for actual speeds (from speed tests) rural n=55.*

The survey also asked respondents to describe their wireless capabilities. While 92.3% (n=48) of urban libraries and 93.7% (n=59) of rural libraries reported having a wireless network in their libraries, the ways in which staff and patrons connect to these networks varies, as does the frequency of use of these networks for e-government service activities. Table G-6 identifies patron and staff accessibility to the wireless network.

As demonstrated in Table G-6, 100.0% (n=46) of urban libraries have wireless Internet available to patrons during library business hours while only 91.7% (n=55) of rural libraries offer

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this same availability. However, more rural libraries (76.7%; n=46) make their wireless networks available to patrons after library business hours than urban libraries (73.9%; n=34). Additionally, 26.1% (n=12) of urban libraries require a password to access the wireless connection while only 21.7% of rural libraries do the same, another indicator that patrons have greater access to wireless Internet after hours at rural libraries than urban libraries.

Table G-6: Availability of Wireless Internet to Staff and Patrons

<b>Access to Wireless Internet</b>	<b>Total Libraries (n=106)</b>	<b>Urban Libraries (n=46)</b>	<b>Rural Libraries (n=60)</b>
Available to staff during business hours	89.6%	93.5%	86.7%
Available to staff after library business hours	70.8%	69.6%	71.7%
Available to patrons during library business hours	95.3%	100.0%	91.7%
Available to patrons after library business hours	75.5%	73.9%	76.7%
Wireless access requires a password	23.6%	26.1%	21.7%

*Response rates differed for each question on the survey; the response rate for this question was n=106. Does not add to 100% because institutions reported in multiple categories.*

Table G-7 reports on the sufficiency of the wireless Internet at Indiana public libraries to meet patrons' and staffs' needs. The majority of urban (84.8%; n=39) and rural libraries (75.0%; n=45) report that wireless at the library is adequate for staff needs and patron needs (urban: 73.9%; n=34; rural: 76.7%; n=46), but there is a larger discrepancy between the adequacy of wireless Internet for staffs' vs. patrons' needs in urban libraries.

Additionally, the fact that 13.0% (n=6) of urban libraries and 21.7% (n=13) of rural libraries have received requests from patrons for improvements to the wireless connections suggests that Indiana public libraries have room to improve wireless availability to better support the libraries' e-government service initiatives and other programming. The exact causes of the perceived inadequacy reported are unknown; however, the fact that the wireless network shares bandwidth with the wired connection at 78.3% (n=36) of urban libraries and 76.7% (n=46) of rural libraries may be a contributing factor. When these two types of connections share bandwidth, this tends to result in slower speeds on both networks, congested servers, and less than ideal service.

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Table G-7: Sufficiency of Wireless Internet for Staff and Patron Needs

<b>Sufficiency of Wireless Internet</b>	<b>Total Libraries (n=106)</b>	<b>Urban Libraries (n=46)</b>	<b>Rural Libraries (n=60)</b>
Wireless connection shares bandwidth with ISP	77.4%	78.3%	76.7%
Wireless is separate from the ISP	12.3%	10.9%	13.3%
Wireless at the library is adequate for staff needs	79.2%	84.8%	75.0%
Wireless at the library is adequate for patron needs	75.5%	73.9%	76.7%
Patrons have requested wireless improvements.	17.9%	13.0%	21.7%

*Response rates differed for each question on the survey; the response rate for this question was n=106. Does not add to 100% because institutions reported in multiple categories.*

*Staff Support*

The next set of questions asked libraries to report on their staffing support for and tracking of e-government service transactions as part of their libraries' e-government service initiatives. The study team first evaluated the staffing support efforts of the participating libraries by asking them to input the results of a week of activity logs filled out by one dedicated professional and one dedicated paraprofessional staff member in order to track the amount of time spent on state, federal, and local e-government transactions. Tables 8 and 9 display the average percentages of time spent on e-government service transactions by type of transaction for professionals and paraprofessionals, respectively. These estimated percentages of time spent on e-government services were used to estimate the cost of staffing support (see Appendices M and N).

Tables G-8 and G-9 demonstrate that urban libraries engage in e-government service transactions much more frequently than rural libraries. While urban libraries report that their dedicated professionals spend 43.6% of their time and dedicated paraprofessionals spend 39.4% of their time engaging in e-government service transactions, rural library professionals spend 15.2% of their time and rural paraprofessionals spend 16.5% of their time engaging in e-government service transactions. However, the distribution of time spent among state, federal, and local transactions is comparable between urban and rural libraries with both spending the largest amount of time on state e-government transactions.

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Table G-8: Average Percentage of Time Professionals Spend on E-government Service Provision

<b>Categories of E-government Services</b>	<b>All Professionals (n=77)</b>	<b>Urban Professionals (n=32)</b>	<b>Rural Professionals (n=45)</b>
State	14.0%	22.8%	7.8%
Federal	2.8%	4.0%	2.0%
Local	10.1%	16.8%	5.4%
All	27.0%	43.6%	15.2%

*\*Response rates differed for each question on the survey; the response rate for these three questions was n=77.*

Table G-9: Average Percentage of Time Paraprofessionals Spend on E-government Service Provision

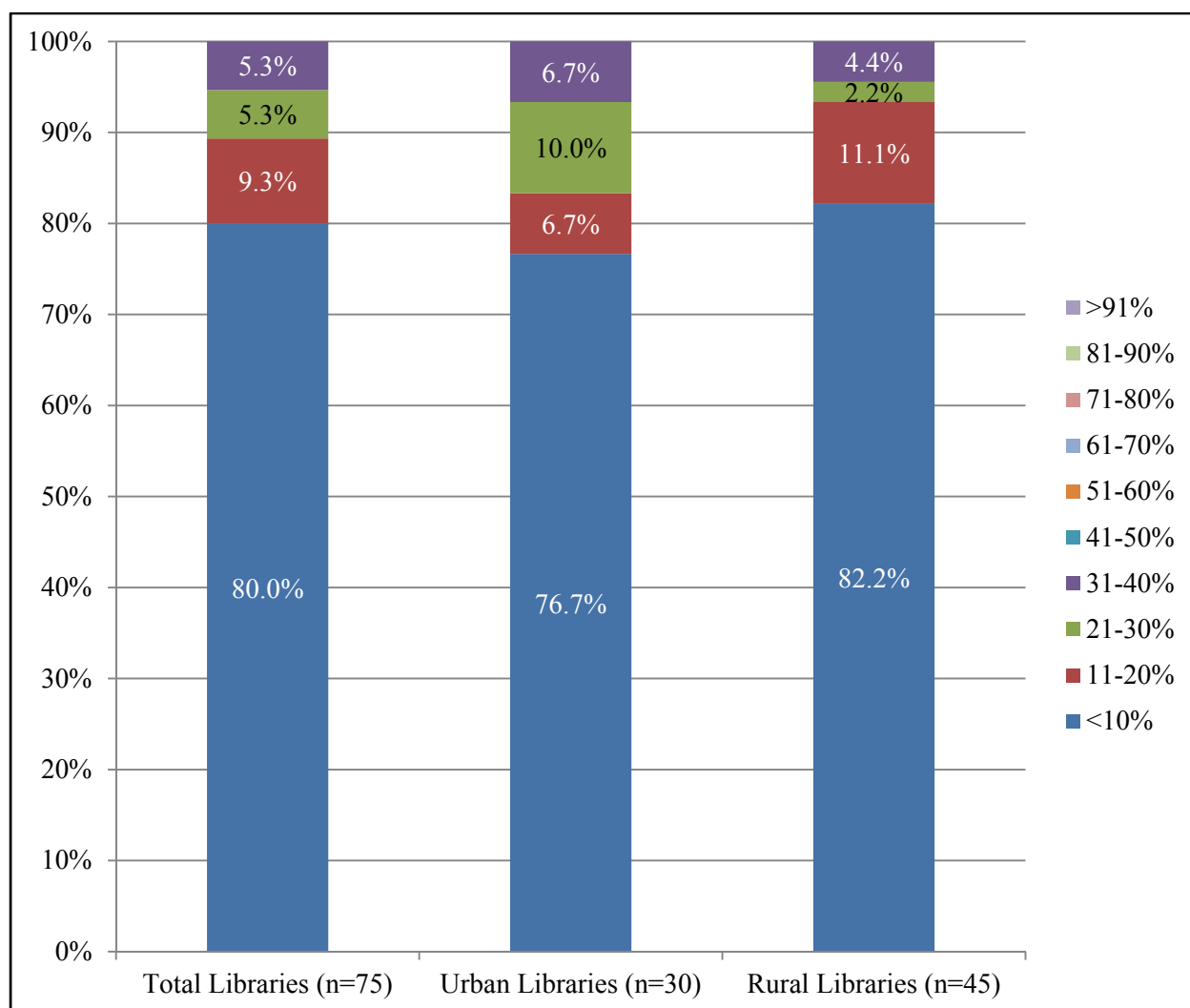
<b>Categories of E-government Services</b>	<b>All Paraprofessionals (n=77)</b>	<b>Urban Paraprofessionals (n=32)</b>	<b>Rural Paraprofessionals (n=45)</b>
State	11.7%	16.4%	8.4%
Federal	2.9%	4.3%	2.0%
Local	11.3%	18.8%	6.1%
All	26.0%	39.4%	16.5%

*Response rates differed for each question on the survey; the response rate for these three questions was n=77.*

Additionally, the survey asked respondents to estimate their libraries' total time investments for their e-government service initiatives. Figure G-4 demonstrates that over three quarters of both urban (76.7%; n=23) and rural (82.2%; n=37) survey respondents estimate their library staffs spend <10% of their time engaging in e-government service transactions. This is in conflict with the results in Tables G-8 and G-9 that show urban library staffs spend about 40% of their time and rural library staffs spend about 15% of their time on e-government transactions. This could be the result of several different factors such as a disconnect between the library administration and staff regarding the frequency of e-government services, an uneven distribution of work among certain positions when dealing with patrons with e-government inquiries, or errors with the self-reported data. Clearly this is an area for additional research.

The survey also asked if and how libraries tracked e-government service transactions. Of the 74 total respondents to this question, the majority (89.2%; n=66) do not track e-government transactions. Of the few libraries that do track e-government transactions, one rural library uses keyloggers or click-through tracking, two urban and two rural libraries use manual activity logs, and one urban and two rural libraries use "other" methods or some combination of these methods for tracking. No libraries reported using ISP data logs or checking the Web browser's cache for e-government service tracking. While not a large or diverse sample, it is evident from these results that some public libraries in Indiana do collect metrics for their e-government service initiatives. These metrics may be able to present more accurate daily estimates of time spent on e-government transactions if they were used more widely in the future.

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Response rates differed for each question on the survey; the response rate for this question was n=75.

Figure G-4. Percentage of Total Staff Time Spent on E-government Transactions

## Equipment Costs

In addition to costing staffing support, the survey also asked respondents to provide annual estimates for material, equipment, and computer costs for the previous year (FY 2011) in support of their libraries' e-government service initiatives. The study team used these responses to calculate the average annual cost for each category. Table G-10 shows the average annual costs for all libraries, urban libraries, and rural libraries for the three cost categories. Survey responses indicate that computer costs comprise the largest of the three cost categories. Utilizing the reported figures, the study team then calculated the average annual cost for materials for rural libraries (\$1,148.89) and urban libraries (\$1,715.43), average annual cost for equipment for rural libraries (\$922.18) and urban libraries (\$896.63), and average annual cost for computer technologies for rural libraries (\$10,987.51) and urban libraries (\$14,201.67).



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For this question, some libraries reported that they spent \$0 for materials, equipment, or computer technology in the previous year. The study team included these figures in the average annual cost calculations since it is possible that some libraries may not have paid for any new materials, equipment, or computer technologies in the previous year or may not have paid for them out of their budgets. For example, they may share resources with another local library or school.

Table G-10: Average Annual Costs for Resources and Equipment Used to Support E-government Service Provision

<b>Cost Categories</b>	<b>All Libraries (n=75)</b>	<b>Urban Libraries (n=30)</b>	<b>Rural Libraries (n=45)</b>
Purchase of books, reports, supplies, and other related materials including print and electronic resources	\$1,375.51	\$1,715.43	\$1,148.89
Purchase of furniture, desks, chairs, and other related furnishings	\$911.96	\$896.63	\$922.18
Computers, software, telecommunications equipment, lines, networks, and services	\$12,273.17	\$14,201.67	\$10,987.51

*Response rates differed for each question on the survey; the response rate for these three questions was n=75.*

The survey also asked participants to enter the total number of public access desktop PACs, library-owned laptop PACs, library-owned tablet PACs, staff desktop computers, and library-owned staff tablets at their libraries. The study team then averaged the results to come up with an average estimated total of each type of equipment for Indiana public libraries (Table G-11). Although urban libraries generally tend to serve larger patron populations and one might expect them to, correspondingly, have more computer equipment, survey results indicate that rural libraries, on average, own more equipment than urban libraries for every type of equipment surveyed. Rural libraries (n=44) own an average of 33.7 desktop PACs, 4.4 laptop PACs, 1.8 tablet PACs, 26.4 staff desktop PCs, and 1.3 staff tablet PCs per library, more than the per library averages at urban libraries (n=28): 28 desktop PACs, 3.8 laptop PACs, 0 tablet PACs, 21.7 staff desktop PCs, and 0.5 staff tablet PCs. Table G-11 also demonstrates, however, that the urban libraries own a greater proportion of desktop PACs to staff desktop PCs at a rate of 1.29:1, while rural libraries own 1.27 desktops PACs to every 1 staff desktop PC.

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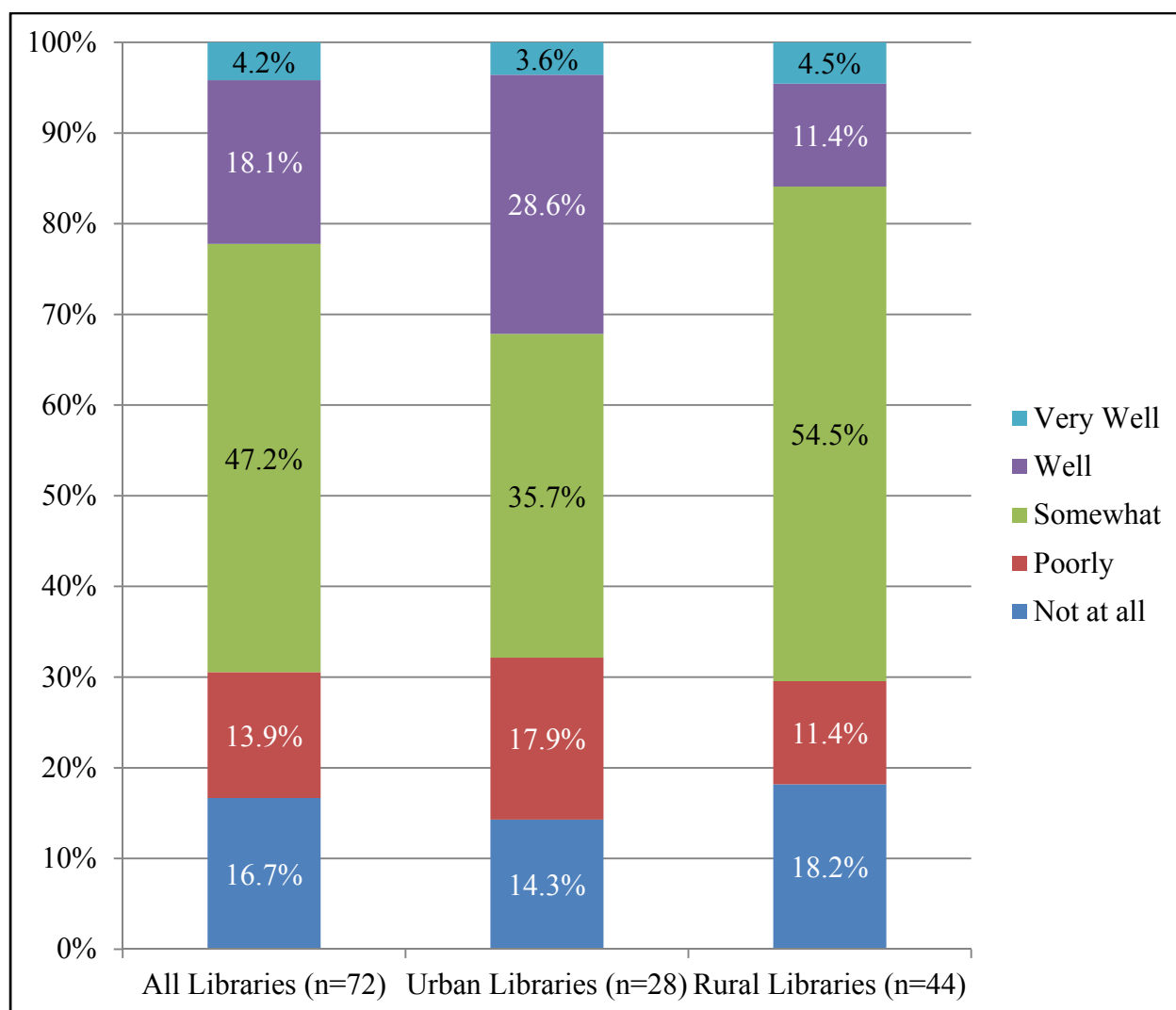
Table G-11: Average Number of Pieces of Computer Equipment by Type

Equipment Type	All Libraries*	Urban Libraries*	Rural Libraries*
Desktop PACs	31.5	28.0	33.7
Laptop PACs	4.2	3.8	4.4
Tablet PACs	1.1	0.0	1.8
Staff Desktop PCs	24.6	21.7	26.4
Staff Tablet PCs	1.0	0.5	1.3

*\*The ns varied for these questions as follows: for desktop PACs, laptop PACs, tablet PCs, and staff tablet PCs the total n=72, rural n=44, and urban n=28; for staff computers the total n=73, rural n=45, and urban n=28.*

In addition to asking how many of each type of equipment the respondents had, the survey asked participants to evaluate how well their libraries were able to keep to 3-year replacement schedules for PAC desktops and laptops. Figure G-5 demonstrates that the largest percentage of all libraries is able to keep to a 3-year replacement schedule “somewhat” (47.2%; n=34), with fewer than a third saying they can maintain this replacement schedule “well” or “very well” (22.3%; n=16). Urban libraries struggle more than rural libraries with maintaining a 3-year replacement schedule with 32.2% (n=9) reporting that they are “poorly” or “not at all” able to keep to a 3-year replacement schedule, compared to 29.6% (n=13) of rural libraries that report being able to maintain a 3-year replacement schedule “poorly” or “not at all.”

On the other hand, only 15.9% (n=7) of rural libraries report they are able to keep to this replacement schedule “well” or “very well,” which is about 50% less than the 32.2% (n=9) of urban libraries that report being able to maintain this schedule “well” or “very well.” The fact that fewer than one-third of all libraries (urban or rural) are able to maintain a 3-year replacement schedule “well” or “very well” is a concern to library e-government service initiatives as it endangers patrons’ abilities to access important information and necessary benefits and further burdens staff by leaving them to deal with outdated or ill-performing equipment.

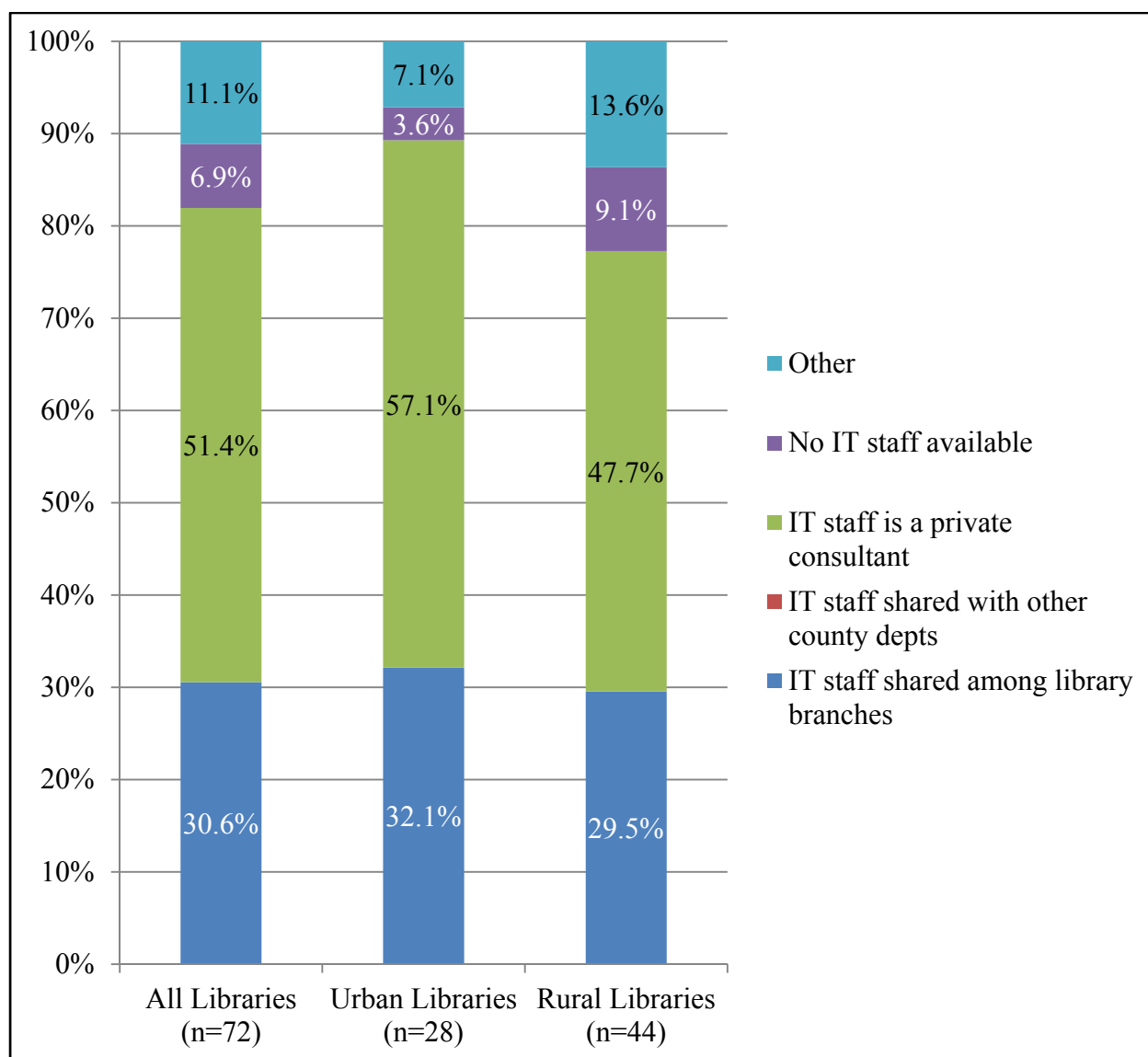


*Response rates differed for each question on the survey; the response rate for this question was n=72.*

**Figure G-5. How Well a Library is Able to Maintain a 3-year Replacement Schedule for PACs and Laptops**

### *IT Support*

The survey also asked participants about IT support at their libraries. As demonstrated in Figure 6, the majority of all libraries (51.4%; n=37) utilize private consultants for IT support, and this is the largest category of responses also for urban (57.1%; n=16) and rural libraries (47.7%; n=21). The next largest category of responses is IT staff shared among library branches (30.6%; n=22 for all libraries). For the respondents that identified that they have “Other” arrangements (11.1%; n=8), answers included using the Director as IT staff and using IT staff provided by the local schools. No libraries responded that they shared IT support staff with other county departments.

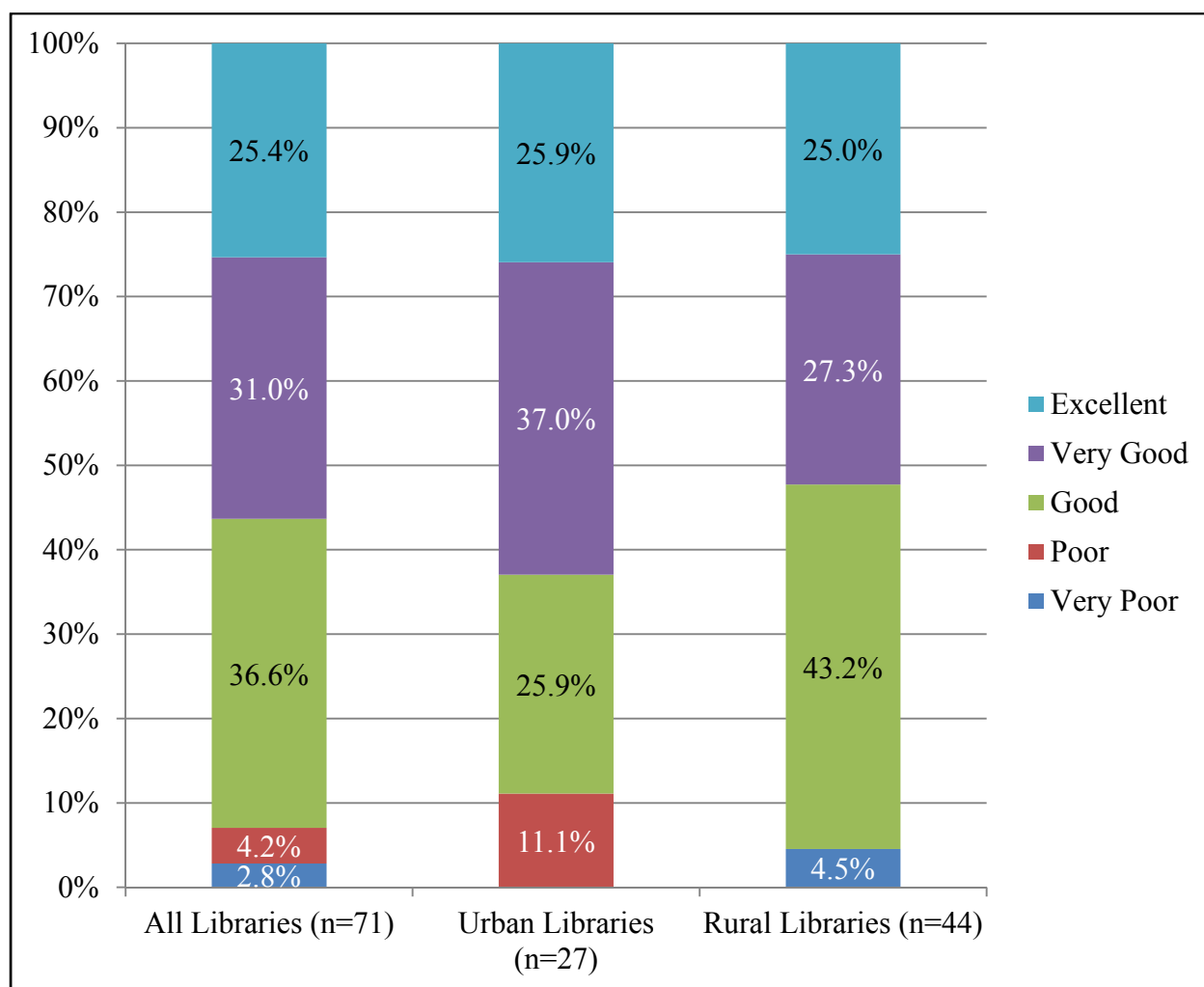


*Response rates differed for each question on the survey; the response rate for this question was n=72. No respondents reported that their libraries shared IT staff with other county departments.*

**Figure G-6. Type of IT Support Available to the Library**

The survey then asked participants to rate the perceived quality of the IT services available at their libraries. Figure G-7 demonstrates that while 93.0% (n=66) of libraries rated their IT services to be good, very good, or excellent, more rural libraries (95.5%; n=42) seem to have good, very good, or excellent IT services than urban libraries (88.8%; n=24). Because adequate IT support is one factor that directly supports e-government services through maintenance of computer equipment and Internet access, poorly rated IT support, even if only a small percentage as demonstrated here) could be incredibly problematic to the e-government service initiatives at the 7.0% (n=5) of libraries that have poor and very poor IT services.

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Response rates differed for each question on the survey; the response rate for this question was n=71.

Figure G-7. Perceived Quality of IT Services at the Library

## Obstacles

The survey asked respondents to note issues their libraries must address to provide high quality e-government services. Table G-12 demonstrates that the most prevalent obstacle participants noted was inadequately trained e-government staff in both urban (55.2%; n=16) and rural libraries (68.2%; n=30), as well as all libraries overall (63.0%; n=46). Staff must first be properly trained to address patron inquiries and utilize the resources available. Second, in order to train and maintain an adequate amount of staff for e-government service initiatives, funding must be sufficient to support the program. This also is a challenge in Indiana, with respondents saying insufficient funding for e-government staff (49.3%; n=36) and lack of financial support from state (47.9%; n=35), federal (47.9%; n=35), and local (42.5%; n=31) agencies are issues that need to be addressed.

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Since state level e-government service transactions are the most prevalent type in Indiana as evidenced in Tables G-8 and G-9, moral and financial support from state agencies are imperative in order for library staff to be able to provide adequate state-level e-government services. However, survey respondents indicate that lack of both financial (47.9%; n=35) and moral (49.3%; n=36) support from state agencies are issues that need to be addressed to improve e-government service provision. Libraries also need to have working partnerships with government agencies in order to properly assist patrons with more advanced needs and daily challenges. Yet, overall, 34.2% (n=25) of respondents cited an inability to contact state agencies as an issue that needs to be addressed in order to provide high quality e-government services. Additionally, 32.9% (n=24) cited inability to contact federal agencies and 24.7% (n=18) cited inability to contact local agencies for support as issues that need to be addressed.

Despite the findings from the Information Institute's recent broadband needs assessments in Florida public libraries<sup>61</sup> and rural anchor institutions<sup>62</sup> that indicate broadband connectivity speeds affect e-government and other library services, survey respondents do not seem to understand the need for adequate bandwidth to provide high-quality e-government services, now and in the future. Inadequate broadband capacity was cited as an issue that needs addressing by the least number of survey respondents (16.4%; n=12). This is in spite of the fact that respondents reported low average speeds (Figures G-2 and G-3, Tables G-2, G-3, G-4, and G-5) and that patrons have indicated that their wireless connections are inadequate (Table G-7).

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<sup>61</sup> McClure, C. R., Mandel, L. H., Snead, J. T., Bishop, B. W., & Ryan, J. (2009). *Needs assessment of Florida public library e-government and emergency/disaster management broadband-enabled services* (Technical report). Retrieved from: <http://ii.fsu.edu/content/download/18354/118602/FL%20Broadband%20#14%20Final%20Rrpt%20COMPLETE%20Sep14.09.pdf>

<sup>62</sup> McClure, C. R., Mandel, L. H., Alemanne, N. D., Saunders, J., Spears, L. I., & Bishop, B. W. (2011). *Florida Rural Broadband Alliance, LLC (FRBA) Florida Rural Middle Mile Networks – Northwest and South Central Regions Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Fourth interim and final report* (Technical report). Retrieved from: <http://ii.fsu.edu/Research/Projects/Florida-Rural-Broadband-Alliance-Broadband-Needs-Assessment-and-Benchmarking-of-Anchor-Institutions-Reports/Florida-Rural-Broadband-Alliance-FRBA-Fourth-Interim-and-Final-Report>; McClure, C. R., Mandel, L. H., Alemanne, N. D., Saunders, J., Spears, L. I., & Bishop, B. W. (2011). *North Florida Broadband Authority (NFBA) Ubiquitous Middle Mile Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Final report* (Technical report). Retrieved from: <http://ii.fsu.edu/Research/Projects/2010-Project-Details/North-Florida-Broadband-Alliance-NFBA-Final-Report>

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Table G-12: Issues the Library Must Address to Provide High Quality E-government Service

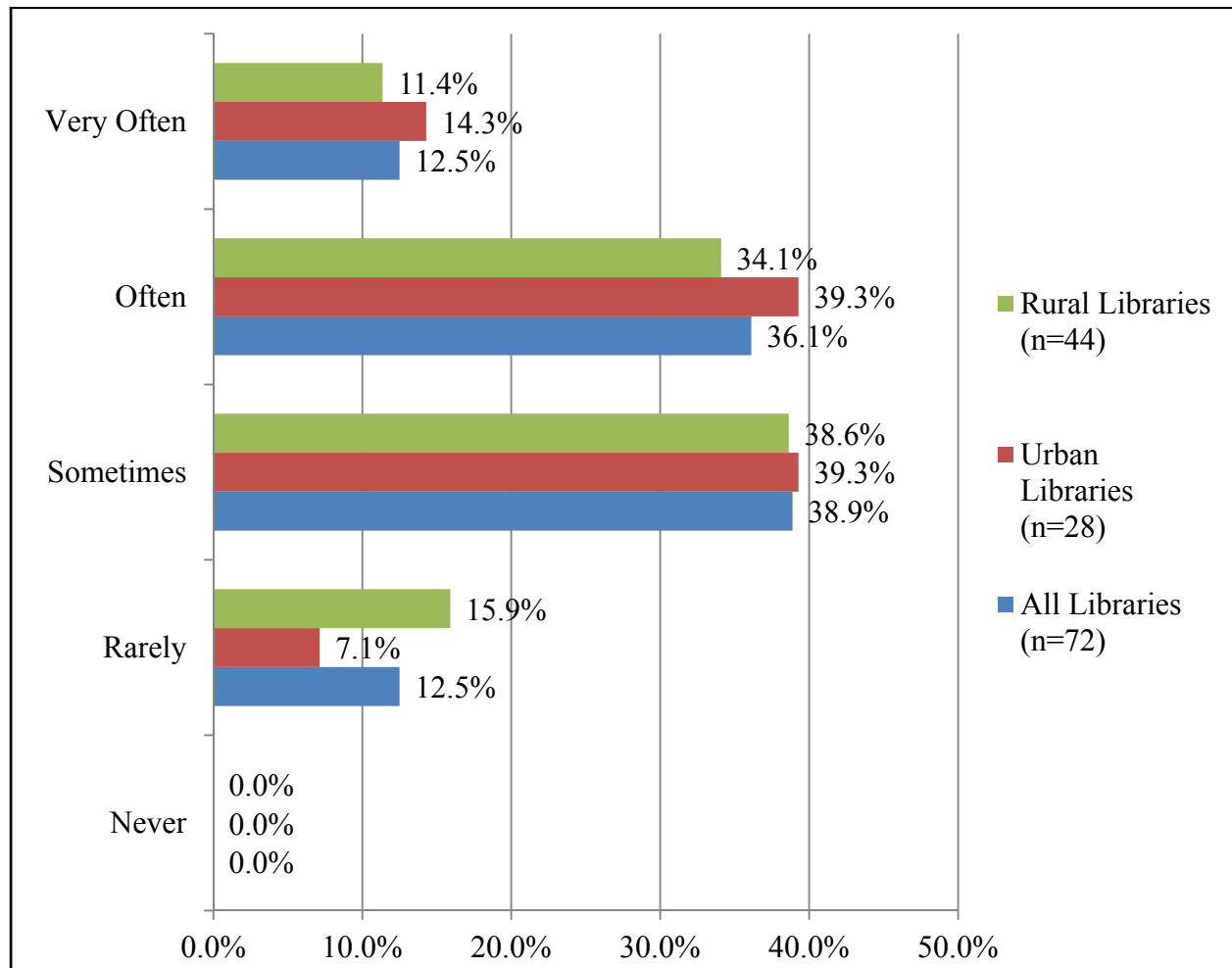
<b>Issues</b>	<b>All Libraries (n=73)</b>	<b>Urban Libraries (n=29)</b>	<b>Rural Libraries (n=44)</b>
Inadequately trained e-government staff	63.0%	55.2%	68.2%
Insufficient funding for e-government staff	49.3%	48.3%	50.0%
Lack of moral support from state agencies	49.3%	55.2%	45.5%
Lack of financial support from state agencies	47.9%	51.7%	45.5%
Lack of financial support from federal agencies	47.9%	44.8%	50.0%
Lack of financial support from local agencies	42.5%	48.3%	38.6%
Lack of moral support from federal agencies	42.5%	48.3%	38.6%
Limited by the hours open to meet patrons' needs	41.1%	48.3%	36.4%
Costs for the purchase of e-government resources	34.2%	34.5%	34.1%
Inability to contact state agency representatives	34.2%	37.9%	31.8%
Lack of moral support from local agencies	32.9%	41.4%	27.3%
Inability to contact federal agency representatives	32.9%	41.4%	27.3%
Inability to contact local agency representatives	24.7%	27.6%	22.7%
Computer time limits not long enough	21.9%	17.2%	25.0%
Inadequate number of computers	17.8%	6.9%	25.0%
Inadequate broadband capacity	16.4%	13.8%	18.2%
Other	9.6%	17.2%	4.5%

*Response rates differed for each question on the survey; the response rate for this question was n=73. Does not add to 100% because institutions reported in multiple categories.*

### *Material Costs*

In the Materials section of the survey, the survey asked participants how frequently their libraries printed or copied documents for patrons during e-government service transactions, if their libraries charged patrons for printing and copying materials for e-government service

transactions, and if their libraries had received any indications that these charges acted as barriers to e-government information, forms, and applications. As shown in Figure G-8, all (100.0%; n=72) libraries print or copy documents for patrons during e-government service transactions, even if only rarely. The frequency with which urban and rural libraries offer this service is fairly comparable. Urban libraries print and copy documents only slightly more often than rural libraries, with 53.6% (n=15) of urban libraries reporting that they do this “very often” or “often,” versus 45.5% (n=20) of rural libraries. Only 7.1% (n=2) of urban libraries and 15.9% (n=7) of rural libraries report that they offer this service “rarely,” and no respondents reported that their libraries “never” provided printing and copying services for patrons during e-government service transactions.



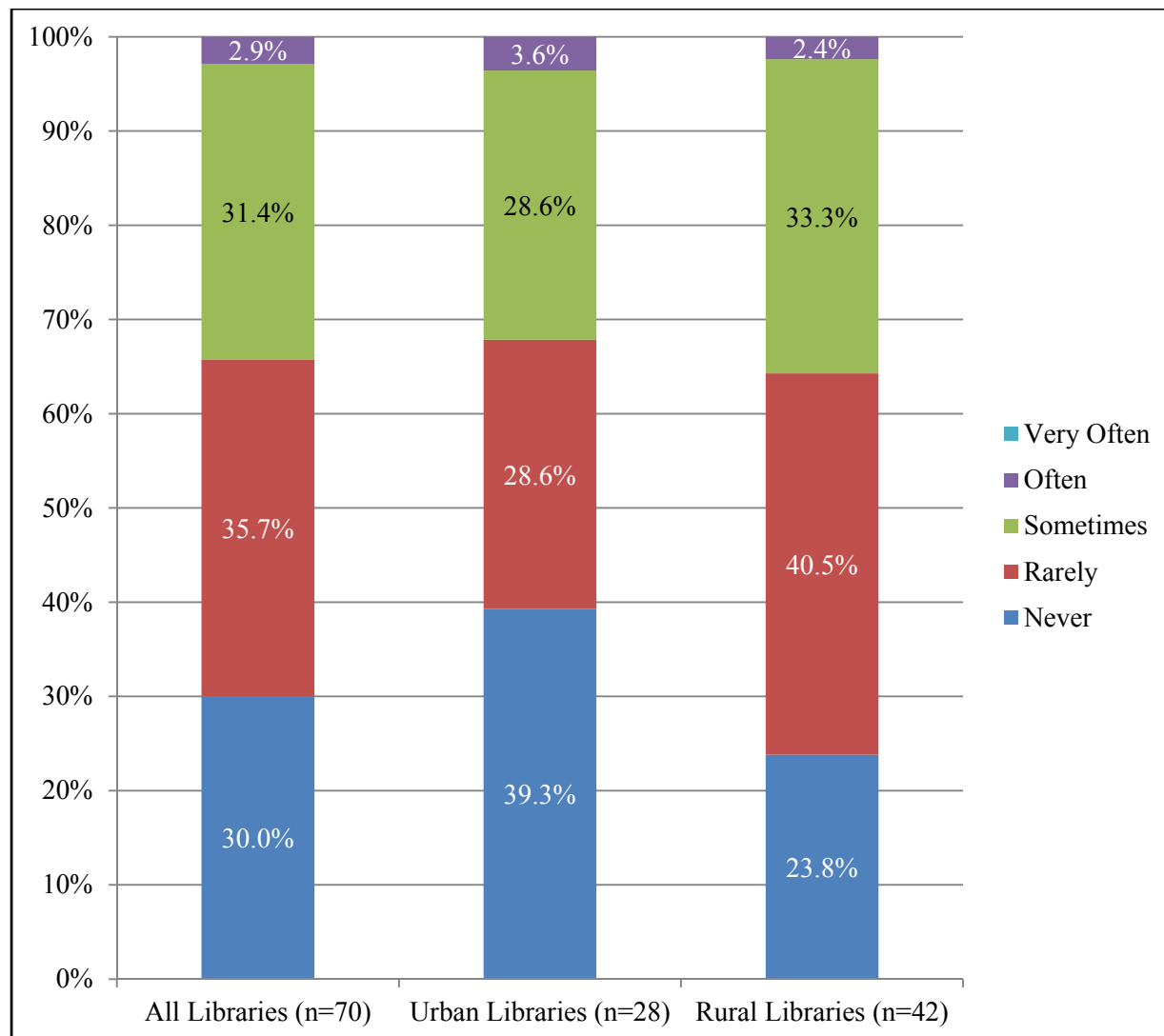
*Response rates differed for each question on the survey; the response rate for this question was n=72.*

**Figure G-8. Frequency of Printing or Copying E-government Documents for Patrons**

Almost all libraries charge patrons for printing and copying services (98.6%; n=70). All urban libraries charge for printing services (100.0%; n=28), and 97.7% (n=42) of rural libraries charge for printing services. The survey also asked whether these services can result in a barrier to accessing e-government information (Figure G-9). About one-third of libraries report that



they receive indications that printing and copying costs can be a factor at least sometimes (34.3%; n=24), but the majority report they receive such indications rarely or never (65.7%; n=46). Rural library patrons appear to perceive printing costs to be more of a barrier than urban library patrons, with 35.7% (n=15) of rural libraries reporting they receive indications that printing costs are a barrier “sometimes” or “often,” versus 32.3% (n=9) of urban libraries. No libraries (0.0%; n=0) reported that they receive indications printing costs are a barrier “very often,” but any indication of financial obstacles to e-government access reflects poorly on the ability of libraries to provide quality e-government services.



*Response rates differed for each question on the survey; the response rate for this question was n=70. No respondents reported that printing and copying charges result in a barrier to accessing e-government information very often.*

**Figure G-9. Frequency of Indications that Printing and Copying Charges Result in a Barrier to Accessing E-government Information**

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### *E-government Activities*

One of the lengthiest sections of the survey asked respondents to identify the types of e-government activities and government websites with which they have assisted patrons. The following tables (G-13 through G-21) present the percentages of respondents who reported that they have assisted patrons with the identified types of employment services, financial services, tax services, social service programs, public access to information services, transportation services, immigration services, and other services. Data demonstrate that Indiana public libraries are assisting patrons with a vast array of e-government activities. The most frequently reported services overall were obtaining state income tax forms and instructions (reported by 94.3%; n=66 of libraries), applying for state unemployment benefits (91.5%; n=65), and obtaining federal income tax forms and instructions (91.4%; n=64). The least frequently reported categories of services were business services (all less than 60%, Table G-14), social services (all less than 65%, Table G-16), and immigration services (all less than 60%, Table G-20).

#### More Frequently Reported E-government Services

Table G-13 demonstrates the types of unemployment benefits and workforce development services that patrons utilize in Indiana public libraries. The most frequently cited tasks in both urban and rural libraries were applying for state unemployment benefits (urban: 93.1%; n=27 and rural: 90.5%; n=38) and applying for jobs using Indiana's WorkOne database (urban: 82.8%; n=24 and rural: 83.3%; n=35). The least frequently cited service was applying for jobs through the USA Jobs database (urban: 48.3%; n=14 and rural: 47.6%; n=20). "Other" activities that were identified for urban (10.3%; n=3) and rural (7.1%; n=3) libraries include resume building classes, assistance with INSPIRE testing and educational research centers, and interview information assistance.

Table G-13: Unemployment Benefits and Workforce Development Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=71)</b>	<b>Urban Libraries (n=29)</b>	<b>Rural Libraries (n=42)</b>
Apply for state unemployment benefits	91.5%	93.1%	90.5%
Job Applications-WorkOne	83.1%	82.8%	83.3%
File for worker's compensation	63.4%	58.6%	66.7%
Career training/adult education services	62.0%	62.1%	61.9%
Job Applications- USA Jobs	47.9%	48.3%	47.6%
Other	8.5%	10.3%	7.1%

*Response rates differed for each question on the survey; the response rate for this question was n=71. Does not add to 100% because institutions reported in multiple categories.*

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Tax-related services are some of the most frequently cited types of services that patrons utilize in Indiana public libraries (Table G-14). Overall, over three-quarters of libraries report patrons use their libraries to obtain state (94.3%; n=66) and federal (91.4%; n=64) income tax forms and instructions and electronically file for state (84.3%; n=59) and federal (81.4%; n=57) taxes. These services are utilized more heavily in rural libraries than urban libraries. For example, 97.6% (n=40) of rural libraries report patrons obtain state income tax forms and instructions vs. 89.7% (n=26) of urban libraries. Additionally, 6.9% (n=2) of urban libraries and 7.3% (n=3) of rural libraries report patrons engaging in “other” tax services e-government activities, such as AARP tax assistance.

Table G-14: Tax Services that Patrons Utilize in the Library

Services	All Libraries (n=70)	Urban Libraries (n=29)	Rural Libraries (n=41)
Obtain state income tax forms/instructions	94.3%	89.7%	97.6%
Obtain federal income tax forms/instructions	91.4%	89.7%	92.7%
Electronically file for state taxes	84.3%	75.9%	90.2%
Electronically file for federal taxes	81.4%	75.9%	85.4%
Research state and local property tax information	51.4%	48.3%	53.7%
Other	7.1%	6.9%	7.3%

*Response rates differed for each question on the survey; the response rate for this question was n=70. Does not add to 100% because institutions reported in multiple categories.*

### Frequently Reported E-government Services

Indiana library patrons appear to utilize public access to information services somewhat frequently (Table G-15). About three-quarters of libraries reported patrons searching the sex offender registry (76.9%; n=50) and accessing state laws and regulations (75.4%; n=49). On the other hand, fewer than half reported patrons accessing local laws and regulations (49.2%; n=32), changing their address (49.2%; n=32), performing tax assessor searches for property tax and values (47.7%; n=31), checking criminal or civil court cases (46.2%; n=30), or checking offender and inmate information (46.2%; n=30). As with business related e-government services, rural libraries reported patrons utilizing public access to information services more often than urban libraries.

For example, where 86.5% (n=32) of rural libraries reported patrons searching the sex offender registry, only 64.3% (n=18) of urban libraries reported patrons utilizing this service in their libraries. While several libraries in urban (10.7%; n=3) and rural areas (10.8%; n=4) reported other activities, only one library offered a specific example of these activities: assisting patrons with information about modifications to child support payments.

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Table G-15: Public Access to E-government Information Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=65)</b>	<b>Urban Libraries (n=28)</b>	<b>Rural Libraries (n=37)</b>
Search sex offender registry	76.9%	64.3%	86.5%
Access state laws and regulations	75.4%	71.4%	78.4%
Access federal laws and regulations	56.9%	53.6%	59.5%
Access local laws and regulations	49.2%	39.3%	56.8%
Change of address	49.2%	42.9%	54.1%
Perform tax assessor searches for property tax and values	47.7%	46.4%	48.6%
Check criminal/civil court cases	46.2%	32.1%	56.8%
Check offender/inmate information	46.2%	32.1%	56.8%
Other	10.8%	10.7%	10.8%

*Response rates differed for each question on the survey; the response rate for this question was n=65. Does not add to 100% because institutions reported in multiple categories.*

Indiana public library patrons also utilize Bureau of Motor Vehicle (BMV) services in their libraries somewhat frequently (Table G-16). The largest overall percentage of patrons in both urban and rural libraries use libraries to locate a BMV office (urban: 77.8%; n=21 and rural: 72.5%; n=29) and to renew their driver's licenses (urban: 77.8%; n=21 and rural: 72.5%; n=29). Also, a large percentage in urban (77.8%; n=21) and rural areas (70.0%; n=28) use their libraries to register or renew the registration of a vehicle. Less than one-third of libraries reported patrons viewing, ordering, or transferring vehicle titles (31.3%; n=21) and paying traffic tickets (16.4%; n=11) in their libraries. Several libraries in urban (11.1%; n=3) and rural areas (10.0%; n=4) reported "other" activities, but they did not note specific examples.

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Table G-16: Bureau of Motor Vehicle (BMV) Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=67)</b>	<b>Urban Libraries (n=27)</b>	<b>Rural Libraries (n=40)</b>
Locate BMV Office	74.6%	77.8%	72.5%
Renew driver's license	74.6%	77.8%	72.5%
Register or renew registration of a vehicle	73.1%	77.8%	70.0%
Pay BMV fees	44.8%	37.0%	50.0%
Obtain a record of driving infractions	41.8%	48.1%	37.5%
Schedule a driver's education service/test/appt.	41.8%	37.0%	45.0%
Renew a professional license	37.3%	44.4%	32.5%
View, order, or transfer vehicle titles	31.3%	29.6%	32.5%
Pay traffic tickets	16.4%	22.2%	12.5%
Other	10.4%	11.1%	10.0%

*Response rates differed for each question on the survey; the response rate for this question was n=67. Does not add to 100% because institutions reported in multiple categories.*

Like public access to information and BMV services, Indiana public libraries reported patrons utilizing healthcare services in their libraries somewhat frequently (Table G-17). The most frequently used healthcare services related to Medicare and Medicaid. Libraries reported researching Medicare benefits is the most frequently used service overall (78.2%; n=43), and this is true for urban (70.8%; n=17) and rural (83.9%; n=26) libraries as well. Rural libraries reported patrons utilizing healthcare service more frequently than urban libraries. For example, 74.2% (n=23) of rural libraries reported patrons applying for Medicaid benefits versus 45.8% (n=11) of urban libraries. Here again, several libraries in urban (16.7%; n=4) and rural areas (12.9%; n=4) reported “other” activities but did not provide specific examples.

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Table G-17: Healthcare Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=55)</b>	<b>Urban Libraries (n=24)</b>	<b>Rural Libraries (n=31)</b>
Research Medicare benefits	78.2%	70.8%	83.9%
Research Medicaid benefits	67.3%	62.5%	71.0%
Apply for Medicare benefits	61.8%	50.0%	71.0%
Apply for Medicaid benefits	61.8%	45.8%	74.2%
Search Rx drug pricing/info	54.5%	54.2%	54.8%
Search elder care providers	54.5%	41.7%	64.5%
Search childcare providers	50.9%	45.8%	54.8%
Medical ins. rate tracking	30.9%	41.7%	22.6%
Other	14.5%	16.7%	12.9%

*Response rates differed for each question on the survey; the response rate for this question was n=55. Does not add to 100% because institutions reported in multiple categories.*

### Less Frequently Reported E-government Services

Business e-government services comprise one of the least frequently used categories of e-government services, based on survey responses (Table G-18). About half of respondents reported that patrons use the library to apply for business licenses (57.4%; n=27), federal loans (51.1%; n=24), state loans (51.1%; n=24), and bankruptcy (51.1%; n=24). Patterns of use vary by location, with more libraries reporting patrons applying for business licenses, federal loans, and state loans in rural libraries (business licenses: 62.5%; n=15; federal loans: 58.3%; n=14; and state loans: 62.5%; n=15) than urban libraries (business licenses: 52.2%; n=12; federal loans: 43.3%; n=10; and state loans: 39.1%; n=9). However, more urban libraries report patrons applying for bankruptcy (56.5%; n=13) than rural libraries (45.8%; n=11). Although 13.0% (n=3) of urban libraries and 12.5% (n=3) of rural libraries reported that patrons used “other” business services in their libraries, no respondents specified examples.

Table G-18: Business Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=47)</b>	<b>Urban Libraries (n=23)</b>	<b>Rural Libraries (n=24)</b>
Apply for business licenses	57.4%	52.2%	62.5%
Apply for federal loans	51.1%	43.5%	58.3%
Apply for state loans	51.1%	39.1%	62.5%
Apply for bankruptcy	51.1%	56.5%	45.8%
Access/apply for copyright/patent	34.0%	26.1%	41.7%
Other	12.8%	13.0%	12.5%

*Response rates differed for each question on the survey; the response rate for this question was n=47. Does not add to 100% because institutions reported in multiple categories.*

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Patrons also appear to be utilizing social services less frequently than other services (Table G-19). Over 60% of libraries reported patrons searching for eligibility requirements for state benefits (64.1%; n=41), applying for veterans benefits (62.5%; n=40), and applying for WIC benefits (60.9%; n=39), but only about one-quarter of libraries reported patrons filing a complaint against a state (28.1%; n=18) or federal (26.6%; n=17) agency or applying for emergency/disaster aid (25.0%; n=16). In contrast to the business services that rural library patrons seem to utilize more than urban library patrons, urban libraries report patrons utilizing social services more frequently than rural libraries do. For example, 69.2% (n=18) of urban libraries reported patrons searching eligibility requirements for state benefits, but only 47.4% (n=18) of rural libraries reported patrons utilizing this social service in their libraries. While several libraries in urban (11.5%; n=3) and rural areas (7.9%; n=3) reported other social service e-government activities, only one library offered a specific example of these activities, saying that their library served as a designated site for The Benefit Bank, Indiana's work support program of Purdue Extension Health and Human Sciences.<sup>63</sup>

Table G-19: Social Services that Patrons Utilize in the Library

<b>Services</b>	<b>All Libraries (n=64)</b>	<b>Urban Libraries (n=26)</b>	<b>Rural Libraries (n=38)</b>
Search eligibility reqmts for state benefits	64.1%	69.2%	47.4%
Apply for veterans benefits	62.5%	73.1%	50.0%
Apply for Women, Infants, and Children (WIC) benefits	60.9%	61.5%	42.1%
Search eligibility reqmts for federal benefits	57.8%	57.7%	39.5%
Apply for disability benefits or social services	50.0%	65.4%	44.7%
Apply for Supplemental Nutrition Assistance Program (SNAP) benefits	43.8%	57.7%	39.5%
Apply for cash assistance	39.1%	53.8%	36.8%
File a complaint against a state agency	28.1%	26.9%	18.4%
File a complaint against a federal agency	26.6%	26.9%	18.4%
Apply for emergency/disaster aid (Federal Emergency Management Agency; FEMA)	25.0%	23.1%	15.8%
Other	12.5%	11.5%	7.9%

*Response rates differed for each question on the survey; the response rate for this question was n=64. Does not add to 100% because institutions reported in multiple categories.*

<sup>63</sup> See <http://www.thebenefitbank.org/INDIANA>. This program provides informal educational programs and educational materials to help match eligible families with government assistance programs.

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Immigration services also appear to be used less frequently in Indiana public libraries (Table G-20). The most frequently cited service is passport applications, but fewer than 60% of libraries reported patrons utilizing this service (58.0%; n=29). Rural libraries (63.3%; n=19) reported patrons utilize this service more frequently than urban libraries (50.0%; n=10), which may be related to physical access to a passport office (passport offices generally are located in urban areas). In contrast, urban libraries reported patrons utilizing citizenship applications (45.0%; n=9), researching immigration services (50.0%; n=10), searching embassy or consulate directories (30.0%; n=6), and checking on immigration case status (40.0%; n=8) more frequently than rural libraries (citizenship applications: 40.0%; n=12; researching immigration: 26.7%; n=8; embassy or consulate directories: 23.3%; n=7; and immigration case status: 10.0%; n=3). More libraries reported “other” services in this category than any other (20.0%; n=10), with an example being green card information.

Table G-20: Immigration Services that Patrons Utilize in the Library

Services	All Libraries (n=50)	Urban Libraries (n=20)	Rural Libraries (n=30)
Passport application	58.0%	50.0%	63.3%
Citizenship application	42.0%	45.0%	40.0%
Research immigration services	36.0%	50.0%	26.7%
Search embassy and consulate directory	26.0%	30.0%	23.3%
Visa application	26.0%	25.0%	26.7%
Check on immigration case status	22.0%	40.0%	10.0%
Other	20.0%	25.0%	20.0%

*Response rates differed for each question on the survey; the response rate for this question was n=50. Does not add to 100% because institutions reported in multiple categories.*

### Other E-government Services and Anecdotes

In addition to the “other” services identified above, libraries reported patrons utilizing a variety of miscellaneous e-government services (Table G-21). The most frequently cited other services, parks and recreation guide (74.1%; n=43) and purchasing a hunting or fishing license (60.3%; n=35) were reported more often in rural libraries than urban libraries. Where 78.1% (n=25) and 62.5% (n=20) of rural libraries reported patrons utilizing parks and recreation guides and purchasing hunting or fishing licenses, respectively, only 69.2% (n=18) and 57.7% (n=15) of urban libraries reported patrons utilizing parks and recreation guides and purchasing hunting or fishing licenses, respectively. This likely relates to the fact that rural areas tend to have more parks, hunting grounds, and places for fishing than urban areas. Finally, 15.4% (n=4) of urban libraries and 12.5% (n=4) of rural libraries reported patrons engaging in “other” services, such as services related to divorce and other judicial matters.



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Table G-21: Other E-government Services that Patrons Utilize in the Library

Services	All Libraries (n=58)	Urban Libraries (n=26)	Rural Libraries (n=32)
Parks and recreations guide	74.1%	69.2%	78.1%
Purchase a hunting/fishing license	60.3%	57.7%	62.5%
Postal Service	56.9%	46.2%	65.6%
Selective service registration	32.8%	34.6%	31.3%
Other	13.8%	15.4%	12.5%

*Response rates differed for each question on the survey; the response rate for this question was n=58. Does not add to 100% because institutions reported in multiple categories.*

In addition to identifying the types of e-government activities that Indiana public libraries engage in, the survey asked respondents to include any personal anecdotes related to e-government service transactions that they thought to be significant or representative of their libraries' e-government service initiatives. Figure G-10 depicts some of these anecdotes. Others included:

- “One patron qualified for a free cell phone through a government office.”
- “We help locally with the divorce forms and many people come to us for local and state laws ranging from tax laws to child custody laws.”
- “Many seek help in finding a tax form online.”
- “Several patrons performed bankruptcy and divorce filings with staff assistance. Many patrons come in to file for unemployment or to use BMV online services.”
- “We have 20-30 people at our doors on Sunday to file for unemployment, so we have 3 computers in our lobby specifically for that.”
- “We served as a question assistance center for Census 2010 at all three of our locations.”
- “A lot of people get the state labor department information.”
- “[Patrons are] able to get tax forms they need quickly, since there are no other agencies providing paper forms in our city.”
- “One patron was looking for what age you can buy a hunting rifle.”
- “One patron was finding out what she needed to force her ex-husband to continue to pay child support.”
- “One patron was looking up information on obtaining custody of his child.”

These anecdotes demonstrate that Indiana public library e-government service initiatives assist patrons with a wide variety of public and personal problems.

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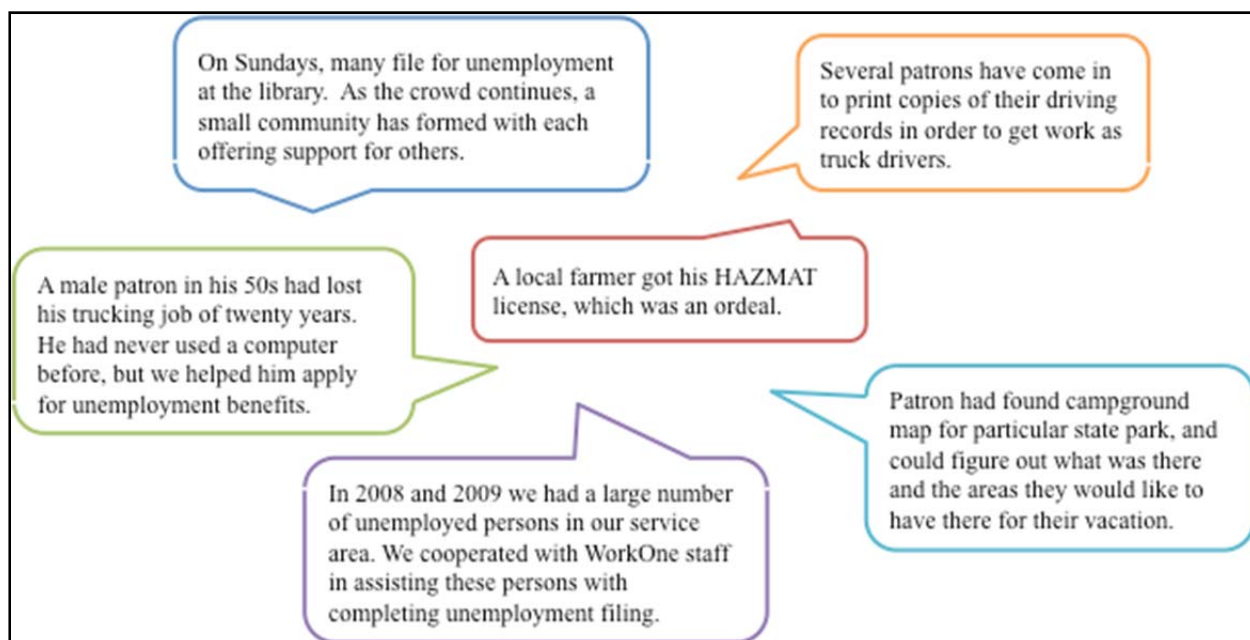


Figure G-10. E-government Service Anecdotes.

### *Benefits*

The survey asked participants to evaluate potential benefits that they believed state, federal, and local agencies (Table G-22) and libraries and communities (Table G-23) receive from public library e-government services. Based on the percentage of respondents who identified each benefit, the top perceived benefit for state, federal, and local agencies was reduced costs from providing paper-based forms, applications and licenses (87.7%; n=64). The next two most frequently cited benefits also related to agencies conserving their own resources: reduced agency staff time in providing information to the public (75.3%; n=55) and reduced technology costs through referral to libraries' PACs (74.0%; n=54). Perception of these benefits does not appear to vary by locality, with both urban and rural libraries citing these three benefits as the top benefits received by agencies from public library e-government service provision.

Libraries do not perceive strongly that agencies receive benefits related to being able to provide better customer service. Only about one-quarter of libraries cite the following benefits agencies receive from public library e-government service provision: improved public understanding of government programs, goals, and objectives (26.0%; n=19), greater ability for government agencies to respond to problems and comments from the public (26.0%; n=19), and more information on the issues and problems faced by local residents (21.9%; n=16). Several respondents in rural areas (6.8%; n=3) also reported other perceived benefits including that the agencies have more time to spend on other duties, do not have to deal with "stressed out" customers, and can reduce the size of their staffs and rely on library staffs to assist with inquiries.

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Table G-22: Perceived Benefits to State, Federal, and Local Agencies from Provision of Public Library E-government Services

<b>Perceived Benefits</b>	<b>All Libraries (n=73)</b>	<b>Urban Libraries (n=29)</b>	<b>Rural Libraries (n=44)</b>
Reduced costs from providing paper-based forms, applications, and licenses	87.7%	89.7%	86.4%
Reduced agency staff time in providing info to the public	75.3%	75.9%	75.0%
Reduced tech costs through referral to library PACs	74.0%	75.9%	72.7%
Continued use of e-gov services by the public	63.0%	62.1%	63.6%
Reduced costs from closing local offices	60.3%	62.1%	59.1%
More efficient delivery of services	52.1%	44.8%	56.8%
Better organization of e-gov resources for public access	47.9%	41.4%	52.3%
Increased use of government programs	41.1%	34.5%	45.5%
Better communication with public about gov projects	37.0%	34.5%	38.6%
Improved public understanding of government programs/goals/objectives	26.0%	20.7%	29.5%
Greater ability for gov agencies to respond to problems and comments	26.0%	20.7%	29.5%
Increased revenue	24.7%	34.5%	18.2%
More info of the issues and problems local residents face	21.9%	20.7%	22.7%
Other	4.1%	0.0%	6.8%

*Response rates differed for each question on the survey; the response rate for this question was n=73. Does not add to 100% because institutions reported in multiple categories.*

Libraries perceive valuable benefits to themselves and their communities from e-government service provision (Table G-23): increased use (81.8%; n=63) and visibility (70.1%; n=54) of the libraries and patrons who are more likely to value and support the libraries (70.1%; n=54). These are also the top benefits perceived by urban and rural libraries: increased use of the library (urban: 86.1%; n=31 and rural: 78.0%; n=32), increased visibility of the library (urban: 72.2%; n=26 and rural: 68.3%; n=28), and patrons who are more likely to value and support the library (urban: 77.8%; n=28 and rural: 63.4%; n=26).

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Libraries are less likely to perceive that they and their communities benefit from increased agency-patron and agency-library interactions. Fewer than 40% of libraries reported library and community benefits from the public having better knowledge of state, federal, and local government services (39.0%; n=30), development of working partnerships with government agencies (39.0%; n=30), provision of an avenue for patrons to complain about poor government programs and services (31.2%; n=24), partnerships with government agencies providing additional resources and equipment to libraries (20.8%; n=16), and library staff having increased knowledge of government programs to seek additional funding (19.5%; n=15). One respondent noted “other” benefits (1.3%; n=1): increased attendance at library computer classes and new patrons coming to the library first for e-government assistance and then becoming regulars using a variety of services.

Table G-23: Perceived Benefits to Libraries and Communities from Provision of Public Library E-government Services

<b>Perceived Benefits</b>	<b>All Libraries (n=77)</b>	<b>Urban Libraries (n=36)</b>	<b>Rural Libraries (n=41)</b>
Increased use of the library	81.8%	86.1%	78.0%
Increased library visibility	70.1%	72.2%	68.3%
Patrons are more likely to value/support library	70.1%	77.8%	63.4%
Library staff have increased knowledge of government programs to assist patrons	64.9%	77.8%	53.7%
Patrons are more satisfied with their use of the library	50.6%	44.4%	56.1%
Public has better knowledge of state, federal, and local government services	39.0%	41.7%	63.4%
Development of working partnerships with government agencies	39.0%	50.0%	29.3%
Provides avenue for patrons to complain about poor gov programs/services	31.2%	47.2%	17.1%
Partnerships with gov agencies provided additional resources/eqpmt to library	20.8%	27.8%	14.6%
Library staff have increased knowledge of gov programs to seek additional funding	19.5%	25.0%	14.6%
Other	1.3%	2.8%	0.0%

*Response rates differed for each question on the survey; the response rate for this question was n=77. Does not add to 100% because institutions reported in multiple categories.*

In addition to identifying the types of benefits that government agencies, libraries, and communities received from public library e-government service provision, the survey asked respondents to include any personal anecdotes of instances where these groups obtained specific benefits from the use of e-government services at the respondents' libraries. These anecdotes can be categorized as relating to benefits to state, federal, and local government agencies or benefits to libraries and communities. Anecdotes about instances where government agencies obtained specific benefits can be categorized as benefits related to reducing agencies' workloads, increasing access to agencies' services, and saving agencies money:

- Relieving agencies' workloads:
  - "We help Workforce One by taking the overload and help people file for unemployment."
  - "We have unemployed workers coming in with little computer skills telling us that WorkForce One sent them to us for help since they weren't able to provide all the assistance the person needed."
- Increasing access to agencies' services:
  - "Internet access we provide allows agencies a means for patrons to access their information. Select staff have been trained to be Gateway Trainers."
  - "We are a Gateway Trainer...assisting local units of gov't when they use Gateway in any of our libraries.<sup>64</sup> Last year our Director trained a Township Trustee at the trustee's request."
- Saving agencies money:
  - "The Indiana Department of Revenue states that it 'relies heavily' on Indiana public libraries for distribution of forms and access to e-filing. It allows the DOR to be more efficient and save tax dollars."
  - "Public Universities are increasingly sending students to the library for proctored exams. This is a service the library provides at no charge but it causes a strain on our staff time and affects the number of available public computers."
  - "Government agencies mainly benefit from reduced costs on their end - but that means the work shifts from those agencies to libraries. The need for citizens to access government services keeps increasing while all of our budgets are getting reduced. We are not well-trained in helping patrons navigate the tricky waters of getting services, which means they are under-served."

Anecdotes about instances where libraries or communities obtained specific benefits can be categorized as increased knowledge of staff and patrons, increased access to e-government services and resources, and gaining new library users and users who perceive the value of libraries:

- Increased knowledge of staff and patrons:
  - "People are taught by librarians who are patient and also capable of teaching."
  - "I have gained knowledge in tax preparation and family services forms to always be able to help my patrons."

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<sup>64</sup> The Library project liaison informed us that Gateway is the program by the Department Of Local Government Finance where local government officials can complete their budget forms online.

- Increased access to e-government services and resources:
  - “We partner with Jackson Co[unty] United Way to provide a site where they can assist people in filing state and federal taxes...last year they helped 155 people.”
  - “At tax time, it has always been important to have forms and access to the less common forms online. Patrons are very appreciative of having a source for their tax needs.”
  - “Patrons who are not regular users of the library are happy that we will help them with the tax form needs.”
  - “Patrons spend time using library computers to process electronic applications instead of waiting in line at a government office. We have many people doing the defensive driving course.”
- Gaining new library users and users who perceive the value of libraries:
  - “We have many patrons coming in filing for unemployment who see the library for the first time and realize that it is a major community asset.”
  - “When people come in to find things online, our staff usually talks them into signing up for one of our beginning computer classes. There is more traffic on Sundays due to unemployment filing.”
  - “The availability of computers for filing unemployment and doing job searches has brought a lot of people in who might not have visited otherwise.”
  - “The library gains advocates who support libraries.”

The anecdotes above, combined with the benefits listed in Tables G-22 and G-23, demonstrate that respondents recognize that library e-government service provision benefits government agencies, libraries, and communities. Respondents perceive that government agencies mainly benefit from reduced costs and minimized staff workloads while libraries must deal with increased costs, planning, and time commitments with little support from the agencies. Although the extra work can be burdensome in light of diminishing budgets and inadequate training opportunities, respondents acknowledge that public library e-government service provision helps increase libraries’ usage and visibility, as well as patron support

### *Suggested Improvements*

In a series of open-ended questions, the survey asked respondents to identify suggestions for improving e-government services. The survey broke this into three parties who could be responsible for the improvements: libraries, the Indiana State Library, and government agencies. A fourth question asked respondents for suggestions to improving the Indiana e-government Web portal at IN.gov.

#### Suggestions That Libraries Might Institute to Improve E-government Services

Respondents’ suggestions for how libraries might improve e-government services related to increasing support for library technology, staffing, and patron education. Suggestions for libraries include:

- Technology support:

- New computers, more computers, and timely computer replacement,
  - Increased broadband connectivity at the front door and workstation,
  - Better website organization, and
  - Additional printers or setting up quick-print stations for e-government services;
- Staffing support:
  - Additional training for staff to become more computer literate,
  - Provision of how-to worksheets and guides for staff use,
  - Additional staffing at high use times,
  - Additional volunteers to help with services like tax preparation, and
  - Quick links to government websites or an on-hand directory of government resources for librarians; and
- Supporting patron education:
  - Additional training for patrons to become more computer literate,
  - Programming to inform patrons what services are available,
  - Training sessions for patrons on how to use government websites,
  - Discounts for copies of tax forms and other government documents, and
  - Additional computer time for patrons who are completing e-government forms and applications.

These suggestions for libraries come from libraries themselves, so they are likely recommendations that libraries are willing to undertake.

#### Suggestions That the Indiana State Library Might Institute to Improve E-government Services

Suggestions for how the Library might help improve e-government services also relate to technology and staffing support, as well as marketing and coordinating activities. Suggestions for the Library include:

- Technology support:
  - Additional funding for computers and connectivity,
  - Helping libraries meet their replacement schedules,
  - More flexible Web page providers,
  - Supporting libraries who have insufficient IT staff,
  - Providing LibGuides and website redesign assistance for e-government services,
  - Purchasing databases that have government forms available, and
  - Increasing the State Technology Fund while requesting more LSTA grants for technology;
- Staffing support:
  - Offering more face-to-face training (*not webinars*),
  - Additional WebJunction classes on e-government services,
  - Coordinating training with government agencies, including relevant government information in the “Wednesday Word” or creating another newsletter for libraries about e-government services, and
  - Training library staffs about the legality and liability of providing certain types of e-government services; and

- Marketing and coordination:
  - Publically promoting libraries' roles in providing e-government services,
  - Coordinating the distribution of e-government materials and forms to libraries to ensure equal distribution and adequate supplies, and
  - Having a dedicated staff member as a contact for e-government inquiries at the Indiana State Library.

These suggestions from libraries for the Indiana State Library indicate that the libraries see the state library as being in a leadership position where the state library could take on more coordination efforts.

#### Suggestions that Indiana Government Agencies Might Institute to Improve E-government Services

Respondents' suggested ways that Indiana government agencies and/or staff might institute to improve e-government services related to sharing information, coordinating services, and supporting libraries' efforts. Suggestions for government agencies include:

- Sharing information:
  - Helping to prepare libraries for additional e-government service responsibilities by making sure that information provided on government websites and applications is correct and complete,
  - Informing libraries in advance when large groups of people will be directed to them for assistance,
  - Training library staff on how forms should be filled out,
  - Providing more direct, confidential resources for patrons so that libraries can address patrons' security and privacy concerns,
  - Better maintaining websites and forms to prevent broken links, and
  - Creating more user-friendly platforms and improved tutorials for the public;
- Coordination:
  - Making staff members available to answer questions or creating a library liaison,
  - Coordinating services with the Indiana State Library,
  - Providing brochures and materials about services available online with Web addresses, and
  - Providing pathfinders or one page help sheets to libraries; and
- Supporting libraries' efforts:
  - Provision of additional materials and resources,
  - Helping to fund the cost of maintaining computers and increasing connectivity at public libraries,
  - Providing workstations for e-government services at libraries with all necessary equipment and materials,
  - Funding additional staff, research, and copy services for e-government services at libraries,
  - Acknowledging public libraries' role in providing e-government services, and



- Having realistic expectations about library staffs' and patrons' computer skills and access to the Internet.

These suggestions indicate that libraries want to work with government agencies, but the agencies will need to meet them halfway.

Suggestions for Improvements That Could Be Made to the Indiana State Government Website for Improved E-government Services

In the final open-ended question, the survey asked respondents to list three suggestions for improvements that could be made to the Indiana government Web portal, IN.gov. Suggestions primarily related to usability issues:

- Simpler design and a more user-friendly interface,
- A better directory to make it easier to find locations, offices, and people not visible on the home page,
- Providing phone numbers for all services and not just e-mail forms,
- A better search function that prioritizes Web pages and not documents about the search term, and highlighting and linking popular services to the front page.

Another suggestion was for additional tutorials on how to use the website for those who are not computer literate or who have limited searching skills.

**Key Themes**

Six key themes emerged from the survey findings in this report:

- Respondents believe that they have inadequate technology to support e-government service provision;
- There appears to be some discrepancy in the amount of time respondents perceive their libraries spend on the provision of e-government services;
- Certain e-government services are more popular than others in public libraries;
- Lack of sufficient training, background, and knowledge makes librarians and library staff uncomfortable with providing e-government services;
- Public library e-government service provision benefits agencies, libraries, and communities; and
- Respondents noted the need for additional library-agency collaboration to improve the quality of e-government service provision.

Each of these themes is discussed below.

Inadequate technology is a significant barrier to public library e-government service provision. Many libraries are underserved by their land-based and wireless Internet connections. They are receiving slower connection speeds than promised by their ISPs and many find their wireless connections to be inadequate for staff and patron needs. Libraries may be offering less

than ideal service for e-government activities and daily programming due to their taxed broadband connections. Also, both urban and rural libraries struggle with 3-year replacement schedules for technology and with having adequate IT support.

The survey results indicate that respondents are not sure how much time their libraries dedicate to e-government service provision. Over three quarters of both urban and rural survey respondents estimate their library staffs spend <10% of their time engaging in e-government service transactions. However, when asked how much time professionals and paraprofessionals spent on e-government transactions, respondents reported that urban library staffs spend about 40% of their time and rural library staffs spend about 15% of their time on e-government transactions. This discrepancy could be the result of several different factors such as a disconnect between the library administration and staff regarding the frequency of e-government services, an uneven distribution of work among certain positions when dealing with patrons with e-government inquiries, or errors with the self-reported data. Clearly, however, this is an area for additional research.

State-level e-government services are more popular than local and federal e-government services in Indiana public libraries. Both urban and rural libraries spend the largest percentages of their e-government time on state-level e-government service transactions. Libraries are assisting patrons with a variety of issues related to the recession and the high unemployment rates. Several of the most popular e-government transaction activities include assisting patrons with filing for unemployment, filing for workers compensation, searching and applying for jobs, applying for business loans, and taking advantage of career development and adult education opportunities. Libraries also assist patrons with tax preparation and electronic filing and report being burdened by these duties due to a shortage of forms and privacy concerns of patrons.

Librarians and library staff often feel ill-prepared to provide high quality e-government services. Both urban and rural libraries identified a lack of training or inadequate training as obstacles to successfully fulfilling their e-government service provision, as well as a lack of financial and moral support from the Library and government agencies. Librarians and patrons alike are concerned with security, privacy, and liability issues related to e-government service transactions at libraries. Despite the relatively small amount of time spent on e-government service transactions, libraries feel burdened and unprepared to deal with the additional duties that accompany their e-government service provision.

While they may feel uncomfortable providing e-government services, libraries acknowledge a variety of benefits from public library e-government service provision. Survey respondents perceive that library e-government service provisions benefit government agencies by reducing their operational budgets and workload. They also perceive that library e-government services benefit libraries and communities by increasing the visibility and use of libraries, increasing patron satisfaction, and garnering additional support for library programming.

Finally, libraries report a need for development of collaborative efforts between libraries and agencies in e-government service provision. Libraries desire more communication

opportunities with the Library and the government agencies they seek to help regarding e-government services. They believe that increased communication and the ability to work with an e-government liaison within these groups will improve their ability to provide good e-government services. Libraries desire more user-friendly e-government print materials, online tutorials, and websites for both libraries and patrons.

These themes indicate that even while e-government services benefit libraries through increased use and visibility, many libraries struggle to supply enough bandwidth, equipment, materials, staffing, and IT support to provide excellent services. This leads many librarians to feel overwhelmed and burdened despite the fact that e-government service transactions do not occupy a large percentage of staff time. Inadequate training and lack of collaboration between libraries and agencies or the Library and agencies causes added anxiety.

## **Recommendations**

Based on these key themes and the suggested improvements reported by survey respondents, the study team offers the following recommendations:

- Conduct an in-depth assessment of the bandwidth and equipment needed to address technology shortages for all libraries and to identify underserved libraries;
- Consider coordinating statewide IT support to assist libraries with equipment maintenance and 3- year replacement schedules;
- Develop and implement a more comprehensive study to assess the actual time and resource commitment for providing e-government services in public libraries using metrics such as click-through tracking, keylogger reports, manual activity logs, etc.;
- Work with government agencies to create tutorials for using government websites and properly completing e-government forms;
- Work with government agencies to increase awareness of offered services among library staff and patrons;
- Create a government agency library liaison to be “on call” for e-government services questions;
- Develop a database of common e-government forms, applications, and instruction sheets for quick reference during e-government transactions;
- Create a guide/training tutorial on e-government security, privacy, liability, and legality issues for library staff;
- Seek avenues for additional funding of e-government service provisions, possibly including collaborative funding with government agencies increasing the State Technology Fund, or applying for additional LSTA grants; and
- Work with government agencies to promote library e-government service provision.

These recommendations are based on the data gathered from the survey and are not comprehensive for the entire project. Additional recommendations will be made in the final report.

## **Conclusion**

The survey findings discussed in this report addressed a broad range of questions related to e-government services currently being provided in Indiana public libraries, costs of these services (in terms of staff support, equipment, materials, and other measures), and obstacles to and benefits of Indiana public libraries' e-government service provision. Survey findings demonstrate that while providing e-government services may not constitute a significant amount of library services efforts, library e-government service provision burdens many libraries by adding costs that strain limited budgets and requiring additional bandwidth, technology, and materials. Additionally, libraries perceive benefits from providing e-government services such as increased visibility, use, and patron satisfaction, and improving the quality e-government service provision require more training, computer literacy, and knowledge of government programs, privacy, security, liability, and legal issues.

On their own, it is unlikely that many libraries will be able to provide such training adequately. Since libraries will continue to deal with these issues as government agencies continue to place resources, forms, and applications online, additional training and collaborative relationships among libraries, agencies, and the Library will be necessary to promote successful public library e-government service provision. Libraries also need increased broadband funding and accessibility to support e-government services.

## **APPENDIX H: ACTIVITY LOG CASE STUDIES FINDINGS**

### **Results**

For this portion of the research, the study team decided to evaluate rural and urban libraries individually. Below, Tables H-1 and H-2 demonstrate the cumulative number of e-government service transactions as reported by professional and paraprofessional staff members in five rural and five urban libraries over a 5-day period. This analysis refers to the four categories of staff as:

- Rural professionals: R-pro;
- Rural paraprofessionals: R-para;
- Urban professionals: U-pro; and
- Urban paraprofessionals: U-para.

These designations are used for simplicity and brevity.

As evidenced by Table H-1, there is nearly equal professional and paraprofessional participation in e-government service provision in rural libraries, with R-pro reporting 165 and R-para reporting 149 e-government transactions in the 5-day period. There is some discrepancy in the average length of time R-pro and R-para spend on e-government transactions. Professional respondents in most rural counties, with the exception of Union County Public Library, tend to engage in shorter (i.e., 10 minutes or less) e-government service transactions. These shorter transactions account for 100.0% of the transactions reported by the R-pro in Argos Public Library and Princeton Public Library, 87.5% in Pulaski Public Library, and 60.0% in Culver-Union Township Public Library. However, shorter transactions are the majority of transactions completed by R-para only in Argos Public Library (94.1%) and Pulaski Public Library (52.6%), indicating that R-para seem to engage in longer e-government transactions than do R-pro.

Table H-1: Cumulative E-government Service Transaction Summary for Rural Libraries

<b>Library</b>	<b>Professional</b>					<b>Paraprofessional</b>				
	<b>≤ 5 Mins</b>	<b>6-10 Mins</b>	<b>11-15 Mins</b>	<b>16-20 Mins</b>	<b>≥ 20 Mins</b>	<b>≤ 5 Mins</b>	<b>6-10 Mins</b>	<b>11-15 Mins</b>	<b>16-20 Mins</b>	<b>≥ 20 Mins</b>
Argos PL	18	0	0	0	0	14	2	1	0	0
Culver-Union Twp PL	2	1	1	0	1	0	2	0	0	3
Princeton PL	1	3	0	0	0	0	0	1	0	1
Pulaski PL	12	2	2	0	0	9	1	2	4	3
Union Co PL	23	7	15	22	55	25	12	15	17	37

In contrast to the fairly even split of the e-government transaction load between professional and paraprofessional staff in rural libraries, U-para tend to engage in more e-government transactions than do U-pro (242 total transactions for U-para vs. 179 for U-pro; or about 35% more transactions in the 5-day period; See Table H-2). Unlike the rural libraries

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where R-para tend to engage in longer e-government transactions, both U-pro and U-para engage mostly in shorter transactions (over 50% for all urban respondents).

Table H-2: Cumulative E-government Service Transaction Summary for Urban Libraries

Library	Professional					Paraprofessional				
	≤ 5 Mins	6-10 Mins	11-15 Mins	16-20 Mins	≥ 20 Mins	≤ 5 Mins	6-10 Mins	11-15 Mins	16-20 Mins	≥ 20 Mins
DuPont PL	8	1	0	0	0	28	3	2	0	0
Butler PL	8	1	0	2	1	4	0	0	0	0
Charlestown Clark Co PL	63	9	2	0	3	25	7	0	0	4
Knox Co PL	55	6	4	1	0	82	10	0	0	0
Lebanon PL	1	7	5	0	2	55	12	5	3	2

Table H-3 displays the location of and equipment used for the e-government service transactions as reported over the 5-day period by the same urban and rural libraries listed previously. The location is directly tied to the equipment used with the assumption that the Reference Desk, PACs, and staff PCs are fixed locations, whereas transactions using laptops, other electrical equipment, or no electrical equipment could occur at any location in the library. Table H-3 demonstrates that while the majority of transactions took place at the Reference Desk (26.6%) or using PACs (26.0% for both patron and staff PAC transactions), patrons do ask for assistance with e-government research, forms, and applications while using their own computers (5.8% at a user's laptop), non-computer equipment such as fax machines and scanners (5.5%), or without the assistance of any electronic equipment at all (17.4%).

Table H-3: Locations of E-government Service Transactions

Library	Patrons						Staff		
	Ref Desk	PACs	Lib. Laptop	User Laptop	Other Elec. Equip	No Elec. Equip	PC	PACs	No Elect Equip
Argos PL	4	16	0	0	0	4	0	0	0
Culver-Union Twp PL	2	8	0	0	0	0	0	0	0
Princeton PL	1	1	2	1	0	0	0	1	0
Pulaski PL	10	4	5	5	5	5	2	1	1
Union Co PL	9	60	7	33	0	0	31	17	73
DuPont PL	25	22	0	0	0	2	3	0	0
Butler PL	13	3	0	0	0	0	0	0	0
Charlestown Clark Co PL	12	20	5	2	26	47	1	0	1
Knox Co PL	49	30	0	0	10	68	1	0	0
Lebanon PL	72	9	6	2	0	3	0	0	0

## **Example Cases**

A benefit of the activity logs is that they can provide a snapshot of e-government service provision in a given library, for example, the Argos Public Library. For a sample week, the professional staff member completed 18 e-government transactions, and the paraprofessional staff member completed 16. All but three of the transactions were completed within five minutes. Also, the majority of transactions occurred at a patron's PAC, with a few at the Reference Desk and none using laptops or other electronic equipment. For this one library, e-government appears to occupy only a small portion of both the R-pro and R-pa's time.

While the Union County Public Library is also a rural library, here e-government transactions occupy a substantially larger portion of staff member's time, with the professional staff member completing 122 e-government transactions in the 5-day period and the paraprofessional staff member completing 106. Not only do there appear to be more transactions occurring here, but each transaction takes more time, given that 81.1% of the professional staff member's transactions and 76.4% of the paraprofessional staff member's transactions took over five minutes to complete. Like the Argos Public Library, the majority of transactions occur using patron PACs, but in the Union County Public Library, e-government transactions also occurred using library and user laptops and staff PCs.

These two cases show the variation in e-government service provision in rural Indiana public libraries. Looking at urban public libraries also shows variation. Like the Argos Public Library, the majority of e-government transactions were completed within five minutes (85.7%). Looking at the ratio of R-pro to R-pa e-government transactions shows variance from the Argos Public Library and the Union County Public Library. Whereas the R-pro and R-pa conducted a similar number of e-government transactions at the Argos Public Library and the R-pro completed more e-government transactions than the R-pa at the Union County Public Library, at the DuPont Public Library the R-pa completed substantially more (n=33) e-government transactions in the 5-day period than the R-pro did (n=9). However, although this library serves a larger population than either rural library, the two staff members combined completed 42 e-government transactions in the 5-day period, considerably fewer than the 228 transactions in the Union County Public Library. In the DuPont Public Library, unlike either the Argos or Union County Public Libraries, a fairly equal number of e-government transactions occur using the Reference Desk or the PACs.

The picture of e-government service provision at the Lebanon Public Library also varies from the Argos, Union County, and DuPont Public Libraries. An urban library, the Lebanon Public Library staff completed 92 e-government transactions in the 5-day period, more than their urban counterpart (DuPont Public Library) but still less than the rural Union County Public Library (n=228). Like the urban DuPont Public Library, at the Lebanon Public Library the R-pa completed substantially more e-government transactions in the 5-day period (n=77) than the R-pro (n=15). For the R-pa, the majority of transactions were completed within five minutes (71.4%), but for the R-pro, the majority took longer than five minutes to complete (93.3%). Overall, 60.9% of the e-government transactions reported for the Lebanon Public Library R-pro and R-pa during the 5-day period were completed within five minutes, less than the percentage

of transactions completed within five minutes at the DuPont Public Library (85.7%). R-paras at both of the urban public libraries seem to engage in more e-government transactions than their rural counterparts. And, unlike the other three libraries where PACs are used for a large portion of e-government transactions, at the Lebanon Public Library, the vast majority of transactions occur using the Reference Desk, with only a few using PACs, a library laptop, or a user's laptop.

Looking at the activity logs from an R-pro and R-para at two urban and two rural public libraries shows a wide variation in the picture of e-government service provision in Indiana public libraries. The number of transactions varies, whether more transactions are completed by R-pro or R-para varies, length of time per transaction varies, and equipment used varies. There is variation between the two rural and the two urban public libraries, as well as variation among all four libraries. If these four public libraries are so different, it is possible to extrapolate that the picture of e-government service provision may vary considerably among all Indiana public libraries. This suggests that understanding e-government service provision in Indiana public libraries may require more situation-based research methods, such as onsite case studies, observation, etc.

## **Findings**

Analysis of these sample activity logs identifies four key themes regarding e-government service provision in Indiana public libraries:

- Who provides e-government services in Indiana public libraries;
- Where e-government transactions occur in Indiana public libraries;
- Existence of staff-to-staff e-government service provision; and
- E-government service provision appears to vary by situation.

In addition, analysis shows some limitations of the activity log approach, and suggests findings with regard to the method. Each of these five topics is addressed below.

### *Who Provides E-government Services in Indiana Public Libraries*

While rural libraries do not engage in as many transactions overall as urban libraries, branches such as Argos Public Library, Pulaski Public Library, and Union County Public Library are consistently busy providing e-government services. In fact, the Union County Public Library completed the most e-government transactions during the 5-day period, out of all 10 cases (n=228). Also, rural public library staff members are engaging in lengthy transactions with patrons, with a larger portion of transactions taking longer than 10 minutes than in urban public libraries (42.7% of e-government transactions in rural public libraries vs. 8.6% in urban public libraries).

These lengthy transactions may strain rural libraries which usually have fewer staff members available for patron services and fewer computers available to aid with inquiries. Also, it is necessary to consider that a smaller number of transactions does not necessarily equate to less time and resources dedicated to e-government service as a percentage of the time and resources



spent on all services. Rural libraries, by definition, serve smaller populations than urban libraries, so one would assume urban libraries to show more e-government transactions, as well as more overall transactions, than rural libraries.

In both rural and urban libraries, paraprofessionals are often just as busy engaging in e-government service transactions as professionals. This is visible in the case study examinations of the rural Argos Public Library (R-pro and R-para completed a similar number of transactions) and the urban DuPont and Lebanon Public Libraries (in both, R-para completed more transactions than the R-pro). This may lead to an inconsistent quality of service as paraprofessionals may not have advanced reference training to address complicated e-government inquiries and resources.

#### *Where E-government Transactions Occur in Indiana Public Libraries*

While many transactions take place at the reference desk or on PACs, other e-government transactions use patrons' PCs or no electronic equipment at all. These transactions can include sharing a website address with a patron or helping to prepare applications and forms printed from a government website (or in the case of tax forms, mailed to the library from the Internal Revenue Service). These analog transactions mean that ISP- and library-generated reports of e-government transactions tabulated using electronic means such as click-through tracking software or browser cache reports may not be inclusive of the entire range of e-government services being offered by Indiana public libraries.

Transactions using library laptops, personal laptops, or other electronic equipment such as tablets require a strong wireless connection in order to be satisfactory for patrons. The frequency of these transactions occurring in the case studies demonstrates that there is a strong need for free wireless access in Indiana public libraries to support these transactions. Libraries should evaluate their broadband capabilities for wired and wireless Internet in order to meet their patrons' needs, keeping in mind that sharing one connection for wired and wireless Internet services can degrade the speeds experienced at individual workstations.

#### *Existence of Staff-to-Staff E-government Service Provision*

Transactions between staff members are also common in libraries with e-government service initiatives. These can be collaborative efforts in preparation for patron transactions (such as reviewing the availability of forms and applications) or training in order to familiarize staff with government websites and resources. These transactions signify that not all librarians are fully prepared to deal with patron requests on their own and that further training would be beneficial in order to help prepare libraries for the ever-changing e-government needs of their patrons.

*E-government Service Provision Appears to Vary by Situation*

The case study examination of the Argos, Union County, DuPont, and Lebanon Public Libraries shows a wide variation in e-government service provision. There are differences between urban and rural libraries, differences between the rural libraries, and difference between the urban libraries. These differences run the gamut, from total number of transactions, length of transactions, whether the majority of transactions are completed by professionals or paraprofessionals, and what equipment is used during the transactions. Basically, the picture of e-government service provision in Indiana Public Libraries appears to vary situationally. That is, the situation in each library likely is impacting the picture of e-government service provision.

*Findings Regarding the Activity Log Method*

While the activity logs offer a glimpse of who provides e-government services and where transactions occur, they offer little evidence of what type of transactions are taking place and what kinds of benefits patrons, libraries, and government agencies receive from Indiana public library e-government service initiatives. Information regarding these topics can be found in Appendices G (survey findings), I (agency interview findings), and J (focus group findings).

In light of the low participation rate for the activity logs and the incomplete logs that were submitted, the study team suggests the following measure for future revisions of this exercise in order to procure a more usable data pool for costing exercises:

- Choose a smaller, sample group for participation instead of sending out packets to each and every outlet, allowing for a more targeted recruitment strategy and more opportunities for follow up with participants;
- Require participants to record exact times of transactions instead of ranges in order to have more specific results for costing measures;
- For the recruited sample group, personalize the activity log forms so that all desirable identification information is included (e.g., library outlet name, professional title, etc.), minimizing opportunities for incomplete or “mystery logs” that cannot be attributed to any particular outlet; and
- Average the results of individual outlet-level logs into system-level estimates for further use with other Indiana State Library statistics such as the *2010 Public Library Annual Report*.

Other revisions also could be made to personalize the project with the intention of learning more details about the types of transactions, websites visited, number of government websites visited in a single transaction, or use of Ask-a-Librarian services for e-government inquiries.

**Conclusion and Potential for Costing E-government Services**

While this activity log exercise was not entirely successful for this project, the information gathered from a revised exercise potentially could be utilized for costing in

collaboration with statistics gathered from the *2010 Public Library Annual Report* from the Indiana State Library. Below is a brief overview of these possibilities:

- The average recorded time for e-government service transactions in a library system (including all participating outlets) over the 5-day period could be extrapolated to a 52-week period and then used as a means of costing salary support using the 2010 Indiana statistics for “Library Staff” expenditures.<sup>65</sup>
- The average recorded time for e-government service transactions in a library system (including all participating outlets) over the 5-day period could be extrapolated to a 52-week period and then used as a means of costing equipment support using the locations of e-government service transactions recorded (the equipment at those locations) on the activity logs and the 2010 Indiana statistics for “Furniture and Equipment” expenditures.<sup>66</sup>
- The activity log data could be used to estimate the percentage of reference transactions that are e-government service transactions by extrapolating the average number of transactions during the 5-day period, into a 52-week period and then dividing the resulting figure by the “Annual Reference Transactions” included in the 2010 Indiana statistics.<sup>67</sup>
- The activity log data could be used to estimate the percentage of PAC usage that is attributed to e-government services by extrapolating the average number of transactions during the 5-day period, into a 52-week period and then dividing the resulting figure by the “Users of Public Internet Computers per Year” included in the 2010 Indiana statistics.<sup>68</sup>

In summation, while the study team was unable to use the activity logs for costing exercises due to the low participation rate and plentitude of incomplete information, it was not without merit. The activity logs exemplify the various ways in which e-government service initiatives manifest as examples from public libraries across Indiana. Further, the exercise itself holds potential for future revisions that could be used for costing in collaboration with Indiana statistics such as those in the *2010 Public Library Annual Report*.

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<sup>65</sup> Statistics of Indiana Public Libraries. (2010). *2010 public library annual report: Table 10: Library staff*.

Retrieved from: <http://www.in.gov/library/4300.htm>

<sup>66</sup> Statistics of Indiana Public Libraries. (2010). *2010 public library annual report: Table 6: Library operating expenditures*. Retrieved from: <http://www.in.gov/library/4300.htm>

<sup>67</sup> Statistics of Indiana Public Libraries. (2010). *2010 public library annual report: Table 8: Library services (excluding programs)*. Retrieved from: <http://www.in.gov/library/4300.htm>

<sup>68</sup> Ibid.

## **APPENDIX I: AGENCY INTERVIEWS FINDINGS**

### **Findings from the Interviews**

#### *Agencies' Activities and Involvement in E-government Services*

Officials at government agencies were asked to describe their agencies' activities and involvement in providing e-government services to state residents. Interviewees' responses indicate that government agencies provide e-government services at different levels. Some agencies, such as the BMV and the Department of Natural Resources (DNR), provide a high level of e-government services. For example, the BMV interviewee said that drivers' license renewal notifications sent via mail instruct Indianans to go directly to <http://myBMV.com> for renewals and other services. Also, the BMV is engaged in some collaborative services, having worked with the Indiana Library Federation to roll-out their initiative for online services.

The DNR interviewee also described a fairly high level of e-government services. The DNR website allows individuals to purchase hunting, fishing, and trapping licenses and to make reservations for campgrounds, shelter houses, and inns located in the state parks. The DNR has an iPhone application, and the State Police also offer such sophisticated e-government service. One respondent explained, "The State Police, Commercial Vehicle Enforcement Division has developed an app for use with BlackBerry for automating bus inspections."

The DNR and BMV also use Web 2.0 applications. The DNR supports over 50 FaceBook pages for DNR properties, as well as Division FaceBook pages, as part of the DNR outreach effort. These are effective because there is a designated person to manage the pages. All of the properties use GIS mapping for information on where to fish or hunt, launch your boat, hike, or bike. The State Parks System also fundraises via an online store. The BMV has a YouTube channel and they recently completed a series of value-added videos (e.g., where to put the new sticker on your license plate). They want to reach as many people as possible, encouraging the use of e-government services instead of visiting a BMV branch office.

The respondents from the Division of Family Resources (DFR) at the Family and Social Services Administration (FSSA) noted that the DFR offers important online services to applicable state residents. Residents can apply for food stamps, health coverage, or cash assistance online. Residents also can manage their current benefits online. The interviewee did note that many of the clients who require these services do not have a home computer, and, although there is at least one DFR office in each county and each of those offices has at least one computer for public use, the DFR staff encourage residents to go to the public library to access these services. This is an example of an agency-driven e-government service.

Another e-government activity that state agencies are involved with is providing service to unemployed residents of Indiana. The DWD provides online services for filing for unemployment, submitting unemployment vouchers, and applying for jobs, among other online services. The IN.gov Web portal has a link to state forms, which DWD staff use to find forms they may need to do their jobs. In an example of e-government services that are outsourced

someplace other than the libraries, every person who files for unemployment in Indiana is required to post a resume on CareerConnect (<http://IndianaCareerConnect.com>), a popular service that is run by a third party. CareerConnect is similar to the online job search portal Monster.com (<http://www.monster.com>), but it is free to use.

*Agencies' Specific Experiences with E-government Services*

The IN.gov Web portal provides e-government services through the agencies, these services are varied, and can involve collaboration with other, nongovernmental organizations in innovative ways. For example, a respondent explained that “The Department of Child Services has a program call Intercept. If an individual in Indiana is behind on child support and has won money at a casino, the casinos in the state can withhold from that person’s winnings.”

Agencies’ experiences with e-government have been both positive and negative. The DWD’s e-government services are heavily used by the citizens of the state, and according to a respondent, most of the experiences have been positive. The DNR has had very positive experiences with e-government services. A respondent told about an annual event, the Hoosier Outdoor Experience, for which the DNR encourages individuals to sign-up online. It is a free event, so not everyone signs up online, however the DNR can use the online registrations in planning for the event, knowing that historically, between 33-50% of participants register online.

The BMV has made a concerted effort over the last 5 years to provide more services online, and to encourage use of those services. According to a respondent, when Indianans were first able to renew their registrations online, the BMV recognized that this would be a major behavior change for many customers, so they offered a \$5.00 discount to anyone who renewed online. The respondent said: “This has been a successful endeavor, as the over half of the registration renewals are now done online, and the website has seen a 25% growth in the last year, with 400,000 unique visitors.”

Some negative experiences relate to outsourced e-government services. The DWD respondent indicated that some employers have negative feedback regarding CareerConnect, saying that the higher-end talent job-seekers often do not post their resumes on CareerConnect, so it is not as valuable to them when trying to fill those positions.

Another negative experience resulted in an agency simplifying its e-government procedures. According to a respondent, the FSSA completed a massive overhaul of their online system for applying for food stamp and cash assistance online services due to criticisms over the complexity of the process. “The application was developed for people who may have low digital literacy skills. The FSSA is very cognizant of this issue and they developed applications and pre-screening tools with appropriate style and language, leaving the more in-depth interview and determination of eligibility to staff people who follow-up the online applications.”

*Experiences Working with Public Librarians in E-government Services*

The IN.gov Web portal is not an example of a state agency working directly with public librarians, but the portal does manage INSPIRE, Indiana's Virtual Library website, as well as the Library and the Indiana Historical Bureau websites. None of the agency officials participating in these interviews described any direct experiences working with public libraries in the provision of e-government services. The DNR used to mail many of the publications to public libraries for distribution, and will continue to do so if requested. A respondent noted that the BMV held many conversations internally and with the director of outreach for the Indianapolis-Marion County Public Library and the library association before launching license renewal online services to ensure they were reaching out to a partner whose mission would be in line with supporting this program.

*Role and Extent of E-government Services Provided by Public Librarians*

Individual agencies have interactions with public librarians, rather than IN.gov staff. For example, FSSA staff members frequently are reminded to tell clients that the public library is an option for online filing and benefits management (an agency-driven service). According to a respondent, because online applications and programs are designed in an uncomplicated manner, it is likely that librarians are asked more technical questions, such as how to navigate to a site, how to click through the form, etc., than anything specific to the agency. Three of the six agencies did not have direct contact with libraries.

*E-government Service Role Model*

There was consensus among all respondents that the e-government service role model (Figure C-1 in Appendix C) is accurate. One respondent felt his agency only reaches the middle of the pyramid, without any collaboration with public libraries. They were in general agreement that there is potential for more collaboration with the Library and public libraries.

*Communication with the Library about E-government Resources and Services*

All respondents expressed interest in establishing ongoing communication with the Library and thought it would be helpful to partner with libraries to better reach constituents (collaborative services). A respondent noted that it will help his agency's staff to know that they can send citizens to local libraries for some of the basic services their agency offers online when they complain they do not have a computer or Internet. Although they have suggested this to individuals in the past, they have heard complaints that the library is too far from the individual. The BMV is concerned about encouraging its customers to use unsecured networks for transactions. There seems to be a cultural shift at agencies that have moved customer services to the phone, through e-mail, or through the website directly, rather than having people physically go to the branch offices to seek e-government information.

*Success of IN.gov in Disseminating E-government Resources and Services for Agencies*

One of the primary goals of the IN.gov Web portal is to get citizens to the appropriate state agency. One respondent felt the site does this well. He noted that the number of financial transactions through IN.gov has doubled and this is evidence supporting the success of the portal.

The FSSA site is currently undergoing a revision to clean out old information and improve navigation. With five divisions, there is a lot of information to go through and as they redesign, they are considering the clients' needs for each page of the site. Agencies are requesting that additional services be added to websites, such as smart phone applications. One respondent replied: "Yes, if you know how to find the information, and when you would use it, it's [IN.gov] very useful. It may not be helpful for those clients who are less computer-savvy." Another respondent felt the IN.gov portal is successful as an aggregator of sites and he appreciates the search capabilities offered by agencies throughout state government.

*Additional E-government Resources and Services for Residents*

When asked about the future of e-government services, interviewees indicated there will be an increase in the variety of e-government services offered. IN.gov invested in Google search boxes to improve site queries and will continue to build out mobile accessibility for agency sites. Four of the six agency representatives interviewed mentioned plans to improve their agencies' websites by redesigning them. One division is considering employing online tools for screening applicants. Another respondent said, "Being able to manage an individual's benefits online has provided better customer service, and this is always a goal they are striving toward." One agency is currently working on a modernization of the system to connect all of its unemployment services into a one-stop shop. Another agency will be publishing its monthly magazine online to save on printing costs.

*Better E-government Resources and Services to Residents*

In response to how agencies can better provide e-government resources and services, one respondent replied that "IN.gov has really moved Indiana's government information into a consistent platform that allows for transparency, in addition to bringing the disparate, scattered sites together." One tool that has helped many agencies is the Gov Delivery of e-newsletters. There are currently over 1,000,000 subscribers to IN.gov sites, receiving over 1.5 million emails per month. The IN.gov portal will be working to make things more mobile, and will work with agencies to incorporate social media where it makes sense and possibly incorporate video or audio tutorials, such as the BMV instructional YouTube videos. IN.gov has decreased the need for paper forms. Two respondents suggested that it would be helpful to provide more education on the availability of online services and viable opportunities to better inform Indiana residents. How this education should be provided is not clear, as one agency representative indicated the agency could provide it and the other did not specify how it could be done.

*Whether E-government Services Save Agencies Staff Time or Other Resources*

There was consensus among the respondents that e-government services save agencies staff time and, therefore, money. Also, for some online applications there are some additional savings in customer service expenses. A respondent said, “It is better for everyone to have more people file taxes online. If an e-filed return does not have a problem, it costs \$0.08 to process that return. For the paper returns, without problems, the cost to process a return is \$2.00. Among electronically filed returns, there is only about a 2% rejection rate, among the paper returns, the rejection rate is increased to 30%.” Although specifically asked, respondents did not mention the effects that public libraries have on saving agency staff time or other resources.

### **Emergent Themes**

Six prevalent themes emerged from the interviews with government officials at state agencies:

- The IN.gov Web portal, which provides online e-government services to Indiana state residents, is used extensively by Indiana residents;
- Agencies are continuously improving their websites in response to residents’ criticisms, indicating an ongoing interest in improving e-government services for Indiana residents;
- Agencies are aware that state residents often use public libraries to access their online services, and even refer their customers to public libraries to access their websites;
- State agencies provide online services to residents, independent of consultations with public librarians about issues surrounding online provision of government services, such as digital literacy competencies;
- While state agency officials are willing to communicate more with public librarians to improve their services, they may not be willing to initiate those communications; and
- While state agencies recognize the benefits public libraries provide state residents through the provision of e-government services, they have not trained librarians to improve those services.

These themes reflect the increased use and popularity of e-government services by Indiana state residents, and the last two themes in the list are critical to improving public library e-government service provision. When e-government services are initiated at the state agencies without prior coordination with the public libraries that ultimately have to teach residents about the services and how to access them, then the libraries are left scrambling to handle patrons’ requests. A model of e-government that involved proactive, engaged interaction and collaboration between agencies and public libraries could facilitate and improve e-government services for Indiana residents.

### **Recommendations**

Responses from participating agencies make it clear that they are actively engaged in providing e-government services to Indiana residents. Based on the data gathered through the 10



interviews with officials from six state agencies, the Information Institute study team offers the following recommendations to the Library:

- Develop a plan for public libraries and state agencies to collaborate and coordinate the delivery of e-government resources and services. This plan likely needs to include:
  - Development of a statewide online training program for librarians on best practices for providing state-level e-government services;
  - Hosting a statewide conference to discuss measures for identifying and addressing problems of communication between government agencies and public libraries and actively recruit agency participation in this conference; and
  - In collaboration with IN.gov, development of an outreach campaign to inform the public about which e-government services are available at public libraries, potentially including a public library e-government service portal that includes resources for librarians and the public.

These recommendations are based on the data gathered directly from the agency interviews. Each participant noted that public libraries assist with e-government on a regular basis and their agency is willing to communicate with public librarians to increase the level of e-government services currently available to Indiana residents.

## **Conclusion**

The interviews with Indiana state agency officials revealed that agencies' e-government services are extremely popular with state residents, but these services are provided without consultation with public librarians. Agencies provide numerous services to state residents online and they are continuously scanning the environment to increase or improve those services, although their descriptions of improving those services do not necessarily entail communication or coordination with public libraries.

Overall, interviewees have had very positive experiences providing e-government services to state residents, and many state residents have engaged actively in using those services online, for example by renewing drivers licenses and accessing information about state parks and other recreational resources. The state agency representatives interviewed for this project expressed concern about difficulties residents experienced with e-government services. In many cases, they have remedied deficiencies noted by users, such as making instructions for applying for services easier to understand.

The state agencies seem to work more frequently with the general public than with public librarians to improve their services, although they may refer residents to local libraries to use computers to fill out forms and to apply for government services online. While many state agencies have not worked directly with public librarians, they are willing to engage in a dialogue that may lead to better communication among the agencies and the libraries. Collaborative services between agencies and public libraries are the highest level depicted in the e-government services role model (Figure C-1 in Appendix C). When asked if the provision of e-government services through libraries save their agencies' staff time and other resources, the respondents

could not identify the role of public libraries in providing those services to Indiana residents. However, the agency representatives felt the e-government service model is accurate and a respondent said he is interested in seeing if the technology department at his agency could collaborate with the library based on the model.

All respondents agreed that their agencies' websites are successful in disseminating e-government resources and services to state residents. They also agreed that adding additional online services to their sites, as needed, will result in better websites with more services to Indiana residents. Generally, the state agencies work independently of public libraries when planning or providing e-government services to Indiana residents. Although state officials are willing to communicate more with public librarians to improve their services, they may not be willing to initiate those communications. If the Library wishes to increase collaboration between public libraries and state agencies for the provision of e-government services, then the Library needs to take the initiative.

## **APPENDIX J: FOCUS GROUPS FINDINGS**

The following sections describe the preliminary findings from public librarian focus groups and questionnaires, identify themes that surfaced, and summarize participant recommendations to improve the provision of e-government services and resources through Indiana public libraries.

### *E-government Services in the Library*

The focus group moderator asked librarians to define e-government services in their libraries, describe types of activities and transactions performed, and discuss how their libraries' staffs perceive e-government services. Focus group respondents defined e-government services as "any type of information accessed via the Internet provided by a government sponsored agency." Participants replied that their libraries treat e-government services at the reference desk the same as any other requests for reference services. Specific examples include a wide range of services, such as assisting with:

- Filing for unemployment online through the DWD;
- State and federal tax issues;
- License renewals for both driver and automobile;
- Access to and help completing a Free Application for Federal Student Aid (FAFSA) access;
- Small business administrative functions, including licenses, permits, business financing, and tax rules;
- Social services, including Medicare, Medicaid, and Social Security;
- General service functions, such as automobile tag renewal and pro se legal activities (e.g., name changes and simple divorce forms); and
- Access to government services and forms.

One librarian stated that she was confused because it appeared that e-government services include everything that librarians do currently and many of the participants agreed that e-government service is a significant category of activities at the reference desk. Figure J-1 shows the responses provided by participants when asked to evaluate their own knowledge of e-government services. Most participants (64.7%; n=11) report that they have "some" knowledge of e-government services.

## Describing Indiana Public Library E-government Services, Costs, and Benefits: An Exploratory Study: Final Report

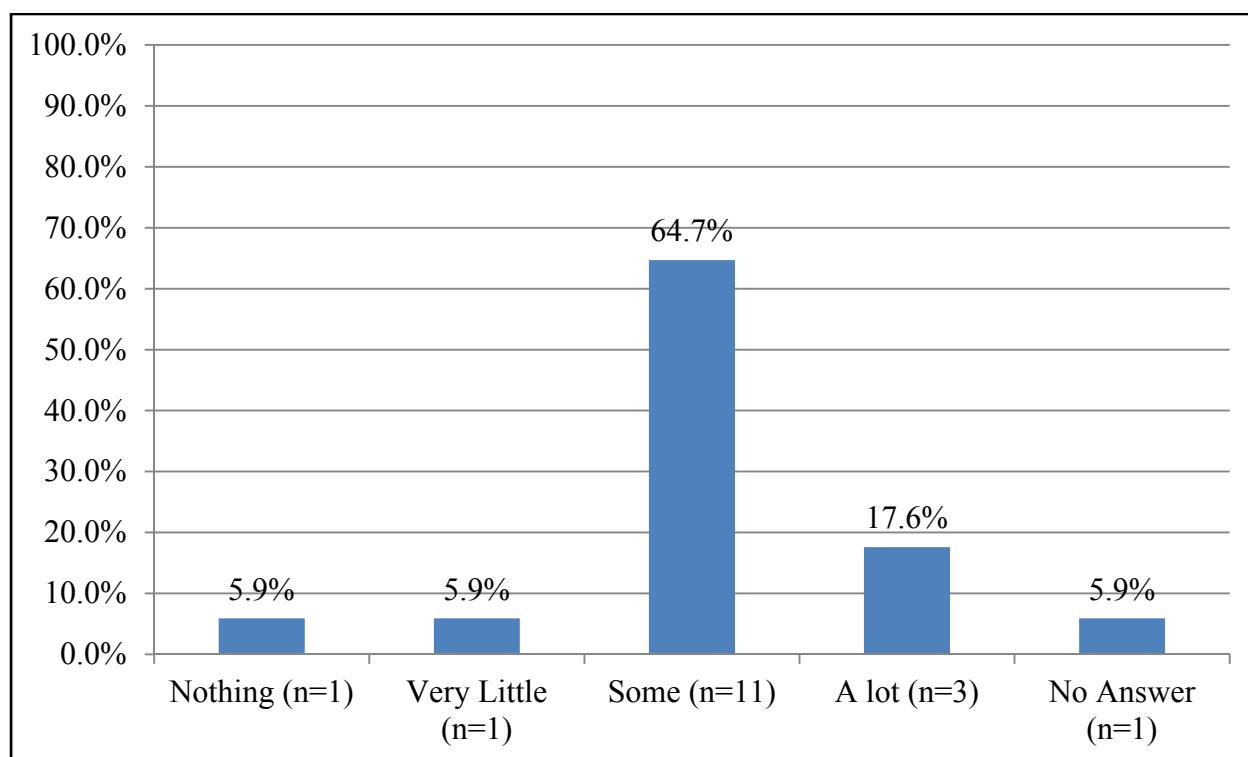


Figure J-1. Library Staffs' Awareness of E-government Services

Another participant stated that she attended the focus group session because she wanted to hear exactly what e-government services were and she was hearing things that she would never have thought of as falling into e-government service provision. She said, "I don't understand how much it encompasses. And it's growing." In general, participants noted that most library staff members recognize the distinctions between local, state, and federal questions. However, assisting patrons with e-government services is just part of the normal reference routine and the type of help requested does not matter to the staff member.

Many paraprofessionals have no specific training in how to provide e-government services and they rely upon the library professionals to provide e-government services. Even professional staff members may struggle with some e-government transactions. Librarians stated that many library staff members are not sure what the boundaries are for e-government service provision and they often feel that they are coming close to providing legal or medical advice. The legal aspect of boundaries arises when librarians provide support to patrons who need legal and medical resources, which many patrons can use with just enough guidance to locate the website, and then they can use it unaided. However, respondents state that some patrons require more assistance and this often puts the librarians into uncomfortable ethical dilemmas. Many states provide professional, legal direction to librarians and paraprofessionals.<sup>69</sup> One director

<sup>69</sup> Minow, M. (2010). *E-government services in Florida public libraries: Policy considerations – What are the risks?* Retrieved from: <http://www.egovflorida.org/pdfs/E-governmentServicesinFloridaPublicLibraries-Final.pdf>; for more information, see <http://www.librarylaw.com>.

instructs his library staff to point to the resource but to refrain from telling a patron what it means or how to fill it out. Librarians can offer technical computer support but should not assist patrons in filling in the blanks.

Overall, the focus group participants felt that library e-government service provision is a contribution to the public good, a free service that supports the mission of libraries, which are trusted places to go for personal help with service provision. As one participant said, “libraries are place[s] that support the idea of an informed citizenry.” In general, participants considered e-government service to be just like any other reference services, and most Indiana public libraries have absorbed e-government service into their usual daily routines.

### *E-government Service Experiences*

The Library project liaison asked the participants to describe the respondents’ experiences and activities in providing e-government services at their libraries. Several topics dominated the conversation including issues with hours, patrons’ lack of computer skills, provision of government forms, privacy issues and agency/library interactions. Figure J-2 lists the services most frequently mentioned by participants in the post-focus group survey, with unemployment at the top of the list (n=15; 93.8%).

When unemployment was at its height, one library experienced fistfights one Sunday afternoon. At this time, the window to file for unemployment compensation so that the application is received by Monday is very small; the library operating hours begin at 1 pm and the window closes at 3 pm. The demand during this two-hour period exceeded the capacity of the library, resulting in tough situations for librarians. Some libraries have considered expanding hours to accommodate those who need e-government services but cannot get to the library during existing operating hours because they work during those hours. One library revised their Sunday operating hours to provide access to the unemployment compensation website to meet filing deadlines set by the government agency.

Librarians stated that many patrons simply do not possess the computer skills to navigate government service websites successfully, for example the Social Security and Unemployment websites. This is a challenge that often requires hands-on assistance rather than basic direction to a website or URL. Older people and the newly unemployed may need more help, especially those for whom computer skills were not a previously-required employment skill. At times, librarians feel compelled to assist users who simply cannot navigate some of the complex government websites. For example, a participant related a story about a patron who came to her at the reference desk and told her: “I can’t read. Can you fill out my unemployment?” so the librarian helped her. All participants reacted strongly to this anecdote: “Well that’s pretty scary.” “You answer one of those questions wrong on those things and it can mean you don’t get it. If you would help her at the wrong level that’s not a one-time thing.”

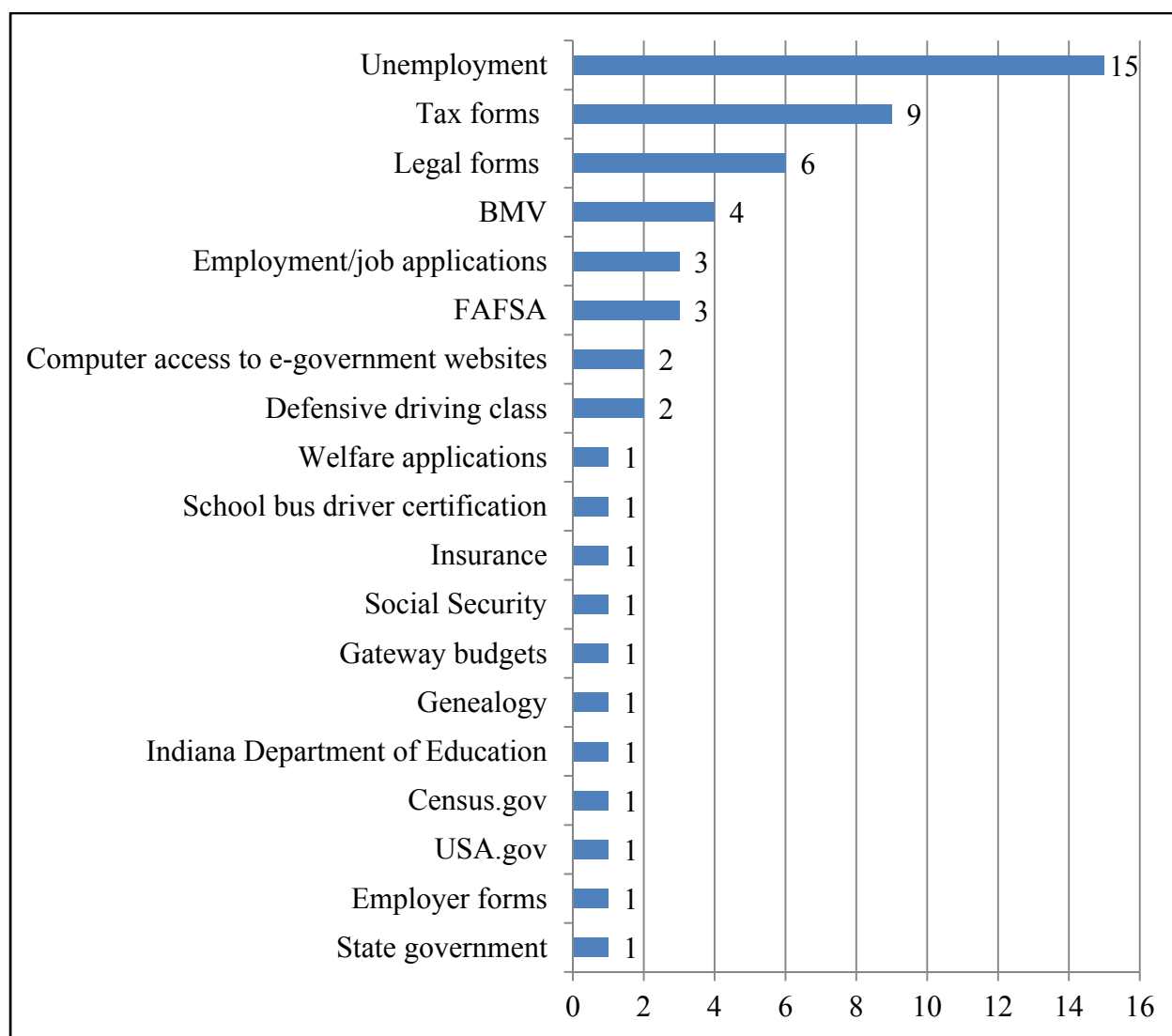


Figure J-2. E-government Services Provided by Libraries as Reported by Focus Group Participants

Providing forms is a major function of e-government services. Issues that arise include locating the correct form for specific patrons' needs, making the forms available for patrons to copy, and collecting the costs of printing and copying the forms. Libraries handle this issue of printing forms differently: some make physical copies available for patrons to copy themselves while other libraries simply point patrons to the websites and the patrons have to print forms themselves. Even though libraries tend to charge for printing, many patrons assume that the library will pick up the cost of printing forms. Some participants report that patrons prefer the paper forms to fill out before they complete the submission online, which exacerbates the situation by requiring patrons to print more paper forms than the agencies anticipate. There also is some confusion about certain forms and whether they can be submitted online. For example, participants all agreed that the divorce website and the divorce form are confusing with one

librarian asking the focus group moderator to give her “the bottom line” on whether patrons can submit a print form or can submit only online.

One participant stated that many patrons do not distinguish between government agencies and libraries. The library is seen as a government entity and is expected to accommodate the patron with these services at no additional cost. As one librarian stated, “I understand where they [patrons] get that. You know, this is America. Everybody should have a right to a library.”

However, as one librarian noted, privacy issues are obstacles to patrons using e-government services at the library. Focus group participants stated that they do not type in personal patron information when assisting with online form submission, but they often experience conflict between the amount of service that a patron needs or requests versus the amount of service that library policies recommend and authorize. Staff members are often afraid to give out wrong information.

#### *The Costs of E-government Service Provision*

Examples of costs of e-government service provision include:

- The cost of Internet connections and computers for access;
- The cost of printing forms;
- The time for staff to assist patrons using online services;
- The time involved for staff to learn about new and revised e-government services; and
- The time for staff to order and receive forms (for those forms that they are still only available in print).

Half of the libraries pass the cost of printing forms on to patrons and half treat government forms differently and absorb the printing costs. A distinction is made between providing a one or two page form for free and charging for a complete booklet of information.

Several librarians recounted that when libraries were able to order and receive government-provided tax forms, they distributed forms at no cost to the patrons. Most government forms, including tax forms, are now only available online and libraries do not receive free print copies. However, library patrons are accustomed to receiving forms for free from the libraries and they complain when libraries charge for tax forms printed on library equipment. One library provides complimentary tax forms, even though they charge for all other types of printed material, but other libraries charge for all material printed using library equipment.

Many costs are intangible and hard to track separately from the rest of the costs of reference service provision and public computer use, so most libraries do not bother to do this. An example of a computer-related cost is that one library had to purchase a computer reservation system that automated the session time each patron can spend on a computer because the demand has grown so much. Costs are not restricted to the libraries; a librarian noted that a patron had to pay \$35 just to set up an account on the tax assessor’s website to make an online payment.

For many libraries, the participants agreed that funding does not allow for increased computer access. Even with this restriction, the high demand for some types of services, such as legal, health, and financial, has some libraries considering adding more user-friendly legal- or government-oriented databases to their collections.

A participant said that “Government agencies are making a killing by pushing this off onto libraries. The burden is transferred to libraries.” Even though library staff members embrace the role of e-government service provider because it involves access to information, there is resounding agreement that libraries have picked up the costs that result from greater demand for computer access and increased need for printing government forms. Many of these costs simply have been assimilated into the libraries’ daily operations and are therefore not detailed here. This study does provide estimation of what these costs are (see Findings section above and Appendices M and N).

### *Benefits to Libraries, Users, and Government Agencies*

Participants described benefits for three stakeholder groups: libraries, library patrons and government agencies. This section organizes the participants’ comments by stakeholder group. Participants agreed that providing e-government services in libraries results in libraries that experience increased visibility, library patrons that receive personal service with difficult tasks, and, government agencies that are saving money.

#### Benefits to Libraries

Participants agreed that the challenges and costs of e-government service provision have altered library service, but they also stated that libraries experience a lot of positive benefits, including:

- Increased visibility for libraries as they experience more foot traffic, especially during tax time;
- Libraries are issuing more library cards since patrons generally need them to use the PACs;
- Former patrons are visiting libraries for the first time in years, and are becoming new regular visitors;
- Increased opportunities to build rapport with patrons as tax return season, for example, might be the only time during the year that some patrons visit libraries;
- Changes in patrons’ attitudes toward librarians because, as one librarian stated, when librarians can help people with frustrating e-government services, the patrons like the librarians; and
- Opportunities to collaborate with entities that librarians would not have considered prior to becoming involved with e-government service provision.

One participant summed up the benefits, saying that “It [electronic tax forms] keeps people coming in. The e-thing keeps people checking us out.” This is an indication of the fact that



library e-government service provision is building good will from citizens who appreciate the valuable services libraries are providing. The respondents acknowledged that e-government service provision gives them an opportunity to increase their libraries' relevance in a time of decreased funding and increased questions about the viability of libraries by bringing more people into their buildings.

### Benefits to Patrons

Citizens benefit from the personal service that libraries provide. The focus group participants agreed that some government websites, such as the tax assessor's website, are providing information that is complicated and may require personal assistance. This is an area where librarians may be able to provide accurate resources to explain the details to the patrons better. If the patrons require further information, librarians are able to refer them to the relevant government agency. Other benefits include:

- Increased access to services through libraries that generally have evening hours as opposed to agencies that have limited hours of availability, facilitating access for people who have to work during regular business hours;
- Opportunities for patrons to speak to a librarian in person for more information versus the non-interactive access they have to agencies online;
- Less time spent waiting for services as libraries offer information faster than most agencies would;
- Value-added guidance in accessing agency websites; and
- Having access to a "trusted third party" (librarians) to help access e-government services and resources.

Benefits to patrons are mediated by the fact that they are using multi-purpose libraries, which may not offer the types of detailed information that patrons may require to satisfy their e-government needs. The consensus among participants, however, was that positive aspects for patrons include the convenience of expanded and diverse hours and potentially more patient service providers.

### Benefits to Government Agencies

Participants expressed that agencies are relieved of the demand of dealing with people, probably experience less correspondence with patrons, and do not need to maintain a great deal of computer technology. Other benefits include that:

- Overburdened government agencies are relieved of the task of handling preliminary requests for information and services because all agencies tell people to go to the library (participants noted that even agency television advertising instructs people to visit their local libraries to obtain services);
- Agencies that have limited operating hours benefit from the computer access available to patrons at libraries during extended hours, referring citizens to the local libraries whose hours may accommodate them better; and

- Government agencies benefit from the increased number of online transactions such as driver's license renewals and from librarians providing information they otherwise would have to provide.

One participant noted that "Government saves money for it [e-government]. We do not save money. We get some other benefits from it, but we don't save money doing it." The participants agreed that libraries bear many costs for e-government service provision, especially increased staff time and provision of forms, which result in cost-saving benefits to government agencies.

#### *Computer Access: Broadband Capacity and Hardware Capabilities*

The differences among responses to this topic varied between library directors and library staff. Directors brought up the difficulties involved in procuring funding and expanding services, whereas library staff focused their commentary on their ability to accommodate patron needs by altering library PACs to provide access to the unemployment site or changing library hours to accommodate the unemployment filing deadline. Despite these general differences, there was agreement that library PACs provide critical access to the Internet. All participants in one focus group agreed when one librarian stated that "High-speed Internet has typically become the standard." Another librarian mentioned that a member of her own staff must access the Internet from the library, saying "In our location, a lot of people come to the library because they don't have access to broadband Internet. One of our employees here doesn't even live that far out rurally, and she can't get Internet service at her house."

Every focus group agreed that libraries can always use more equipment, as the PACs are always in use. Discussions at two focus group sessions reflected that the need for Internet connectivity and more computer hardware are interrelated and that the demand for more computer access is not just hardware or broadband, but it is a combination of the two. Librarians stated that broadband service is adequate for their needs most of the time, unless others in the library are using computers with image-intensive programs. The librarians said that they advise patrons to avoid certain hours during which they experience slow Internet connectivity, especially between lunch and dinner hours. One librarian accommodated demand by providing access to the unemployment website on the computer used for catalog access. Participants agreed that they need more computer stations, but then they would need more broadband. However, they indicated that they either cannot afford more broadband or their current network is "maxed out" (i.e., their physical set-up could not accommodate more bandwidth).

Most libraries do not prioritize computer time by type of use—users are free to play games or file for unemployment. But some libraries *do* prioritize computer use or set them aside for specific activities a few hours each week, such as for activities like unemployment seminars or basic computer training. One library experiencing demand beyond its capacity purchased a reservation system that patrons must use to reserve computer sessions, a feature that was unnecessary for this location prior to the provision of e-government services. A participant stated that libraries are considered the central Internet connection sites in her community and the other focus group participants agreed that libraries can "never have enough computers."

Several participants were library directors who are experienced in managing funding for library services. They suggested that the Library's LSTA funding should be re-prioritized in order for all libraries to 'catch up' to the demand for public access computing. Directors stated that the competitive grant program works against collaborations between libraries. The librarians would rather see a program funded by LSTA that improves broadband access and computer hardware for all libraries, bringing all libraries up to minimum standards to meet the needs of e-government service provision. One participant summed up the group's sentiments, saying

We should say, okay, bottom line, in a community this size, for e-government purposes or for public access purposes, you should have this many computers, you should have this much bandwidth, it costs this much. We should somehow be able to subsidize it so that we have a minimum standard of service.

This discussion concluded with the directors also mentioning that the application for E-rate funding for Internet connectivity is onerous. The application form does not work well with every browser and the process discourages many libraries from applying. Several librarians mentioned that working with ENA makes the process of obtaining maximum broadband speed easier to achieve.

#### *The E-government Service Model and Indiana Public Libraries*

The focus group moderator presented each participant with a copy of the e-government service model (see Figure C-1 in Appendix C). The model is arranged as a pyramid where the top level of service is agency-library partnerships. However, focus group participants did not perceive that government agencies considered library participation or experiences at all. In Indiana, there are no such collaborative efforts as indicated on this model. The consensus in each focus group was that the model does not reflect their perception of the current library/agency relationship. One librarian stated, "I didn't know there were any agency-driven initiatives aimed toward libraries at all." Others participants noted during separate parts of the focus group discussions that agencies send patrons to libraries for access to e-government information, but participants do not seem to acknowledge this as an agency-driven service. Each focus group echoed the sentiment about not knowing agency-driven services existed, but the participants also added that given more information, collaborations between government agencies and libraries would benefit the patrons a great deal. The participants also agreed that librarians would benefit from agency-driven training programs that provided general information about the wide variety of services that patrons request and, in particular, about website updates.

Libraries provide a more personal, empathetic touch to service provision than what a patron may experience at a busy, government agency, but both librarians and patrons could benefit from more training about the services that the government has to offer. Librarians feel that they are the only ones who will offer personal assistance to patrons, especially for the unemployed or those who do not have strong computer skills. The participants indicated that librarians feel they offer a personal touch that people do not receive at the unemployment office. The participants shared ideas for collaborations such as making the library a central meeting place for service training on topics such as Medicare applications, tax assistance programs like

the Volunteer Income Tax Assistance Program (VITA), and the Women's Bureau. Other collaborations could include acting as voting centers or locations for local Census training.

Library staff and professionals indicated that collaboration would improve communication between libraries and government agencies, resulting in better service at the libraries. The participants also stressed that this communication should be provided before, during, and after implementation of e-government services for new and existing programs. The creation of a liaison from the State Library to work with government agencies would facilitate communication. Some high volume library systems may even want to make their own "targeted contacts" to build partnerships, disseminate information, and develop outreach and programming to support e-government services.

### *Improvements to E-government Service Provision*

Librarians agreed that consistently delivered, increased communication is the most needed improvement and would have a positive impact on libraries' provision of e-government services. One librarian commented that a clear description of the roles of the libraries versus that of the government agencies also would be helpful. Other suggestions were on a variety of topics, as follows:

- Training: This can include both formal and informal training options geared to library staff and patrons, such as:
  - Forms need to have help widgets that allow patrons to read instructions while regularly scheduled staff training conducted by agencies on how to use agency websites,
  - Agency-developed guidelines on how to respond to patron requests and how to provide services while understanding the limitations inherent in legal and medical service provision,
  - Many online submission systems (e.g., the IRS) do not provide instructions that are easily accessible in the submission windows, and
  - The Library could provide e-government service certification for library staff and professionals;
- Access to services: Suggestions in this area relate to both library- and agency-driven actions, such as:
  - Library administrators could ensure that library staff could allow users to access computers for e-government services regardless of their library member status, including those without a library card,
  - Government agency websites could be standardized and the IN.gov search engine improved to facilitate ease of use,
  - Agencies could recommend third party Web resources that provide reliable information that is basically 'agency approved,' and
  - Agencies and patrons may benefit from agency use of Web 2.0 tools and social media to assist users, including videos and other audiovisual media;
- Increased funding and new funding sources: Libraries could be funded by non-competitive LSTA grants so they can purchase other databases that would support some

e-government-related needs, such as Cyprus, a \$1,500 per year resume builder that is easy to navigate for less-skilled computer users; and

- Development and use of communication channels between libraries and agencies: Suggestions here include collaborative efforts to understand patron needs, as well as general information sharing activities, such as:
  - The Library, in collaboration with government agencies, could conduct a needs assessment study of library patrons for information about their e-government service needs to inform future collaborations between agencies and libraries,
  - Agencies could create a back-up plan that informs libraries when the online e-government services are offline, and
  - The Library could provide a liaison who works with different government agencies and provides a means for feedback to and from the libraries.

Many of the improvements that focus group participants suggested focused on training and communication with government agencies. Participants agreed that agency-provided training on websites, basic policies, and procedures are welcome. Also, the librarians consistently mentioned that any changes to these three areas need to be communicated directly to libraries so that they can properly inform patrons.

Based on comments and suggestions from focus group attendees with regard to the IN.gov Web portal, a member of the research team visited IN.gov and found that the most sought after information was not readily available. For example, the 'Top Links' section is at the bottom of the homepage, which does not fit in the browser window without scrolling. Also, the 'Top Links' section contains a 'word cloud,' a popular website convention that displays more frequently used search terms with greater prominence (in this case, font sizes are larger for more popular terms). This is the only section of the homepage in which the term 'unemployment' is provided, and it is at the *bottom* of the IN.gov homepage. Due to these findings, the Information Institute team decided to conduct a preliminary usability study (See Appendix F for the method and Appendix L for the findings).

Government agency websites are too complicated and this discourages many patrons. This is complicated by patron attitudes toward computer literacy, such as views that computer skills are not important and household Internet use is unnecessary; therefore, the library is the only place that some people have to access the Internet. As a result, many patrons do not have the ability to evaluate online resources for quality and do not understand the use of icons as visual instructions. Some agency websites are simply more user-friendly than others, and there is no consistency across agencies.

Participants suggested that they accept the role of information provider, but they feel as though they are not fully prepared to offer accurate and reliable information, which compromises the reputation of the library profession and fails to meet patrons' needs. A consistent comment in the post-focus group surveys was the need for the agency websites to have usability tested. While the websites may work for those who have strong computer skills, participants' experiences indicate that many older patrons or newly unemployed patrons find the sites difficult to navigate.

*Training Opportunities to Improve Delivery of E-government Services*

One library assistant who attended a focus group commented that the difference between other library services and e-government services is that, while librarians generally are relied upon to help patrons, in these situations, “We try to help our patrons, but it seems like we are learning right along with them.” The participants noted many potential areas for training opportunities including agency websites, disaster preparedness, and resources to recommend if patrons need more information. Other ideas included:

- Patrons would benefit from basic computer literacy training, including use of computer hardware (e.g., mouse and keyboard), software (e.g., Microsoft Office suite), and Web browsing;
- Librarians agreed that they would welcome any agency-provided training;
- Librarians need time to review websites so that they can help with tutorials and document management;
- Librarians could accumulate LEUs for training on e-government services;
- Librarians need training on specific services such as unemployment filing (DWD site), use of the IRS website or the INSPIRE search engine (Google replacement advocated by school districts); and
- Librarians mentioned that disaster preparedness training, which was so crucial to citizens in the wake of Hurricane Katrina, is an important training area.

Participants welcome training from any source, whether the State Library or government agencies, and would be willing to coordinate and host training sessions.

Participants noted several times that libraries may need to revitalize basic literacy training programs, focusing on reading and writing skills, for patrons who cannot use computers because they simply do not read well enough. Several participants indicated that their libraries provide literacy training but the need for literacy training seems to be more urgent, especially for the newly unemployed. The participants agreed that online accessibility of government services is convenient, but the current service delivery method does not meet the needs of all citizens. Libraries are only effective if they can meet the information needs of the greatest number of residents and the participants agreed that agency-provided training for specific services is the best way to improve e-government service provision in libraries.

## **Key Themes**

The focus group findings reveal a number of key themes, including a need for improved communication, funding for e-government services, collaboration and cooperation between government agencies and libraries, increased computer access and broadband connectivity, e-government-specific training, improved government websites, and identification of boundaries for librarian provided e-government service. Each is detailed below.

***Communication between libraries and government agencies is a key element that is missing as e-government service provision has shifted onto libraries.*** Libraries are not included

in the creation of services and have no means to provide feedback on challenges that are faced. Also, participants would like to be advised in advance of program additions or changes and be provided with resources upon which to draw for accurate or updated information, including website interfaces and form changes. Taking this communication to the level of collaboration and resource sharing among libraries and government agencies (such as suggested at the top of the E-government Service Roles Model) would be ideal.

***Funding the cost of e-government service provision stimulated a great deal of conversation with the participants and focused on two basic areas: cost of form provision and cost of staff time.*** Form provision and its attendant cost was the single most frequently discussed topic in all focus groups and this is an issue that libraries are not handling consistently. In addition, especially from library directors' viewpoints, the way that libraries are funded is ineffective as libraries that may need funds do not apply for grant assistance and these may be the only funds available. For instance, E-rate discounts and LSTA funding are difficult programs from which to obtain money successfully and through which to implement programs. The nature of LSTA funding, in particular, involves competitive grant applications that can be challenging to complete and implement, given reduced staffing. Further, taxing districts rarely reflect the true scope of library patrons being served at a single location resulting in patrons who use library services, but do not contribute to funding it (i.e., they live outside the taxing district but use the library's services). As one librarian recounted her particular situation, many surrounding townships obtain service from a library for which they are not taxed nor required to subsidize in any way. Assessing the library's service capacity, however, is completed using only the reported population of the immediate community, resulting in use that puts the library over capacity with no way to indicate an increase in demand. Participants also agreed that they need guidance on funding that can be obtained to improve resources for e-government services.

***Collaboration and resource sharing are topics of interest to librarians, especially in response to the e-government service model.*** The e-government service model provoked surprise in each focus group with participants stating that they did not know if agencies recognized libraries' roles in the process of e-government service provision. Also, they are surprised to hear that agencies would care about libraries and are unaware that agency-library collaborative initiatives exist. However, they are interested in working with agencies to improve e-government services.

***The need for adequate computer access is an issue librarians addressed in two ways.*** All participants agreed that libraries could never have enough computers but many, especially among the library directors who participated, agreed that the need is for greater bandwidth to improve broadband capacity, not just an increase in computer stations. However, not all participants understood that performance is a combination of adequate computer hardware and broadband capability, so the total network needs to be addressed to improve computer performance during high-volume periods in the library. But all participants agreed with one librarian who stated that "High-speed internet has become the standard." According to one participant, patrons who have dial-up at home know that the library has better Internet service.

***Focus group participants see a need for training for both librarians and patrons.***

Librarians are willing to participate and attend training sessions that would improve their skills in providing e-government services. Librarians need to know which e-government services and resources are available, when they are updated, and how to use them. In addition, participants support the idea of agencies conducting training at the libraries for income tax return preparation and unemployment application submission. Participants also suggested that they need more information about the boundaries involved in ethically providing legal and/or medical resources. Participants agreed that increased computer skills training for patrons is imperative stating, “People in the area are scared to death of that computer. So we’ve reached out to them. But, so many of them are just scared to death.”

***Agencies need to revise their websites to be more user-friendly.*** Sites, such as the county tax assessors’ websites, are providing complex information and may need revision to make them more ‘self-service’ oriented. The IN.gov site could improve, as one librarian stated that searching for an item by its number will not bring up a correct answer, such as a state statute. Web resources are not user-friendly enough to be self-service, but the typical intermediary role of the librarian does not include participation in patrons’ use of resources, especially when the topic is sensitive, such as unemployment or divorce. The use of a global search engine to provide entry to all agencies needs to consider the user who may be challenged by both basic literacy and computer literacy. The tension between meeting patrons’ needs and respecting their private information requires greater support to make access easier, such as by providing patron training and more user-friendly resources.

***Boundaries of service need to be defined.*** This is necessary both to delineate clearly the different functions of the government agencies and to identify ‘safe’ areas for librarians when assisting patrons with sensitive topics, such as legal or medical resources. Training to address librarians’ roles and responsibilities was a point of conversation with each focus group, specifically in three areas: (1) identify the roles of government agencies and libraries, so that each clearly understands the services each provides; (2) provide librarians and paraprofessionals with clearly drawn boundaries for service that is helpful, ethical and legal using a professionally developed resource, such as <http://www.librarylaw.com> and the Indiana Public Library Standards,<sup>70</sup> which define how libraries should set costs for photocopies; and (3) advise libraries about the extent to which library resources should be used to provide e-government services<sup>71</sup> and include communication channels for libraries to use when they need to request additional support. In the case of the last issue regarding library resources, it is clear from the conversations that significant inequity exists among Indiana libraries’ copying policies that may require redress in order to ensure a more equal and consistent level of service across Indiana public libraries.

***The library is a provider of e-democracy, not just e-government services.*** Librarians express a great deal of pride in their role as “trusted third partners” in the delivery of e-government services from government agencies to citizens. As such, the role of librarian is

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<sup>70</sup> Minimum Standards for Public Libraries, *Indiana Administrative Code*. 590 IAC 6.1.4 (2011). Retrieved from: <http://www.in.gov/legislative/iac/T05900/A00060.PDF>

<sup>71</sup> Ibid.



idealized to that of provider of information so that citizens can continue to participate in democratic processes that are integral parts of modern American society. This role supports the concept of an informed citizenry and these intangible issues are intrinsic to the libraries' contributions to and support of the public good.

In spite of the expansive list of services and activities provided by the public librarians in the focus groups, the consensus emerged that libraries simply do not promote their own contributions enough. One librarian stated that "We aren't promoting how much we do, how helpful and essential we are in the provision of e-government services. Libraries are a driving force." Libraries need to do a better job of marketing their e-government services.

## **Recommendations**

During the focus groups, the project liaison asked participants for their recommendations of the most important improvements to make in the provision of e-government services. The top responses focus on four areas, (see Figure J-3 for all responses): communication, training, resource assessment, and funding.

- Increased agency-library communication:
  - Librarians desire multiple channels of communication between government agencies and libraries, to include a liaison from the Library who would coordinate statewide programs and collect feedback for use by both libraries' and government agencies', and
  - Participants indicated that libraries need direct access to agencies for policy and service updates and agency announcements in order to improve collaboration and use of resources;
- Training:
  - Participants suggested that they would host agency-delivered training sessions for librarians and library staff on agency resources and basic program policies, supporting librarians' efforts to answer patron inquiries accurately and meet their e-government service needs,
  - Librarians look to the Library for training on the ethics of sensitive information provision, clarifying the role of the library and the librarian in e-government services, and participants indicated a desire to roll this into the existing LEU program, and
  - Librarians indicated that tutorials for both library staff and library patrons would improve self-directed information provision and accommodate the confidentiality patrons required by some services, like divorce inquiries or unemployment applications;
- Assessments:
  - Based upon the many comments about the IN.gov website and the brief usability study that the study team conducted, there are areas for detailed assessment of the website to facilitate self-service use by those who may have limited basic and computer literacy skills, and

- Librarians indicated that they could benefit from a more accurate view of how users perceive services that they could gain through a needs assessment and analysis of patron use of e-government services, and this also will provide opportunities for changes that will improve user satisfaction; and
- Funding:
  - Library directors who participated in the focus groups indicated that funding sources need to be identified or revised to support provision of a minimum standard of computer and broadband access to libraries, and
  - Participants indicated that increased funding for staff is needed but acknowledged that this may not be realistic given the economy and budget cuts.

Participants suggested that while e-government service provision has improved library visibility with patrons, libraries need increased communication, training, and resources to meet patron needs successfully.

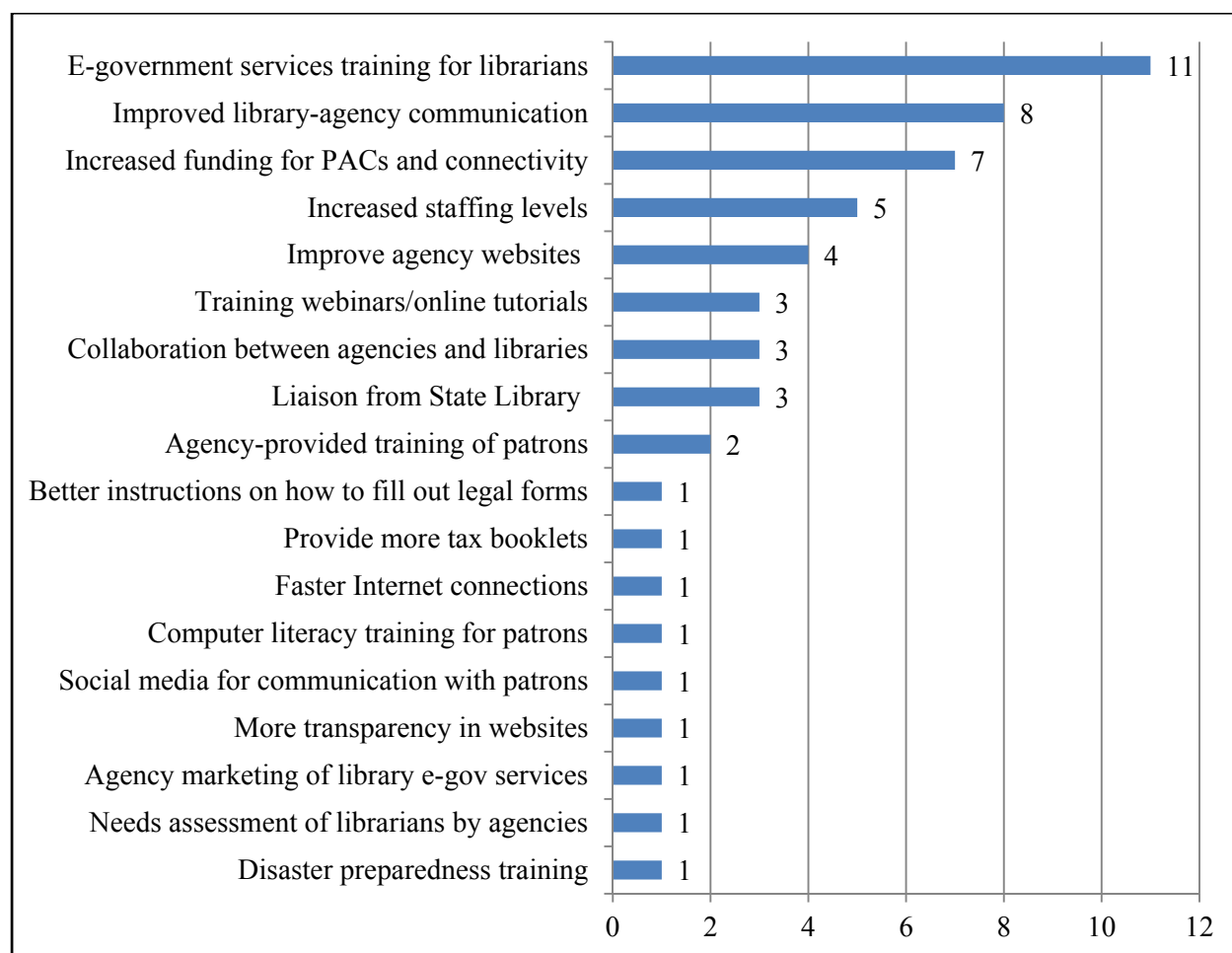


Figure J-3. Most Frequently Recommended Improvements for E-government Services

## **Conclusion**

The focus groups conducted with Indiana public library staff members revealed that librarians understand that e-government services will grow as more agencies provide more services online only. Librarians are amenable and often enthusiastic to providing information to all library patrons, but they believe that they are not fully prepared to do so when it comes to e-government information. Agencies provide numerous services to state residents online and while they are continuously scanning the environment to increase or improve those services, they do not communicate their findings and revisions to public libraries or coordinate services with public libraries. Often this results in libraries being asked to provide services of which they are unaware or ill-equipped to accommodate.

While focus group participants expressed very positive experiences in providing e-government services to state residents, and they acknowledged the many benefits libraries realize through e-government service provision, such as visibility and increased relevancy, they have strong concerns about the ethics of providing information that their training has not prepared them to deliver. Further, the librarians and paraprofessionals who are aware of the boundaries hesitate to cross them in spite of tremendous pressure created by demanding and sometimes desperate patrons.

The librarians and paraprofessionals interviewed for this project expressed concern about difficulties that users experience in successfully locating the information they need to navigate e-government services. In many cases, such as the change of Sunday hours, addition of the unemployment website (DWD) to the catalog computer, and changes in mechanisms for printing forms, librarians have modified library policies and procedures in order to satisfy e-government service needs, but there still are improvements that could be made. Focus group participants encouraged completion of an assessment of library resources, the creation of standards for service, and remediation of broadband and hardware capacities in order to meet the needs of a growing body of e-government services.

All participants agreed that the provision of e-government services fits with traditional library missions, however the complexity of some topics and the challenges for patrons who are not computer literate stretch the bounds of library service, both logistically and ethically. Participants agreed that libraries should disseminate e-government resources and services to patrons. Librarians feel strongly that communication between government agencies and public libraries and training by agencies for libraries are the most important improvements to make. They welcome any training and feedback that agencies or others are able to provide.

## **APPENDIX K: PHONE INTERVIEWS FINDINGS**

### **Introduction**

The Information Institute study team used a multi-methods research approach to estimate the costs of providing e-government services to patrons at Indiana public libraries. The data collection methods related to costing originally included content analysis of activity logs and descriptive statistics from the online survey. In light of low response rates for the activity logs and survey, and particularly incomplete data from the activity logs, the Information Institute proposed adding follow-up telephone interviews with library directors to gather supplemental information to flesh out the data collected in the activity logs and survey.

The Information Institute study team conducted 17 follow-up telephone interviews with Indiana public library directors. Originally, the team planned to conduct 20-25 interviews, but after 15 interviews, the study team felt that the saturation point had been reached. The study team then conducted two additional interviews to verify that saturation had occurred, and analysis revealed that respondents provided the same answers to questions 5, 6, 7, and 8. The following sections describe the preliminary findings from responses to all the interview questions, identify themes emergent from the data, and make recommendations for the Library to consider.

### **Findings from the Interviews**

#### *Frequency of Requests for E-government Assistance*

Directors were asked to describe the frequency of requests for e-government-related assistance in a typical work-week. E-government assistance includes finding information in government websites, filling out forms through government websites, or faxing forms to appropriate government agencies, among other activities. The question serves to measure the prevalence of e-government requests for assistance at Indiana public libraries and Figure K-1 displays the directors' responses. The largest group of respondents (n=7; 41.2%) indicated that patrons request e-government assistance somewhat frequently. None of the respondents indicated that patrons request e-government assistance very frequently. These data indicate that Indiana public library patrons request e-government-related assistance at least somewhat frequently in a typical workweek.

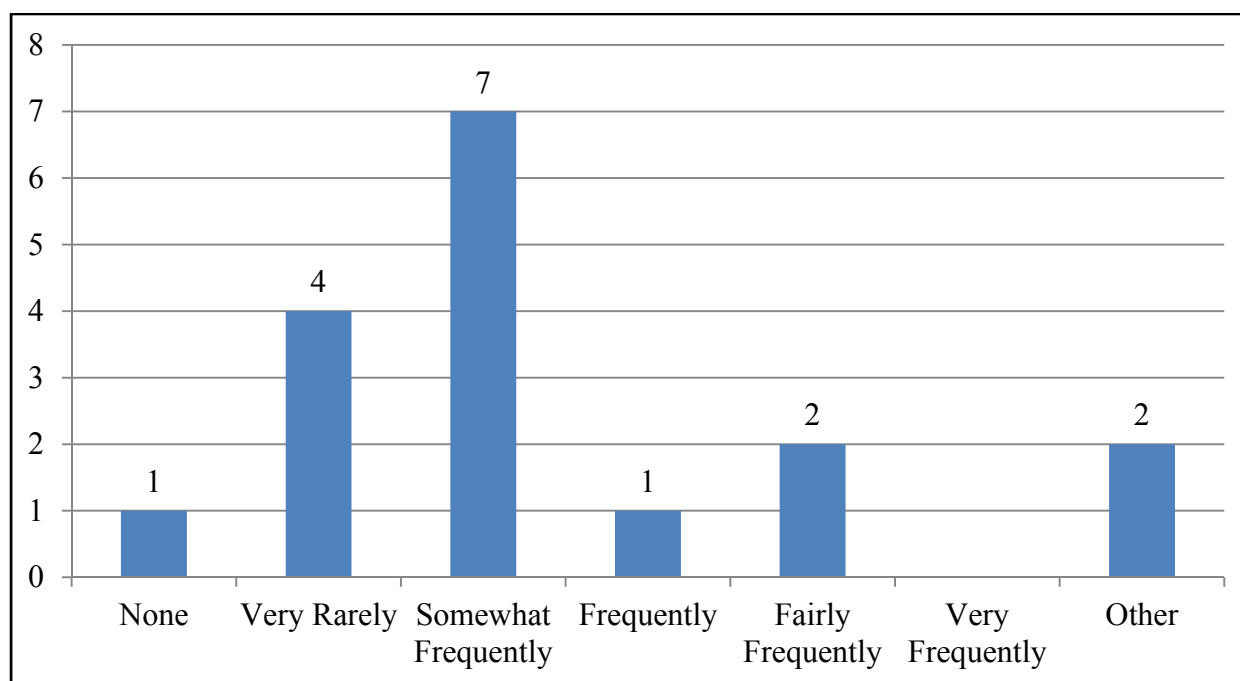


Figure K-1. Response to Frequency of E-government Assistance Requests

#### *Types of E-government Services*

Next, directors were asked which types of services patrons ask for assistance with over the course of a typical workweek, using examples found in the survey, as well as which type of service they think is requested most often in a typical workweek. Figure K-2 presents the responses for this question. All participants (n=17; 100.0%) noted they provided unemployment benefits and workforce development services. Library directors noted that many patrons required help with basic digital literacy skills such as setting up an e-mail account or printing, but once those basic skills were learned, those patrons did not require much further assistance.

The next most frequently mentioned type of service was requests for help with tax services (n=16; 94.1%). This may be attributable to the fact that the interviews were conducted in April when federal taxes are due. Many participants noted that requests for tax services taper off during the rest of the year. However, a number of participants used their experiences with tax services as examples of overall problems with e-government services. Several directors noted that, this year, Indiana's Department of Revenue and the federal IRS provided only a limited number of paper tax forms and they sent them to the libraries later than in past years, leading many patrons to blame the libraries for not having the forms. Many interviewees noted that improved communications regarding when and how many IRS forms are being sent to libraries could improve e-government services a great deal.

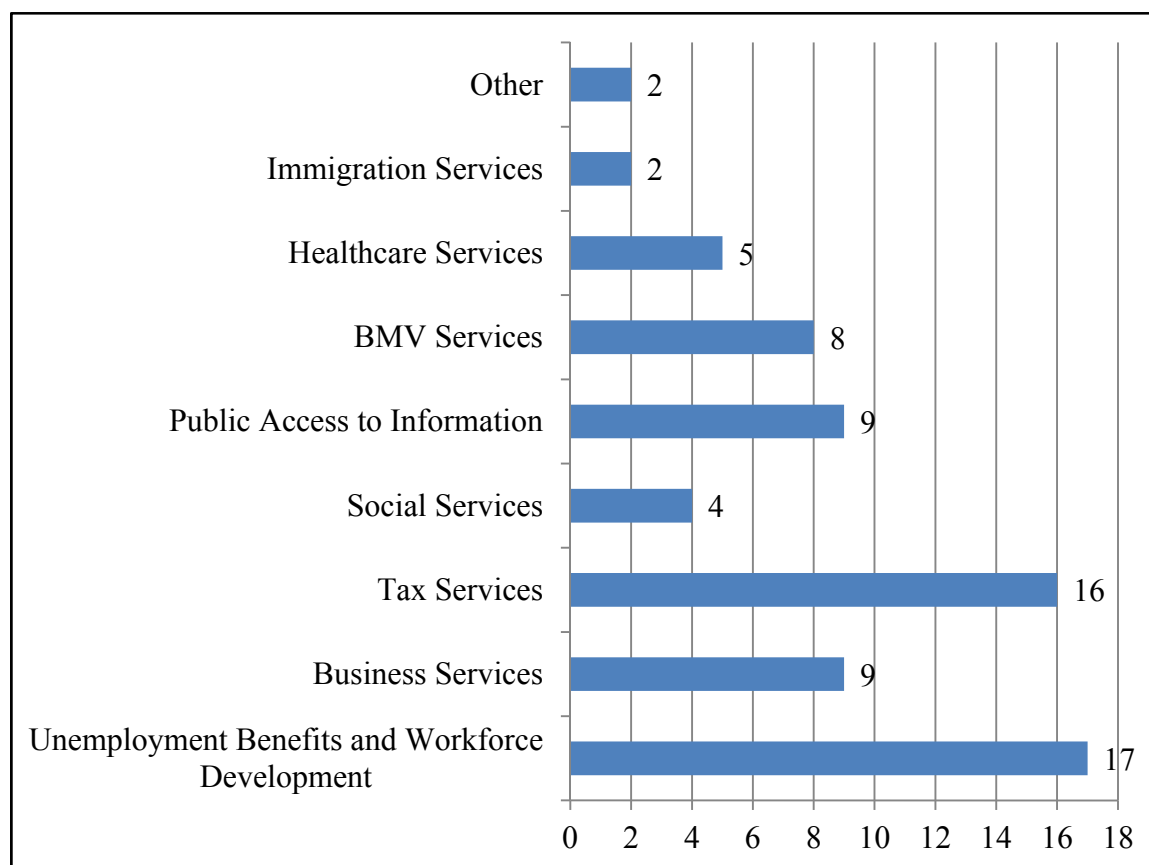


Figure K-2. Types of E-government Services Provided

After tax services, the next three groups were mentioned with similar frequency: business services (n=9; 52.9%), public access to information (n=9; 52.9%), and BMV services (n=8; 47.1%). As far as business services, participants noted that often many patrons simply required help navigating a website to find the information they needed. One director commented, “A lot of the time it takes 15 to 20 minutes just to find the telephone number to call for something then it’s the wrong number or doesn’t work and you have to start all over again.” The director further stressed the need for improved communication and training from government agencies on how to find certain things on their websites.

Although it was reported by only two interviewees as a frequently requested type of service, one participant noted that the most difficult and time consuming e-government service was providing assistance about immigration because library staff members have little familiarity with immigration policies or procedures. A director noted that patrons who do not speak English or do not speak it very well also add to this difficulty: “There is one patron who is Chinese and doesn’t speak English very well and it takes a lot of time to just understand what he wants to find. Then we have to go and actually find it and make sure it is the right thing, but we don’t really have any experience with any of it so the help we can give is very limited.” The overall lack of familiarity with agency policies and procedures can be interpreted as meaning that e-government services are just as difficult for library staff to deal with as they are for the patrons.

*Percent of Time Spent on E-government Services*

In order to help validate the cost estimates the study team is deriving from the survey, the interview included a question asking library directors to estimate the percentage of time their library's staff spend in a typical workweek helping patrons with e-government questions or other assistance. Figure K-3 displays the results for all responses to this question. Despite anecdotal evidence suggesting that a vast amount of time is spent on e-government transactions, the majority of participants (n=13; 76.5%) reported that, typically, their staff dedicate less than 10% of their time to e-government assistance to patrons. However, one participant said that describing the percent of time spent in a typical work week was problematic as a patron might request help with retrieving information on a website initially, then not need help as he gains experience with the site, but later come back to request help setting up an email account that is required for using an online form and application.

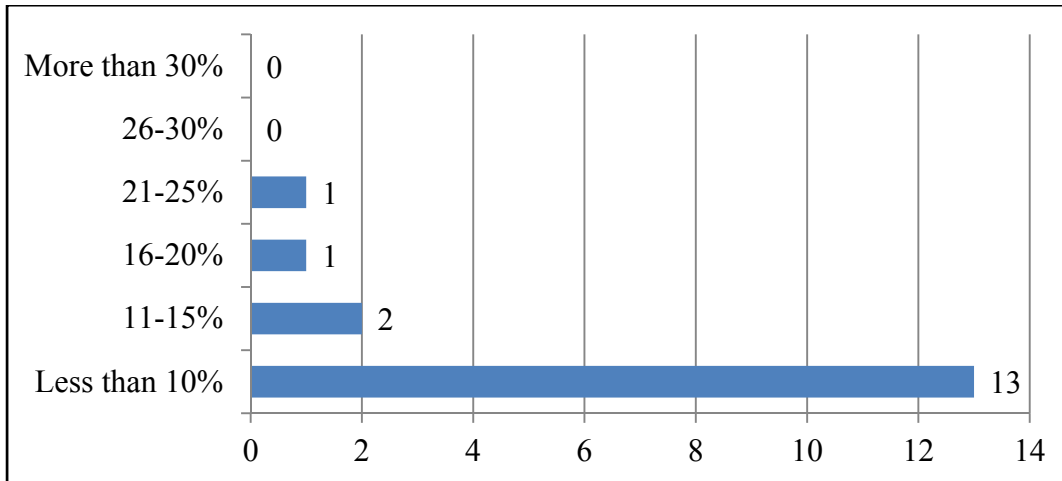


Figure K-3. Percent of Time Spent Providing E-government Assistance

Library directors found it even more difficult to break down the time spent on local, state, and federal e-government services as there seems to be a frequent overlay among different programs or services with which patrons are requesting help. Figure K-4 presents results regarding the portion of time spent on state, federal, and local e-government transactions. The majority of participants (n=13; 76.5%) responded that the time spent on requests for assistance with e-government transactions related to state services. This is not surprising as unemployment benefits and workforce development programs are handled by state agencies. The only other response was that time was split evenly between assistance on state and federal services.

No respondents indicated that the majority of time was dedicated purely to federal or local e-government transactions. The lack of any directors indicating that patrons mostly ask for help with local services is likely due to the fact that many local government agencies do not offer online services, such as paying utility bills. One participant commented: “We would probably have more requests for local stuff [e-government services] if any of the local stuff was [sic]

available online, but it's not." Directors from self-described "rural counties" noted this more often than other interviewees.

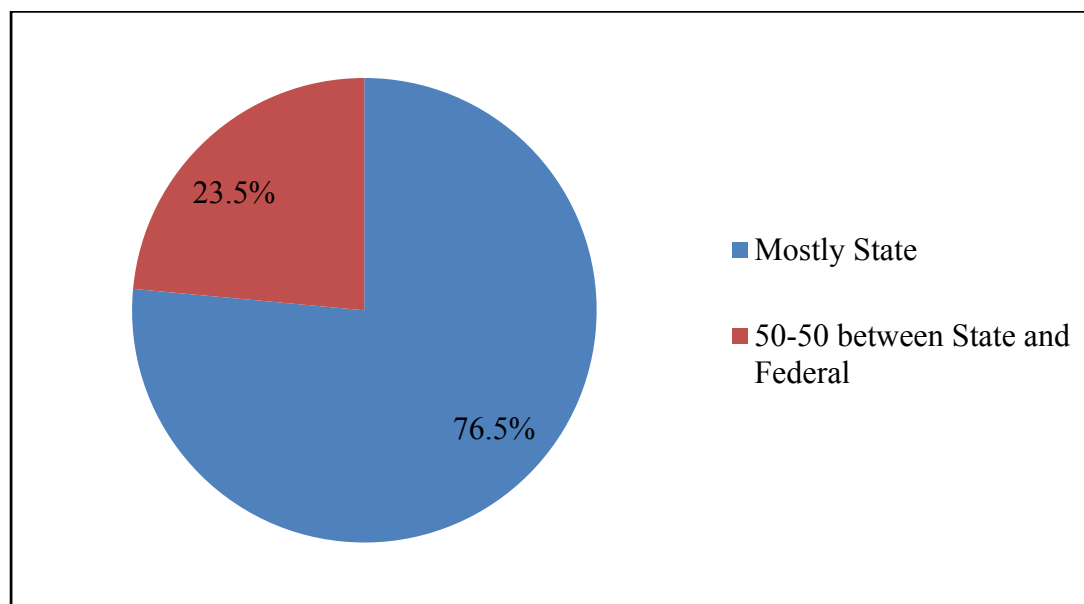


Figure K-4. Time Spent on State, Federal, and Local E-government Transactions

#### *Benefits of E-government Service Provision*

Directors also were asked to discuss the benefits of e-government service provision in their libraries (the interviewer provided some examples from the survey). First, they discussed benefits to the library, then benefits to other government agencies. As far as benefits to the library, every participant listed increased use of the library as the main, and often only, benefit the libraries receive. One director commented: "It gets people in the front door and maybe makes them realize all the other services the library has."

However, many participants noted they did not know if simply getting people into the library to use the computers for e-government related activities actually got anyone to come back. One participant said: "It certainly gets people in the door, but as to whether they stay and use anything else, I don't know. I don't know what the conversion rate on something like that would be." Another director said there are not any benefits to the library: "I don't think any of it is really a benefit. It might bring in someone who would not normally come in, but it really dilutes our ability to provide traditional library services to people that always come in, so I think really the only benefit would be to the government agency that does not have to deal with anyone anymore." This point was echoed by other library directors who were relatively ambivalent when asked about benefits to the library. No participant suggested an additional benefit or how else the library might profit from e-government service provision. The uniformity of response suggests a lack of widespread belief that providing e-government assistance to patrons is worth any time or effort on part of the library staff.



Responses to the question of benefits to other government agencies from public library e-government service provision were uniform. Each respondent noted the reduction of cost to the government agencies for not maintaining or staffing a local office. One director commented: “They get to pawn everything off on the library and they do not have to interpret their own information to the public.” Another respondent said, “When people do go directly to the agency they’ll have a better understanding of what needs to be done because they’ve already come here [the library] asking us for help with it and that saves them time and effort.”

### *Improving E-government Services*

The final question in the interview asked participants to comment on which three things could improve e-government services at their libraries. Only two respondents said more money or funding for additional staff or equipment would help. Many said that more funding would not necessarily make service provision any better. What every participant said would make e-government services better for the patrons, the library, and the government agencies included:

- Training about the information available on agency websites;
- Training on how to contact the agencies;
- Set policies and procedures for contacting agency staff and sending forms and other documents to agencies;
- Better advertising of what services are available through the library and which are not;
- Increased community awareness of e-government service roles provided by libraries; and
- A central website with all contact information for every state agency.

These responses show that public library directors’ priorities concerning e-government services include more training and better avenues of communication with government agencies, rather than more funding or staff. This is a place where the Library can take a leadership role.

### **Emergent Themes**

Five prevalent themes emerged from the telephone interviews with the library directors:

1. While the time spent by library staff members assisting patrons with e-government requests varies from library to library, it does not demand significant amounts of library staff time.
2. The time they do spend predominantly goes to provision of state-level e-government services.
3. The types of e-government services patrons request the most help with are not necessarily the most difficult e-government services for which library staff provide help.
4. Public library directors do not perceive a tangible benefit to their libraries as a result of providing e-government service assistance.
5. Public library directors perceive a need for staff training about e-government services and a need for improving staff communication with government agencies.

These themes indicate that, even though e-government service provision may not occupy a substantial amount of staff members' time, it is a burden on the libraries because library staff struggle to provide e-government services due to lack of training and background on the government services they are now providing.

## **Recommendations**

Responses from participating library directors make it clear that, while more funding and/or more staff are helpful, there are other factors that could improve e-government service provisions at their public libraries. Based on the data gathered through the 17 telephone interviews with public library directors, the Information Institute study team offers the following recommendations:

- Develop a statewide training program related to provision of e-government services for all state agencies that is offered through various media and via assorted methods;
- Hold a statewide conference to discuss measures for identifying and addressing problems of communication between government agencies and public libraries;
- Establish a set channel through which agencies can communicate changes in government policy to public library staff quickly and easily;
- Develop a centralized website with all contact information for every state agency; and
- Develop an outreach campaign to inform the public about which e-government services are available at public libraries, potentially including a public library e-government service portal that includes resources for librarians and the public.

These recommendations are based on the data gathered directly from 17 Indiana public library directors. Each participant noted that the main barriers for providing more effective e-government services at their libraries are twofold: the complete lack of training from government agency representatives to library staff and the need for a centralized authority that library staff can refer to for answers about e-government services.

## **Conclusion**

The interviews with Indiana public library directors revealed that public library staff members seem to spend less than 10% of their time responding to requests for assistance with e-government services. However, sometimes it takes a few hours to locate and verify important e-government contact information. Participants noted that simply increasing funding for e-government service provision would not necessarily resolve all of the e-government service issues. Library directors repeatedly noted that establishing a clear line of communication between library staff and government agencies and providing staff training on how to respond to patrons' requests for assistance are possible solutions to the problems public libraries have in relation to providing effective e-government services. The Library may wish to determine where it can best take a leadership role in improving public library provision of e-government services.

## **APPENDIX L: USABILITY ANALYSIS FINDINGS**

### **Background**

The purpose of usability, functionality, and accessibility testing presented here is to gain an understanding of the state of Indiana's IN.gov Web portal. Findings of usability, functionality, and accessibility testing are presented by test type where tests include:

- Usability Inspection: assessment of the effectiveness and efficiency of content access throughout the site, use of the site, and usefulness of site content;
- Functionality Testing: assessment of the degree to which all aspects of the website are functional and operate properly; and
- Accessibility Testing: assessment of the level at which the website can be used by individuals with disabilities.

Findings presented include recommendations to improve the website. Testing of the Web portal occurred between June 11 and June 25, 2012.

### **Usability Inspection Findings**

#### *Website Navigation*

An assessment of website navigation focuses on users' ability to navigate a site to specific site Web pages, between site Web pages, and back through pages to the site's homepage. Assessment also includes the ability of a user to navigate back to a site from other linked websites (e.g., from IN.gov out to a specific state agency and back to IN.gov). Website design can incorporate a variety of navigation features to enhance individuals' use of websites. Website developers determine navigational features based on user needs and site complexity, such as the depth users can drill into website content (i.e., unique pages and website layers a user must traverse to reach targeted information). The results of the IN.gov navigational feature assessment are divided into the categories listed above: navigation toolbars, page headers and descriptive metadata, links and anchor tags (which include breadcrumbs), search, and support features.

Overall, navigation throughout the IN.gov site is relatively straightforward and user friendly (see a screenshot of the homepage in Figure L-1). In general, content in each Web page is easy to locate, aesthetically presented, and clean and easy to read. Navigation toolbars provide navigation assistance to users. This site does a good job of keeping the navigation toolbars at the top of IN.gov pages.

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Figure L-1. Screenshot of the IN.gov Homepage

There are a few issues, however, that if addressed would improve a user's visit to the site. Issues and recommendations include:

1. For sites such as this one that have multiple toolbar tabs, *highlighting* the tabs as users select them alerts the users of the tab selection and enhances navigation through the site by readily identifying the relationship between targeted Web page content and the broader information-based toolbar tabs. The bottom row of tabs does highlight when it is selected and in use, however the tabs in the top row do not highlight when selected.

Solution: Add tab highlighting to the top tab toolbar.

2. The Homepage brand header is significantly larger than other website page brand headers (i.e., the picture in the header). It is large enough to hide the bottom two-thirds of the homepage from viewers with smaller height monitors.

Solution: Decrease the size of the homepage header and make it the same size as other site page headers as this will alert more visitors that there are more materials available from below the visible screen.

3. All linked state agency websites have a conventional and relatively similar page footer that contains links to general information (e.g., Quick Links, Information For, Online Services, Frequently Asked Question (FAQs), etc.) and State Info (e.g., Help, Policies,

Sitemap, etc.). Each page in IN.gov includes similar information in a table row, however the information is not presented as a bottom of page footer.

Solution: State information (located in the row with “Quick Links” and state seal) should be located in the page footer of every IN.gov page, in the same manner as other state of Indiana website pages:

- a. See Figure 2 for an example of the footer from the Governor’s homepage.
- b. The IN.gov does not match this format, and it would help users to modify the IN.gov website to conform with the footer arrangement in Figure L-2 to maintain consistency across state agencies.



Figure L-2. Example of the Footer from the Governor’s homepage

4. Page footers: website content navigation links are typically not included in page footers, such as the Quick Links located in the IN.gov pages. Page footers do typically contain links to website development and maintenance information, privacy and other policy statements, disclaimer statements, administrator contact information, webmaster/developer contact information, and/or site logos or brands. Web content information topics are not very effective as navigation tools when located in page footers as users may not intuitively scroll to the bottom of Web pages to locate website content links.

Solution: Move navigation links from the footer to the Web page body.

### *Page Headers and Descriptive Metadata*

Users can identify readily that they have reached targeted website content when Web pages contain headers and sufficient page content-related descriptive metadata. Much of the content in the IN.gov site consists of short lists of agency and other official state Web-based services/resources and direct links to state agency and other sites beneath prominent page headers. What is missing from the IN.gov website content is descriptive metadata capable of better informing citizens of the types and kinds of services and resources available through the IN.gov website. There is a general lack of descriptive metadata throughout the IN.gov site, which is needed to better inform visitors’ understanding of specific services and resources offered by linked-to sites (i.e., state agencies and other state sites).

Solution: Add metadata to the listed topics and links so visitors will have a better understanding of the association between a list item or link and a state agency. This will improve visitors' successes with locating needed information from state agencies through IN.gov.

### *Links and Anchor Tags*

The IN.gov website design incorporates lists of internal links for navigation through the site, lists of links to agency-provided services and resources, and some anchor tags. For example, IN.gov Web pages effectively utilize headers and sub-headers as mentioned in the section above and links from the tabs that surround the site's brand to organize the site. Links below headers and sub-headers are alphabetized, which also aides visitors in locating relevant information. In addition, the website has a brand with a "Home" link (i.e., IN.gov) located in the brand, which aides with navigation through the site.

Anchor tags, however, are missing from most IN.gov pages. Anchor tags are used as internal page links to help individuals navigate to sections in a Web page, particularly if the page is long and extends beneath the visible window. These anchor tags typically are listed in the visible window page (e.g., as tabs or a drop-down list of links) to alert users that additional content is located below the visible Web page window. The anchors typically link to headers and/or resources located lower on the Web page (i.e., content located below the visible window).

IN.gov does not use anchor tags for content located in the Web page, such as to the Online Services, Agencies & Gov. Mitch Daniels, and News & Events Calendar headers shown in the screenshot below. Also, anchors are needed for the Legislative/Judicial/MYLOCAL.IN.GOV, Quick Links/State Info, and Top Links sections of the homepage that are located in the bottom third of the homepage screenshot in Figure L-3 (i.e., located below the visible window shown below).

Solutions: Anchor tags are needed that link to content headers in a long webpage. Add anchor tags to help users locate and navigate to content available below the visible Web page window.

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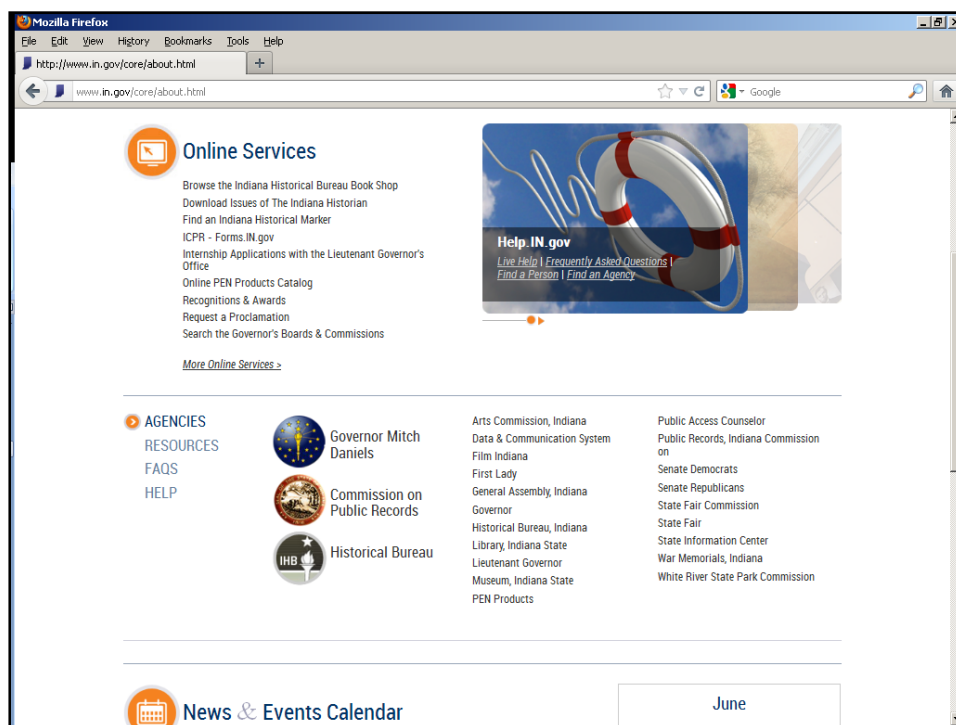


Figure L-3. Screenshot of the Lower Portion of the IN.gov About Web Page

### *Breadcrumbs and Logo Links*

Breadcrumbs are essentially pathways of links that allow users to go back to prior visited Web pages. An example of a breadcrumb list is [IN.gov Business & Employment](#) >> [Online Services](#) >> [File Business Entity Report](#). The IN.gov website does not utilize internally-based breadcrumbs as links for individuals to navigate through and between IN.gov Web pages. Breadcrumbs would be useful for visitors who search through the IN.gov site and leave the IN.gov website to visit other state of Indiana websites and need to find their way back to IN.gov. For example using the breadcrumb list above, the last page visited in the breadcrumb list is File Business Entity Report, which pushes a visitor from the IN.gov website to the Indiana Secretary of State website Business Entity Report Filing page presented in the screenshot in Figure L-4.



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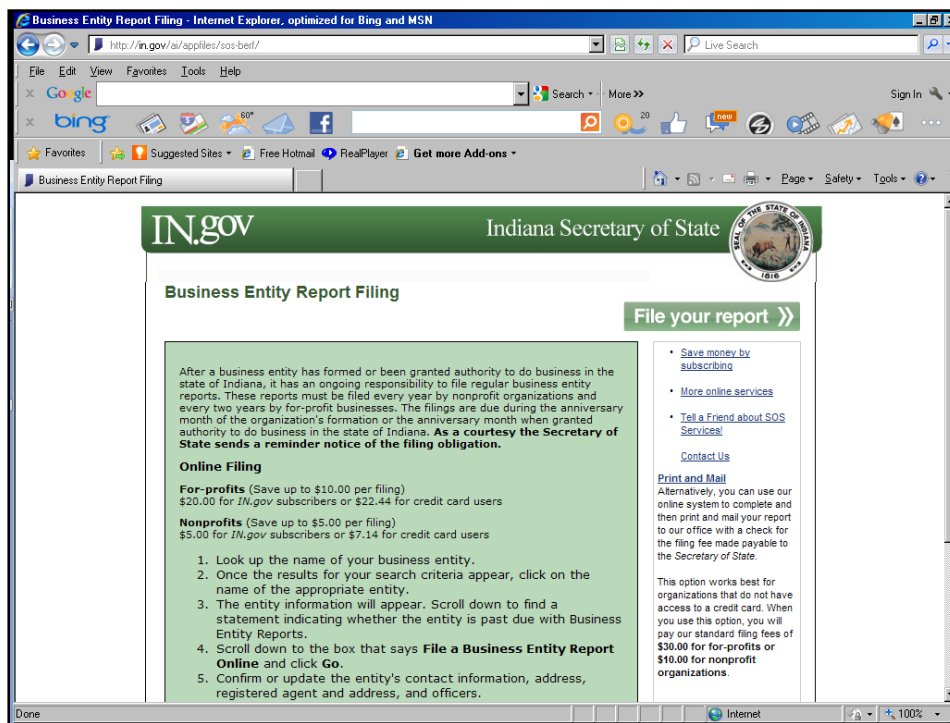


Figure L-4. Screenshot of Indiana Secretary of State Website Business Entity Report Filing Page

The primary issue with the linked page above is navigation back to IN.gov. The IN.gov logo (top left corner of the page) is present but is not an active link back to the IN.gov homepage (i.e. a functionality issue of the Secretary of State Web page). The logo should be an active link, but the link would only take the user back to the IN.gov homepage and not to the last IN.gov Web page visited. This would cause a visitor to begin a prior search again, which is a waste of a visitor's time and effort. Breadcrumbs would help visitors navigate back to the last IN.gov Web page or to another IN.gov page they visited in their searches, which is useful in returning to a search in progress, particularly when a link turns out to not be the needed resource or service.

**Solution:** Consider either adding breadcrumbs so individuals can find their way back to the last IN.gov page visited or having all externally linked websites open in new browser windows so visitors do not lose the ability to return to the last IN.gov Web page visited as part of an ongoing information search.

### *Search Feature*

The site's search feature, advanced search feature, and the IN.gov active link back to the site's homepage are located in the center of the site's brand that features cycled photos (see Figure L-5). Issues with both the search box and logo are specific to their location in the center of the brand's pictures. The default color for the IN.gov logo, search box, and Advanced Search link are white. Some of the photos are white or light-colored behind the features listed above, which can make it difficult for some visitors to locate the logo, search box, and/or Advanced Search link. Other official state of Indiana websites present the IN.gov logo, search and retrieve



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interface, and link to the Advanced Search feature in the top left corner of the header for each site, essentially including these features as part of each site's brand.

Solution: Consider moving these features from the center of the brand photos to the top left-hand corner of the site brand for consistency across state agency and other official state websites.

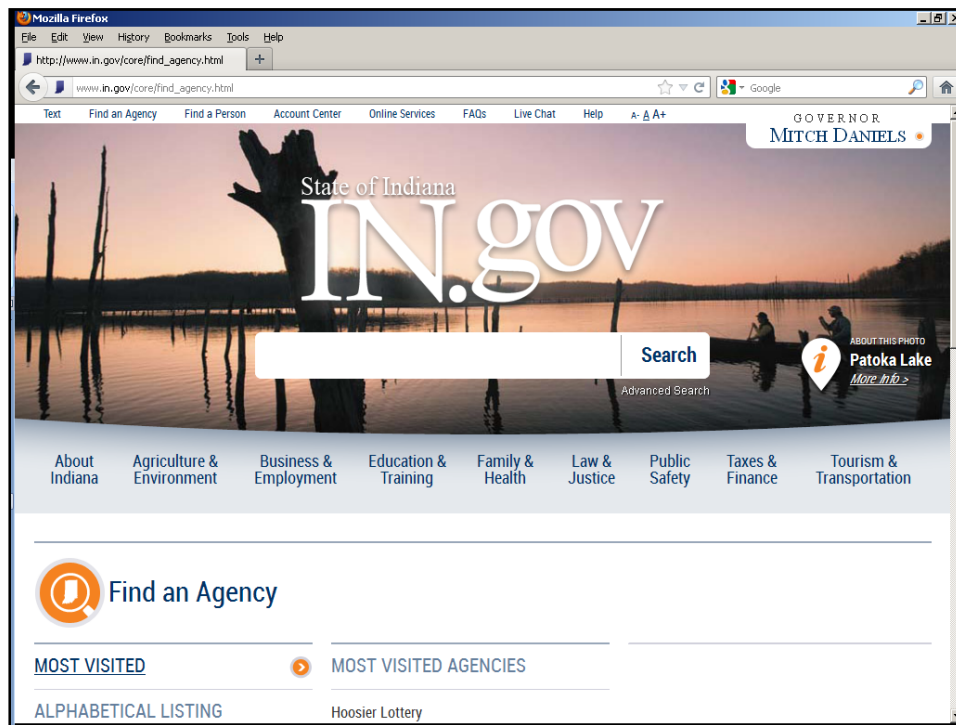


Figure L-5. Screenshot of IN.gov Search Page

### *Support Features*

Support features include topic areas such as Help, Contact Us, FAQs, and Technical Assistance. The IN.gov website includes an organized and easily locatable Help page and FAQs page, each of which are accessed from the top tab bar, which consists of support links. IN.gov does not have a visible link, however, to contact information or technical assistance. Visitors can find contact and technical assistance information in the Help page (<http://www.in.gov/help.htm>), which is accessed from the top tab bar and also from the information row located near the bottom of each page, however contact information and technical assistance should have their own visible link for visitors.

The site also includes a Sitemap, the link to which is located near the bottom of each page. The sitemap page, however, is incomplete and not very useful as presented, meaning material located in the sitemap is already available in a more organized format from the two tab bars that surround the IN.gov brand on each page.

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**Solutions:** Consider adding links to the Contact Us and Technical Assistance topic areas in the page footers (i.e., current Quick Links and State Info area, second row from bottom). Also, update/complete development of the SiteMap.

### *FAQs Section Issues*

In general, navigation is good through most sections of the IN.gov site. The *FAQ* section, however, is an exception. The browser back button functions well for most topic areas, but it does not function for the FAQs section (shown in Figure L-6). For example when selecting a question listed in the Law & Justice section, a user is taken to the answer. When navigating back using the browser back feature, however, the user is taken back by default to questions listed in the About Indiana topic. This is an example of when breadcrumbs as a navigation feature are useful for visitors to the site.

**Solution:** The browser back feature should return a user to the page shown in Figure 6 with the Law & Justice topic highlighted when the question is part of the Law & Justice topic. Also, the inclusion of breadcrumbs in the site would help alleviate these types of issues.

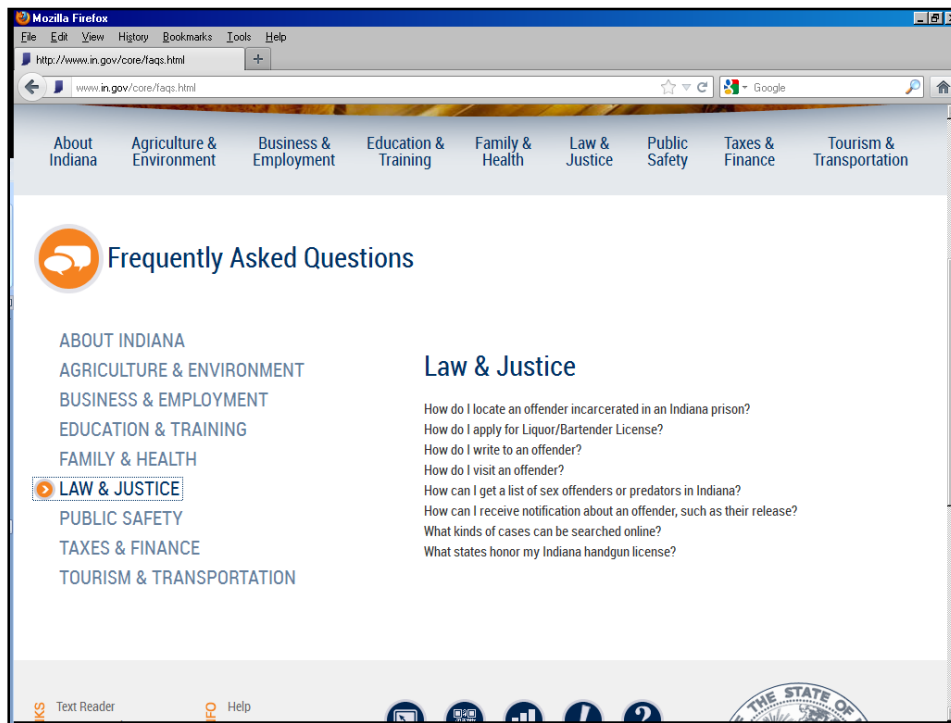


Figure L-6. Screenshot of the FAQs Page

FAQs pages do not have header 1 labels that indicate which page a user is visiting or the name of the originating page (see and compare screenshot in Figure L-7 to screenshot in Figure L-6 to see missing page header 1 labels). The question answered in the screenshot in Figure 7 is from the Law & Justice FAQs topic shown in the screenshot in Figure L-6, however there are no headers labeled Law & Justice on the answer page shown in the screenshot below.

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**Solution:** Add header 1 labels to all FAQ answer pages to create a relationship between FAQ topic questions and question answers. This is particularly important as the browser back feature does not take a user back to the Law & Justice topic page.



Figure L-7. Law & Justice FAQs Answer Page

In addition to the above issues, the FAQs answer pages include a section called Answers Others Found Helpful. This section, however, does not appear to have any additional answers listed (see example in screenshot in Figure L-8). The section simply includes the original list of other FAQs, such as the questions listed for the Tourism & Transportation Answers That Others Found Helpful Area.

**Solution:** If no additional answers are available, this section should be empty.

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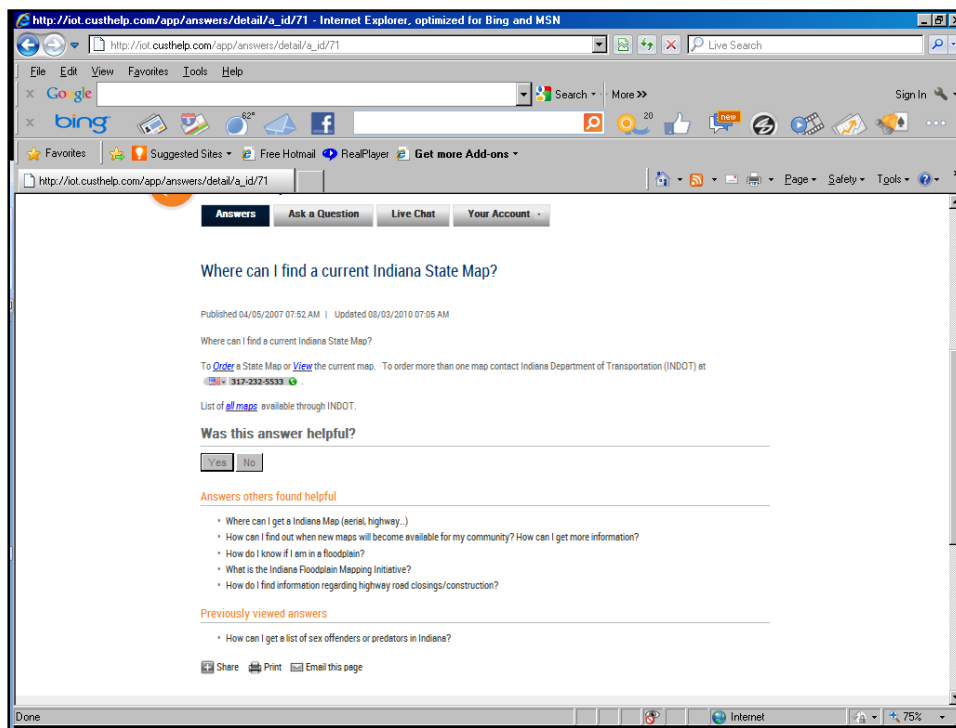


Figure L-8. Screenshot of Answers Others Found Helpful Page

### *Usability Conclusions*

In general, the IN.gov site is usable, primarily due to the simplistic presentations of headers with lists of services and resources, which are often direct links to listed state agency services and resources. The sites also include direct links to state agency and other state websites, which makes it fairly simple for individuals to navigate from IN.gov to other state websites. As discussed above, however, there are some navigation issues to address, that include:

- Adding breadcrumb software and/or having other websites open in a new browser window to aid visitors' navigation back from internal and external Web pages;
- Adding internal Web page anchor tabs to IN.gov Web pages, particularly long pages;
- Moving the search features and Homepage link (i.e., the IN.gov logo) from the center of the site's brand to the top left-hand portion of the brand, which will match other official state website branding efforts;
- Create Contact Us and Technical Assistance support features in the site's footer (after creating an actual footer for each IN.gov page); and
- Clean up the FAQs pages to make them both navigable and functional.

In addition to the above, the primary observed issue in the site is the lack of enough descriptive metadata on Web pages to aid visitors in understanding information available on the pages and linked from the pages. Adding descriptive metadata will improve the usefulness of the site.

Although the site is good in terms of usability, the site can be improved for usability and usefulness of site content. The recommendations above and in the different usability sections are intended to help improve the usability and usefulness of the IN.gov website.

### **Functionality Testing Results**

Overall, functionality of the IN.gov website is good. The test identified some issues that when fixed will improve use of the site, such as the addition of anchor tags for linking to page headers located below the visible page window and the use of “Breadcrumbs” to help visitors navigate back to IN.gov after leaving the site. Also, links should change color after selected (i.e., become highlighted) so users can remember which links they have visited and which they have not visited. Change in color also helps individuals with navigation should they want to go back to a page they had previously visited.

There are also some functionality issues that are specific to a Macintosh computer (i.e., appeared when tested with the Mac but did not appear when testing with a PC) that include:

1. The site’s screen text sizing feature (A- A A+) is difficult to see in some of the background pictures for Firefox browser as the feature appears in the picture frame, however it is easily seen in the top tab bar for Explorer (i.e., it is outside the picture frame).
2. The sizing feature (A- A A+) is not working for the FAQs window and not working for any of the tabs located below the header tab bar in Firefox. The sizing feature does work well in Explorer for these tab windows.
3. Homepage under Online Services:
  - a. Underlined phrases are not working links (for Mac and PC). Reverse this as working links are typically underlined and/or a different text color (such as the blue used for the headers that are not working links);
  - b. List items are working links and the underline appears with mouse-over; and
  - c. There is an issue with headers when sized to A+ using the A- A A+ feature for the Department of Natural Resources and Professional Licensing Agency in Firefox, but the sizing works fine in Explorer.

Also for both PCs and Macs the Text feature does not work for all IN.gov Web pages and links from the Text pages are not all working for all pages.

The A- A A+ tab is an unusual but useful feature for increasing or decreasing page content size; however, it is not as useful or functional as keyboard shortcuts for changing font size. The A- A A+ tab does not work for the brand itself or the tab bars that are also part of the site’s brand (fixed font size in relation to this feature). It also does not work consistently for all pages checked in Explorer. These features need to be checked for consistency across site pages. There are also other functionality issues that the usability section above addressed briefly, such as functionality issues in the FAQs section, missing page anchor tags, and not using breadcrumbs.

Results of the functionality assessment found that, overall, most links from the navigation toolbar, links in content areas of the site, and other navigation features are functional and operate properly. In addition and at the time of testing, most resource links were operational and linked to the appropriate websites. Functionality testing, however, is an ongoing process that should be scheduled regularly to address broken links that naturally occur in websites.

## **Accessibility Testing Results**

Accessibility is the level at which a technology can be used by individuals with disabilities. This can include having built-in accessibility features and working with adaptive technologies that individuals with disabilities may use. Accessibility testing is particularly important in government websites as access to many government services and resources are only offered online through agency sites. Individuals with disabilities—such as visual, hearing, and mobility impairments—depend on website accessibility to access and use web-based services and resources. Below are the accessibility testing results presented by question, followed by a description of the findings related to each question.

1. Provides equivalent alternatives to auditory and visual content?
  - a. The magnify feature (i.e., Ctrl + or Ctrl -) readily enlarges Web page text without distortion, however the branding features that include the tabs and search box are fixed in size and do not enlarge when using the site's enlarge/diminish feature (i.e., A- A A+). The A- A A+ feature may be useful for those with minimal visual limitations, such as those who use reading glasses for magnification, but this feature is not very useful for individuals with moderate to severe visual problems.
  - b. The site includes the use of Alt-text for most images, which is used by screen readers to interpret images for visually impaired individuals. The site, however, is inconsistent in the provision of alt-text for all tabs and page headers. For example on the homepage, most of the tabs have alt-text added to the fixed tab labels, however the Family & Health, Law & Justice, and the Public Safety tabs do not have working alt-text added.
  - c. Other examples of inconsistent use of alt-text are for headers such as with the Online Services and News & Events Calendar features shown in the Homepage screenshot in Figure 9. The Online Services header has alt-text associated with it (as a header 1) and is readable, as are links beneath sub-headers for this section, but the actual sub-headers do not have alt-text (e.g., Bureau of Motor Vehicles, Department of Natural Resources, Department of Insurance, etc.).
  - d. When More Services is selected under Online Services (see the screenshot in Figure 9), none of the headers or links in the new page has alt-text. The same occurs with the News & Events Calendar (where only the News & Events Calendar header is readable) and with many other sections of the IN.gov site.
  - e. Also viewed from the screenshot in Figure L-9, the underlined headers of Online Services are not actual links but the topics listed below the header become underlined with mouse-over and are working links to more information about the services. For example, the header Bureau of Motor Vehicles is not a link but as shown in Figure L-9, Driver's Record, Title & Lien and Registration Search becomes underlined and is an actual link.

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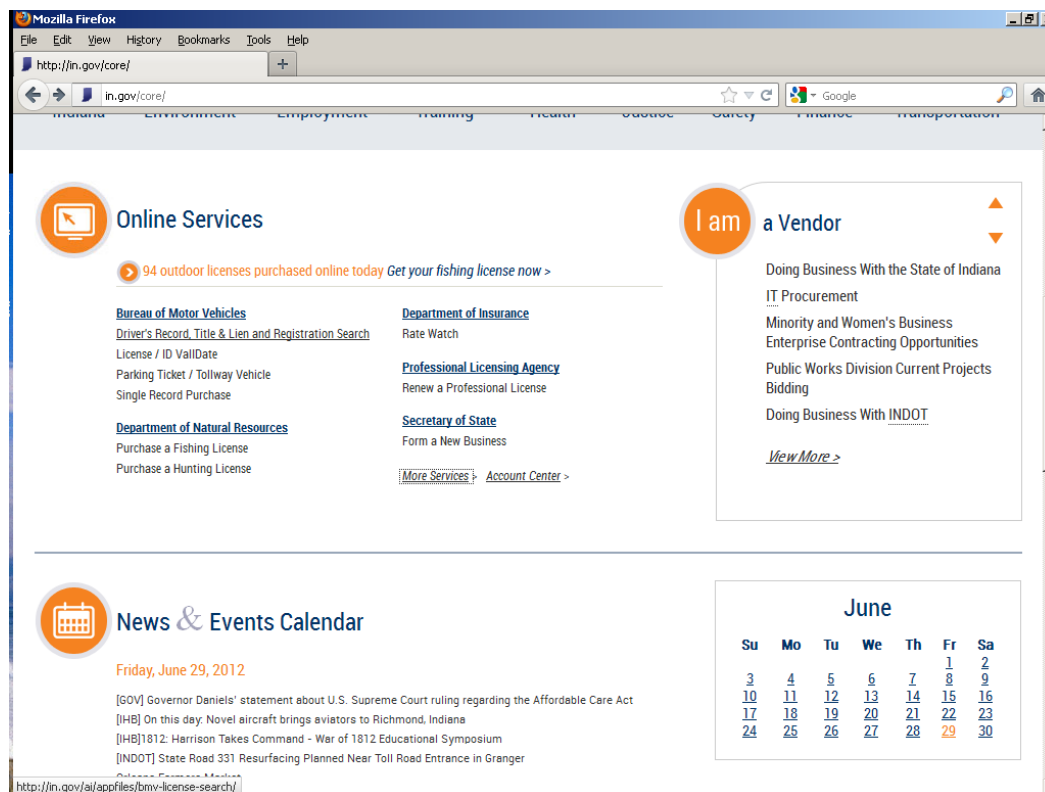


Figure L-9. Screenshot of the Online Services and News & Events Calendar Features

## 2. Does not rely on color alone?

For the most part, site colors are fixed and do not change. For example, when changing the contrast to improve readability, the browser frame changes color but the page frame does not. Also, tabs do not highlight to indicate they are currently in use by a visitor. In addition, links do not change color to indicate that a link is or has been previously selected. This is a limitation of a site's navigation capability.

## 3. Uses markup and style sheets and does so properly?

The HTML code and style sheets used for the website readily accommodate text size and page modification. This makes the site accessible to users who change settings when using screen enlargement. The site does not provide consistent use of alt-text for screen readers and does not change readily when different contrast settings are applied.

## 4. Creates tables that transform gracefully?

Columns and rows in the site do transform gracefully as they enlarge or diminish. No fixed tables were located in the site.

5. Ensures direct accessibility of embedded user interfaces?

As pointed out in items 1-3 above, the site does not provide adequate user interaction with the site's user interface for individuals with visual disabilities.

6. Provides context and orientation information?

As mentioned in the usability test results section above, the site has limited descriptive metadata, which limits context and orientation understanding for all readers. Individuals with visual disabilities are very limited in understanding the context or orientation of the site due to lack of adequate descriptive metadata and associated alt-text for most of the available data in the site.

7. Provides clear navigation mechanisms?

Navigation throughout the site is good for most users of the site, including many individuals with somewhat impaired vision, however individuals with severe vision impairment will have difficulty using this site. The addition of anchor tags, breadcrumbs, and alt-text will improve navigation throughout the site for individuals with severe visual impairments. Also, the addition of a narrator skip button to bypass unneeded narrated information will save users time when trying to move about a page as the narration of the page address, for example, can be long and slow.

The site does provide a text feature/tab, which can improve the navigation and accessibility of the site by essentially converting all headers, sub-headers, and list topics to active links with alt-text added to all. The text feature opens in a new browser, which is the only IN.gov Web page located that does so. This is inconsistent with the functionality of the site although it is a preferable feature (opening in a new browser) as mentioned in the usability section above. Once the Text page opens, the IN.gov Homepage link is visible as part of the list of top toolbar tabs, however the IN.gov link is not operational, which can confuse users. This link could be removed as the page has opened in a new window and alt-text in the browser back button can guide users back to the IN.gov homepage. Also, links from the text only version of the site are often not operable and a number of user issue messages and errors appear when attempting to use this site in both Explorer and Firefox.

8. Ensures that documents are clear and simple?

The website primarily provides information about state government services and resources and links to the services and resources. The site itself does not appear to provide downloads for individuals (documents) as it primarily provides links to state websites with downloadable documents. If the site were to add document downloads in the future, it is recommended that an HTML format be included.

Overall, the accessibility of the site needs a lot of work to create consistency across the site. There are a number of issues that can and should be addressed, some of which are



mentioned briefly above. Some initial solutions for the above would include: (1) consistently adding alt-text throughout Web pages and to all connected pages of the website and (2) not underlining non-links as this can confuse individuals who can think the links are broken. Also, the addition of a narrator skip button to bypass unneeded narrated information, particularly with the narration of the page address.

The best approach to building and testing sites for accessibility is to follow established accessibility guidelines and standards, such as the W3C guidelines for accessibility (<http://www.w3c.org>) and the federal legal standards of accessibility established by Section 508 §1194.22 of the Rehabilitation Act (<http://www.section508.gov>).<sup>72</sup> These are good places to start with addressing accessibility issues associated with the IN.gov website. The U.S. Department of Justice also has an Americans with Disabilities Act (ADA) page (<http://www.ada.gov>) with an extensive amount information on design standards and links to other federal resources and a state and local government Civil Rights Division Disability Rights Section (<http://www.ada.gov/websites2.htm>), which provides discussions on why accessibility is important and provides some examples of website development for accessibility. The W3C Web Content Accessibility Guidelines version 1.0 (<http://www.w3.org/TR/WCAG10/#toc>) and version 2.0 (<http://www.w3.org/TR/WCAG20>) are excellent sources.

The best approach to insuring accessibility of website pages is to build accessibility into pages as they are created. There are tools available to check pages as they are built and to go back and check them after they are built. The W3C Markup Validation Service ([http://validator.w3.org/#validate\\_by\\_uri](http://validator.w3.org/#validate_by_uri)) checks the markup validity of Web documents (html, xhtml, smil, mathml, etc.) by URI, file upload, and direct input. For example, the W3C Markup Validation Service located seven errors and two warnings for the IN.gov website (Figure L-10). The Web Accessibility Checker lists 11 known problems, two likely problems, and 757 potential problems for the IN.gov homepage (Figure L-11). Different tools are useful in checking accessibility compliance and should be utilized when building and/or going back to check accessibility. There are, however, no tools available that adequately replace human assessments based on guidelines and standards.

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<sup>72</sup> Section 508 §1194.22 of the *Rehabilitation Act Amendments of 1998* requires that Federal agencies ensure the accessibility of their web-based intranet and Internet information and applications.

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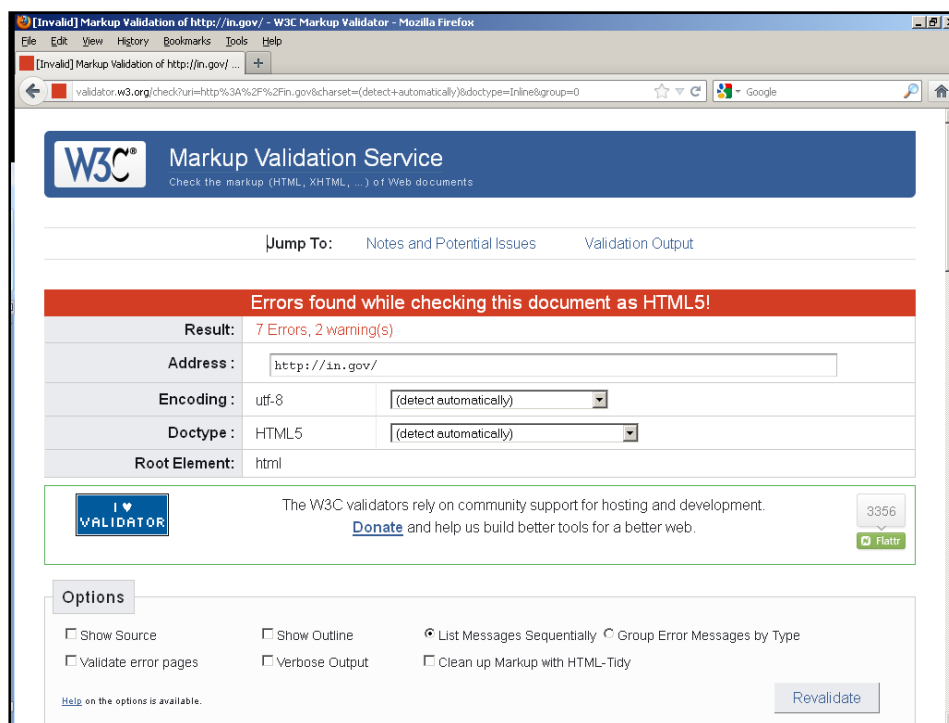


Figure L-10. W3C Markup Validation Service Errors and Warnings for the IN.gov Website

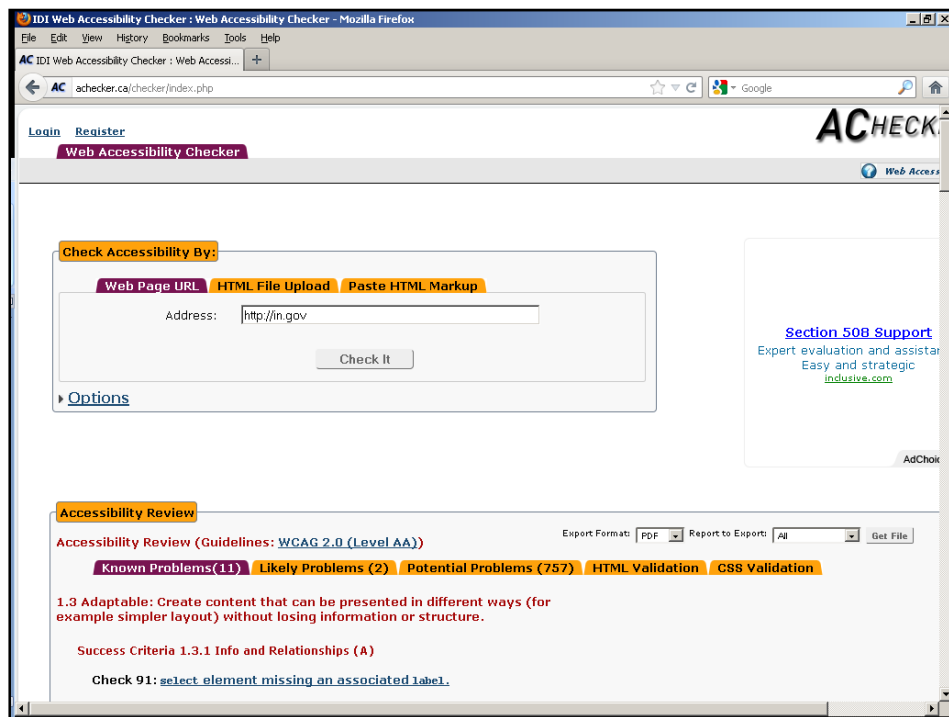


Figure L-11. Web Accessibility Checker Known, Likely, and Potential Problems for the IN.gov Homepage

## **Summary**

Preliminary usability, functionality, and accessibility analyses of IN.gov indicate there are areas of strength and areas where improvements can be made on the IN.gov website. In general, navigation throughout the IN.gov site is relatively straightforward and user friendly and Web page content for each area is easy to locate, presented aesthetically, and clean and easy to read. Much of the content in the site, however, consists of short lists of agency and other state web-based services/resources and/or direct links to state agency and other sites. What is primarily missing from site content is descriptive data capable of better informing citizens of the types and kinds of services and resources available through the IN.gov site.

Functionality of the site is good overall. However, there are some identified issues that when fixed will improve use of the site, such as the addition of anchor tags for linking to page headers located below the visible page window and the use of breadcrumbs to help visitors navigate through and back to IN.gov after leaving the site. Functionality testing is also something that should occur on a scheduled basis as links that previously worked successfully can become broken over time for various design, software update, and other reasons.

Accessibility is marginally good overall. There are a number of relevant issues to address, such as adding a narrator skip button to bypass unneeded narrated information, consistent use of alt-text each time it is needed, and consistency in presentation across different browsers when users need to enlarge pages. The primary approach to correcting accessibility for this site, however, is to work through the code of the site's Web pages to fix issues that limit accessibility as defined by the W3C guidelines for accessibility and the federal legal standards of accessibility established by Section 508 §1194.22 of the Rehabilitation Act. Also, consider using tools to identify actual and potential accessibility issues, such as the ones provided as examples in the accessibility section above.

## **Next Steps and Recommendations**

The issues identified and recommendations included in this report will improve the usability, functionality, and accessibility of IN.gov for citizens of Indiana, however there are a number of broader key issues identified that should be addressed. The issues listed below can significantly affect the use and usefulness of the IN.gov Web portal for residents' access to needed state agency services and resources. These issues include:

- General lack of descriptive metadata throughout the IN.gov site, which is needed to better inform visitors' understanding of specific services and resources offered by linked-to sites (e.g., state agencies and other state sites);
- Understanding of specific types of information and resources needed by citizens for inclusion in the IN.gov site; and
- Better understanding of the accuracy and precision with which the IN.gov search and retrieve interface locates relevant information and resources needed by users.

To address the issues above and for future development of the website, the IN.gov development team should initially develop a strategic plan. The plan should include current and future website development goals and guidelines. The strategic plan also should include metrics for measuring success of the site, such as log analysis usage metrics. The plan should incorporate evaluations, such as needs assessments, to better identify types of services and resources needed by Indiana citizens, citizens' cognitive capabilities, and the skill levels needed to obtain access to available online services and resources.

Needs assessments including such methods as focus groups and interviews will help determine the value of current content and identify any additional content that should be added to the website. The content includes the addition of descriptive metadata to help users better understand the types of services and resources available and to identify additional services and resources for inclusion in the site. The needs assessment can determine how to organize content in a way that best fits the information seeking behavior of the site's targeted user population. Organization of content can also aid with navigation of the site. In addition, what is needed is an assessment of the search and retrieve interface to determine the precision and accuracy of search returns in meeting specific citizen needs. A search feature is only useful if it produces needed results and this is determined best by testing the search capability in locating known and needed resources, such as those identified through a needs assessment.

The study team recommends that a follow-up usability, functionality, and accessibility study be done that incorporates website usage data from Web analytics in six months and the development of a strategic plan for future site development. This next review of the website should include a systematic needs assessment that collects usability data from actual users of the website, public librarians who guide users to needed services and resources, and state and local government officials who oversee the provision of needed services and resources. The inclusion of all three of these stakeholder groups will insure a more comprehensive and useful data collection effort. The needs assessment will identify the appropriateness of current website content, the need for additional content, and the usefulness of search results acquired via the site's search and retrieve interface. In addition, the next assessment should include an assessment of the actual and potential extent to which the website strategically incorporates social networking applications to build virtual communities of practice and increase public participation in the ongoing development and use of the website.

The findings from this study's needs assessment and usability, functionality, and accessibility testing indicate more refinement and future assessments will greatly improve the overall benefits of the IN.gov Web portal for the residents of Indiana. The need for and importance of an Indiana service and resource-based website is significant. A centralized website, such as IN.gov can meet the information needs of residents, leverage statewide available services and resources, and provide a continual evolution and improvement of state-provided services and resources that will benefit all residents in the state of Indiana well into the foreseeable future.

## APPENDIX M: SALARY COSTING EXERCISES

### Background

This section aims to enumerate the methods used for estimating the costs of staff support for e-government service provision in Indiana public libraries. While staff support is only one component of the total cost of the libraries' involvement, it does contribute greatly to the overall estimate that will be provided at the culmination of this study. An additional element is the equipment costs, and the method for estimating those costs is available in Appendix N.

In order to determine the cost of staff support for e-government service provision in Indiana public libraries, the Information Institute study team first had to clarify the certification requirements for professional titles in Indiana. While labeling staff members as professionals or paraprofessionals usually depends on the presence, or absence, of an advanced MLS degree, the Library liaison informed the study team that their classification system works differently. She explained:

In Indiana, in 2007-2008, the public library community had the opportunity to completely remake itself as a profession in the state. Given the choice of eliminating the public librarian certification, or making the program meaningful, public librarians from across the state overwhelmingly chose to make the certification program meaningful. Public librarians from all over the state in all levels of positions came together as the Certification Taskforce, and developed the administrative rule that is public librarian certification in Indiana. All positions which are at the director, assistant director, branch managers or department head require certification, and are therefore considered *professional*. Additionally, any position that spends more than half of their time doing professional library work should also be certified, and is therefore considered *professional*. Obviously not everyone who helps the public is a professional, so other positions which do not have duties that are mostly of the nature of professional library work are considered *paraprofessional* for the purposes of determining an average salary for each type of library, rural and urban.<sup>73</sup>

In addition to this explanation, the Library liaison provided the project team with salary data for each *library system* and assigned a professional or paraprofessional classification for each position. After evaluating the available information and discussing the desired outcomes of the costing exercise with the Library liaison, the study team established the following methodology in order to estimate the costs of staff support for e-government service provision in Indiana public libraries.

### Methodology

The method for estimating the cost of staff support includes three elements, as follows:

- Determining average statewide salaries;

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<sup>73</sup> Included *verbatim* from Library project liaison e-mail received on January 22, 2012.

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- Calculating estimated staffing costs to support e-government service provision; and
- Calculating time estimates for state, federal, and local e-government service transactions.

Utilizing predetermined average staff salaries and self-reported survey data, the study team will be able to produce estimated salary costs for state, federal, local, and total e-government service transactions and average time estimates for state, federal, local, and total e-government service transactions in order to contribute to the greater cost estimate for Indiana public library e-government services. The following sections detail each of the three components.

### *Determining Average Statewide Salaries*

The study team was able to determine the average statewide salaries for library staff members in the following two steps:

1. Determine locality (i.e., urban or rural) for Indiana public library systems; and
2. Determine average salaries for staff members.

Details for each step follow.

#### Step 1: Determining Locality for Indiana Public Library Systems

First, the study team created a worksheet for the library system salary data according to each professional and paraprofessional position. The study team then designated each library system as either rural or urban based on the county's rating in the IRR (See the *Methodology Addendum: Locality Designation Methodology* for more information on the IRR).<sup>74</sup>

#### Step 2: Determining Average Salaries for Staff Members

Second, the study team averaged the data from the resulting categories to determine the average salary for professional urban staff members (U-pro), paraprofessional urban staff members (U-para), professional rural staff members (R-pro), and paraprofessional rural staff members (R-para). In order to accomplish this, the study team averaged the salaries for each position separately according to their locality designations, and then computed the resulting average of all of the *professional* positions and all of the *paraprofessional* positions separately. The resulting averages are included in Table M-1. While the actual salaries of individual staff members in each library system differ, these figures offer statewide averages to be used in calculating estimates of the cost of staff support for public library e-government service provision.

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<sup>74</sup> Waldorf, B. S. (2007). *What is rural and what is urban in Indiana* (Research Report No. PCRD-R-4). Retrieved from the Purdue Center for Regional Development website:  
[http://www.pcrd.purdue.edu/documents/publications/What\\_is\\_Rural\\_and\\_What\\_is\\_Urban\\_in\\_Indiana.pdf](http://www.pcrd.purdue.edu/documents/publications/What_is_Rural_and_What_is_Urban_in_Indiana.pdf)

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Table M-1: Average Salaries for Indiana Public Library Staff Members

Type of Staff	Locality Designation	
	Urban	Rural
Professional	\$35,709.76	\$28,629.86
Paraprofessional	\$29,725.77	\$26,768.96

### *Calculating Estimated Staffing Costs to Support E-government Service Provision*

Next, the study team calculated the estimated total statewide staff cost for e-government service provision by utilizing (1) the calculated average salaries for Indiana public library staff members (explained above) and (2) the survey responses for the estimated percentage of time spent on e-government services for state, federal, and local e-government transactions in library systems (see Appendix G for survey findings).<sup>75</sup> Calculating the estimated statewide total salary cost was a four-step process, as follows:

1. Determining the estimated percentage of time spent on and estimated total statewide staff cost for e-government services;
2. Determining the estimated cost per staff person for local, state, and federal services;
3. Determining the estimated statewide cost for all U-pro, U-para, R-pro, and R-para; and
4. Determining the estimated total statewide staff cost for e-government services in Indiana.

Details for each step follow.

#### Step 1: Determining the Estimated Percentage of Time Spent on and Estimated Total Statewide Staff Cost for E-government Services

First, the study team used the estimated percentages for time spent on e-government service variables for each survey respondent (at the system level) and classified them as urban or rural according to the IRR (Figure M-1). This already splits the variable into two sets: urban and rural. As this question was asked separately on the survey for professional and paraprofessional staff members, two subsets of variables were available for the urban and rural sets: percentages of time spent on state, federal, and local e-government transactions by professional staff and percentages of time spent on state, federal, and local e-government transactions by paraprofessional staff. This resulted in 12 variables, as depicted in Figure M-2.

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<sup>75</sup> Any outlet-level data that was submitted through the survey will be averaged with other outlets in the library system in order to produce percentages that are the estimated average for the library system.

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Start with the <i>Estimated Percentages for Time Spent on E-government Service</i> variables for each respondent			
Urban respondents		Rural respondents	
Professionals	Paraprofessionals	Professionals	Paraprofessionals
% on federal e-gov	% on federal e-gov	% on federal e-gov	% on federal e-gov
% on state e-gov	% on state e-gov	% on state e-gov	% on state e-gov
% on local e-gov	% on local e-gov	% on local e-gov	% on local e-gov

Figure M-1. Breakdown of the Estimated Percentages for Time Spent on E-government Service Variables

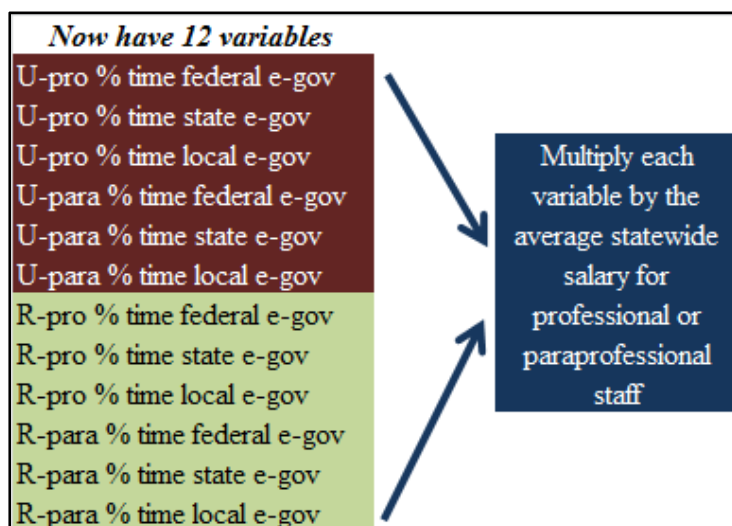


Figure M-2. Steps 1 and 2 of the Process for Estimating Total Statewide Staff Costs for E-government Service Provision

### Step 2: Determining the Estimated Cost Per Staff Person for State, Federal, and Local Services

Second, the team then multiplied these percentages by the average statewide salary for professional or paraprofessional staff in Indiana public libraries in order to calculate the estimated cost per staff person for local, state, and federal services (Figure M-2 above). The study team used the formula builder in Microsoft Excel to calculate all mathematical operations. The resulting figures from these calculations represent the statewide average staff costs for U-pro, U-para, R-pro, and R-para to provide e-government services in Indiana public libraries.

The resulting averages are included in Table M-2. While the actual costs for individual libraries differ, these figures offer statewide averages that are based on available data and can be used as inputs in further e-government service support costing exercises.



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Table M-2: Average Yearly Staff Cost Per Person for State, Federal, and Local E-government Services

Staff Type	Avg. Cost for State	Avg. Cost for Federal	Avg. Cost for Local	Avg. Cost for All
U-pro	\$8,135.13	\$1,428.39	\$5,992.54	\$15,556.06
U-para	\$4,867.60	\$1,263.35	\$5,573.58	\$11,704.52
R-pro	\$2,226.77	\$578.96	\$1,552.37	\$4,358.10
R-para	\$2,260.49	\$535.38	\$1,623.98	\$4,419.85

These figures demonstrate that of the four types of staff discussed in this section, urban professionals (U-pro) and urban paraprofessionals (U-para) comprise the largest portion of libraries salary support costs for local, state, and federal costs combined with \$15,556.06 of an average U-pro's salary and \$11,704.52 of and average U-para's salary supporting their library's e-government service provision each year.

While urban libraries spend more, there is little discrepancy in the percentage breakdown of costs for local, state, and federal level service transactions. While paraprofessionals in urban libraries spend the most time and money on local-level transactions all other staff types spend the most on salary support for state-level transactions. For U-paras, 47.6% of these costs are directed towards local-level transactions, 41.6% toward state-level transactions, and 10.8% towards federal-level transactions while for U-pros, 38.5% of these costs are directed towards local-level transactions, 52.3% towards state-level transactions, and 09.2% towards federal-level transactions.

Like U-pros, the percentage breakdown of costs for local, state, and federal level service transactions is comparable. For R-pros, 35.6% of these costs are directed towards local-level transactions, 51.1% towards state-level transactions, and 13.3% towards federal-level transactions. For R-paras, 36.7% of these costs are directed towards local-level transactions, 51.2% towards state-level transactions, and 12.1% towards federal-level transactions.

On average, urban libraries spend \$11,197.96 more per year (71.9% more) than rural libraries for dedicated professional staff members and \$7,284.67 more per year (62.2% more) for dedicated paraprofessional staff members on salary support costs.

### Step 3: Determining the Estimated Statewide Cost for All U-pro, U-para, R-pro, and R-para

Third, the study team multiplied each category of statewide average cost by the total number of persons employed in that category in Indiana public libraries according to the 2010 Indiana Public Library Statistics provided by the Library project liaison.<sup>76</sup> These estimates are included in Table M-3. This calculated the estimated statewide cost for staff for state, federal, and local e-government service provision by U-pro, U-para, R-pro, and R-para (Figure M-3).

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<sup>76</sup> Based on the 2010 Indiana Public Library Statistics, Table 10- Library Staff. Provided by the Library project liaison.

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For this step, the study team used the total number of professionals and paraprofessionals included in the 2010 Indiana Public Library Statistics.

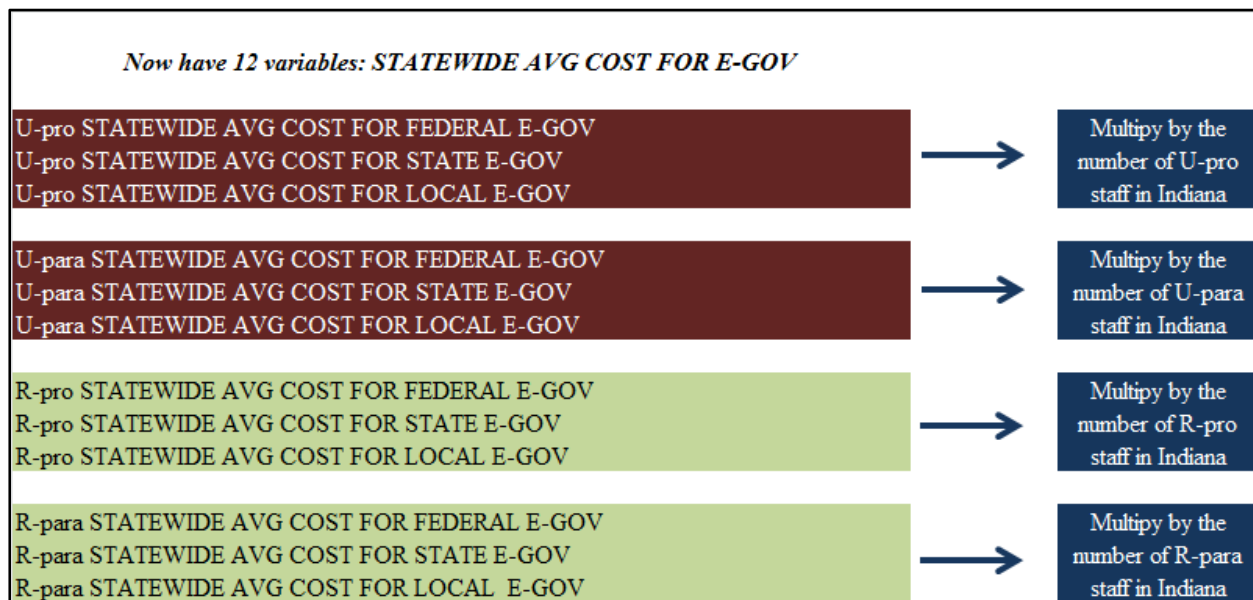


Figure M-3. Step 3 of the Process for Estimating Total Statewide Staff Costs for E-government Service Provision

Table M-3: Total Number of Urban and Rural Professionals and Paraprofessionals

Staff Type	Urban Libraries	Rural Libraries
Professionals	1207	417
Paraprofessionals	3797	1219

The resulting averages are included in Table M-4. These figures are based on an assumption that every library staff member is an e-government support staff member. Because this is most likely not the case, the costing figures represent the maximum estimated staff cost of Indiana public library e-government service provision. In reality, the cost may be significantly lower due to a portion of staff members, professional and paraprofessional, who do not engage in e-government service support activities and transactions.

Table M-4: Estimated Costs for All Staff for State, Federal, and Local E-government Services

Staff Type	All Costs for State	All Costs for Federal	All Costs for Local	Total Costs
U-pro	\$9,819,101.36	\$1,724,067.18	\$7,233,000.59	\$18,776,169.14
U-para	\$18,482,260.37	\$4,796,922.54	\$21,162,893.55	\$44,442,076.46
R-pro	\$928,561.88	\$241,426.09	\$647,340.28	\$1,817,328.26
R-para	\$2,755,537.24	\$652,627.24	\$1,979,635.97	\$5,387,800.45

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These figures demonstrate that of the four types of staff discussed in this section, U-pro and U-para comprise the largest portion of libraries salary support costs for local, state, and federal costs combined with \$18,776,169.14 spent U-pro's salaries and \$44,442,076.46 spent on U-para's salaries each year.

Due to the total number of paraprofessional staff members reported, both urban and rural libraries spend more on paraprofessionals than professionals with urban libraries spending 70.2% of their total salary support costs on paraprofessionals and rural libraries spending 74.7% of their total salary support costs on paraprofessionals each year.

When multiplying the estimated yearly average costs for urban and rural libraries by the actual number of staff members, the figures begin to vary from the results discussed in Table 1. Average salary costs indicate that urban libraries spend \$11,197.96 more per year (71.9% more) than rural libraries for dedicated professional staff members and \$7,284.67 more per year (62.2% more) for dedicated paraprofessional staff members. However, looking at total costs shows that urban libraries spend \$16,958,840.88 more per year (90.3% more) than rural libraries for dedicated professional staff members and \$39,054,276.01 more per year (87.8% more) for dedicated paraprofessional staff members.

### Step 4: Determining the Estimated Total Statewide Staff Costs for E-government Services in Indiana

Finally, the team tabulated the estimated total statewide staff costs for e-government services in Indiana public libraries by summing all 12 variables resulting from Step 3 (Figure M-4).

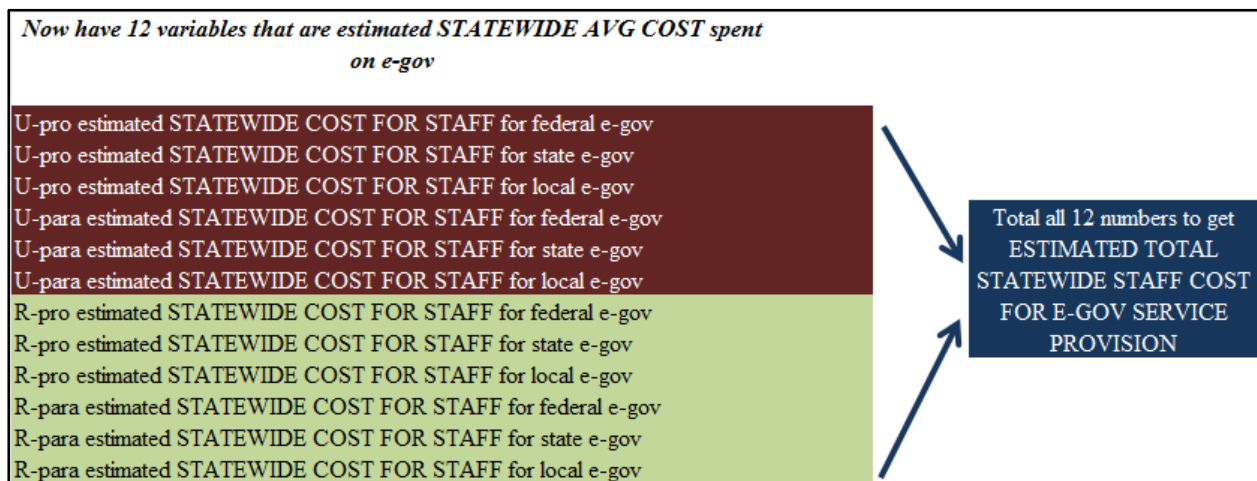


Figure M-4. Step 4 of the Process for Estimating Total Statewide Staff Costs for E-government Service Provision

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The resulting averages are included in Table M-5. These figures also are based on the assumption that every library staff member is an e-government support staff member. With a total cost of \$70,423,374.30, the cost of providing salary support for Indiana e-government service provisions is lofty. This comprises 50.0% of the Salaries/Wages (Operating Budget 1) in 2010 (\$140,819,927).<sup>77</sup> While the salary cost estimate provided here is based on FY 2011 data and the Salaries/Wages data from the Operating Budget 1 category is from FY 2010 data, it is unlikely that salaries/wages rose substantially from 2010 to 2011 given external economic forces. Therefore, this comparison gives some idea of the large percentage of library staff costs that are dedicated to e-government service provision

Table M-5: Total Statewide Staff Costs for E-government Services

Staff Type	Transaction Type	Total Costs
U-pro	State	\$9,819,101.36
U-pro	Federal	\$1,724,067.18
U-pro	Local	\$7,233,000.59
U-para	State	\$18,482,260.37
U-para	Federal	\$4,796,922.54
U-para	Local	\$21,162,893.55
R-pro	State	\$928,561.88
R-pro	Federal	\$241,426.09
R-pro	Local	\$647,340.28
R-para	State	\$2,755,537.24
R-para	Federal	\$652,627.24
R-para	Local	\$1,979,635.97
<b>All Staff</b>	<b>All Transactions</b>	<b>\$70,423,374.30</b>

### *Calculating Time Estimates for State, Federal, and Local E-government Service Transactions*

Finally, in order to determine the average time estimates for state, federal, and local e-government service transactions the study team utilized the self-reported estimated percentages of time spent on e-government services from the survey (same beginning variable as used to estimate staff costs). This process is detailed below:

1. The estimated percentages for time spent on e-government service figures were averaged for all urban and all rural respondents, keeping professionals and paraprofessionals separate but assuming all staff worked 40 hours per week. This resulted in the average amount of time spent on state, federal, and local e-government transactions by an R-pro, R-para, U-pro, and U-para (Table M-6).
2. The study team then multiplied the resulting averages by the number of professional and paraprofessional staff in Indiana public libraries to get the total time spent on state,

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<sup>77</sup> Based on the 2010 Indiana Public Library Statistics, Table 6- Operating Expenditures. Accessed at <http://www.in.gov/library/4300.htm>

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federal, and local e-government transactions by all R-pro, R-para, U-pro, and U-para, assuming all staff worked 40 hours per week (Table M-7).

3. The team then totaled the time urban, rural, and all libraries spent on state, federal, local, and all e-government transactions, assuming all staff worked 40 hours per week (Table M-7).

These calculations assume that all employees are full-time equivalent employees (FTE; 40 hours/week or 2080 hours/year), so the team also re-ran all the calculations assuming that professionals are FTE (40 hours/week or 2080 hours/year) while paraprofessionals are part-time equivalent employees (PTE; 20 hours/week or 1040 hours/year). This second set of calculations was done to attempt to produce a range of costs that represent the true costs of salary support in Indiana public libraries (Tables M-8 and M-9). Because the amount of FTE and PTE staff varies by library, this method aims to provide an estimated costing of salary support.

Table M-6: Average Annual Time Estimates Assuming Professionals and Paraprofessionals FTE

Staff Type	Average Time in Hours			
	State	Federal	Local	All
U-pro (n=1,207)	473.9	83.2	349.1	906.1
U-para (n=3,797)	340.6	88.4	390.0	819.0
R-pro (n=417)	161.8	42.1	112.8	316.6
R-para (n=1,219)	175.6	41.6	126.2	343.4

Table M-7: Total Annual Time Estimates Assuming Professionals and Paraprofessionals FTE

Staff Type	Total Time in Hours			
	State	Federal	Local	All
U-pro (n=1,207)	571,937.0	100,422.4	421,303.4	1,093,662.7
U-para (n=3,797)	1,293,258.2	335,654.8	1,480,830.0	3,109,743.0
<b>All urban (n=5,004)</b>	<b>1,865,195.2</b>	<b>436,077.2</b>	<b>1,902,133.4</b>	<b>4,203,405.7</b>
R-pro (n=417)	67,461.3	17,539.9	47,030.2	132,031.5
R-para (n=1219)	214,110.6	50,710.4	153,821.5	418,642.5
<b>All rural (n=1,636)</b>	<b>281,571.9</b>	<b>68,250.3</b>	<b>200,851.7</b>	<b>550,674.0</b>
<b>All (n=6,640)</b>	<b>2,146,767.1</b>	<b>504,327.5</b>	<b>2,102,985.1</b>	<b>4,754,079.7</b>

Tables M-6 and M-7 display the average and total annual time estimates based on the assumption that all staff, professional and paraprofessionals, work 40 hours per week. The figures demonstrate that urban libraries spend over 4 million hours per year on e-government services transactions with 44.4% spent on state-level transactions, 10.4% spent on federal-level transactions, and 45.3% of their total time spent on local-level transactions. Rural libraries spend significantly less total time on e-government service transactions per year (about 500,000 hours), of which 51.1% is spent on state-level transactions, 12.4% is spent on federal level transactions, and 36.5% is spent on local-level transactions. In both types of libraries (and in all libraries in total), state and local e-government transactions comprise the largest percentage of all transactions, with federal transactions comprising about 10% of all e-government transactions.

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When considering the statewide total amount of time spent on e-government services, urban libraries provide 88.4% and rural libraries provide 11.6% of all hours dedicated to e-government services.

Table M-8: Average Annual Time Estimates Assuming Professionals FTE and Paraprofessionals PTE

Staff Type	Average Time in Hours			
	State	Federal	Local	All
U-pro (n=1,207)	473.9	83.2	349.1	906.1
U-para (n=3,797)	170.3	44.2	195.0	409.5
R-pro (n=417)	161.8	42.1	112.8	316.6
R-para (n=1,219)	87.8	20.8	63.1	171.7

Table M-9: Total Annual Time Estimates Assuming Professionals FTE and Paraprofessionals PTE

Staff Type	Total Time in Hours			
	State	Federal	Local	All
U-pro (n=1,207)	571,937.0	100,422.4	421,303.4	1,093,662.7
U-para (n=3,797)	646,629.1	167,827.4	740,415.0	1,554,871.5
<b>All urban (n=5,004)</b>	<b>1,218,566.1</b>	<b>268,249.8</b>	<b>1,161,718.4</b>	<b>2,648,534.2</b>
R-pro (n=417)	67,461.3	17,539.9	47,030.2	132,031.5
R-para (n=1219)	107,055.3	25,355.2	76,910.8	209,321.3
<b>All rural (n=1,636)</b>	<b>174,516.6</b>	<b>42,895.1</b>	<b>123,941.0</b>	<b>341,352.7</b>
<b>All (n=6,640)</b>	<b>1,393,082.7</b>	<b>311,144.9</b>	<b>1,285,659.3</b>	<b>2,989,886.9</b>

Tables M-8 and M-9 displays the average and total annual time estimates based on the assumption that professional staff work 40 hours per week and paraprofessional staff work 20 hours per week. The figures demonstrate that, under this assumption, urban libraries spend about 2.5 million hours per year on e-government services transactions with 46.0% spent on state-level transactions, 10.1% spent on federal-level transactions, and 43.9% of their total time spent on local-level transactions. Under this assumption, rural libraries still spend significantly less total time on e-government service transactions per year (about 350,000 hours), of which 51.1% is spent on state-level transactions, 12.6% is spent on federal-level transactions, and 36.3% is spent on local-level transactions. When considering the statewide total amount of time spent on e-government services under the assumption that professionals work 40 hours per week and paraprofessionals work 20 hours per week, urban libraries provide 88.6% and rural libraries provide 11.4% of all hours spent dedicated to e-government services. These breakdowns are similar to the breakdowns of urban vs. rural contribution to total statewide e-government service provision under the assumption that all staff work 40 hours per week.

Because paraprofessionals outnumber professionals in both urban and rural libraries, reducing the number of hours worked for U-para and R-para in Tables M-8 and M-9 greatly reduced the statewide total from 4,754,079.7 to 2,989,886.9 hours per year. This makes the statewide total assuming PTE paraprofessionals to be 37.1% less than the statewide total assuming FTE paraprofessionals (Tables M-6 and M-7).

Additionally, the individual amount of estimated total yearly time spent on e-government service transactions per staff type vary greatly. While the figures in Table M-6 demonstrate the U-pros spend 9.6% more time on e-government services than U-paras, Table M-8 increases this differential to U-pros spending 54.8% more time when compared to hours spent by U-paras. This drastic reduction is also demonstrated in rural libraries. While the figures in Table M-6 demonstrate that R-paras spend 7.8% more time on e-government services than R-pros, Table M-8 demonstrates an opposite relationship with R-pros spending 45.8% more time on e-government service than R-paras.

## **Conclusion**

Determining the cost of staffing support for e-government services in Indiana public libraries is challenging due to the unique classification system for professional and paraprofessional status established by Indiana public libraries, the challenges associated with system-level analysis, and the unexpected difficulties with procuring data that works within the parameters of the project.

By utilizing predetermined average salaries for Indiana public library staff members and self-reported survey data, the study team was able to produce estimated salary costs for local, state, and federal service transactions, and for total e-government transactions and average time estimates for state, federal, and local e-government service transactions in order to contribute to the overall cost estimate for Indiana public library e-government service provision.

The estimated costs presented as the result of this exercise should be interpreted as maximum estimated staff costs for e-government service provision. In order to procure a more accurate estimate, research would need to obtain a more exact count of employees who actively engage in e-government support services and patron transactions and awareness of whether the employees engaged in e-government services are FTE or PTE.

Based on the assumptions set forth in the methodology for this costing exercise though, it is apparent that urban professionals (U-pros) and urban paraprofessional (U-paras) have the highest combined costs for e-government services and that urban libraries spend the most overall on salary support staffing for e-government service initiatives. Additionally, with the large number of paraprofessionals on staff, both urban and rural libraries spend more on paraprofessionals than professionals. Finally, this exercise demonstrated that salary support for e-government service provisions statewide is substantial with an estimated yearly cost of \$70,423,374.30.





## **APPENDIX N: EQUIPMENT, MATERIALS, COMPUTER, AND ISP EXPENDITURES COSTING EXERCISES**

### **Background**

This section enumerates the methods used for costing equipment, materials, computers and ISP expenditures for support of e-government service provisions in Indiana public libraries, as well as the results of those efforts. While equipment, materials, computer, and ISP costs are only a fraction of the total cost of the libraries' involvement, they do contribute greatly to the overall estimate provided in the final report. An additional element is the staff support costs, and the method for estimating those costs is available in Appendix M above.

For the purposes of the project, the study team used the following definitions to define which resources qualified as equipment, materials, and computer costs:

- *Equipment Costs*: Furniture, desks, chairs, and other related furnishings;
- *Material Costs*: Books, reports, supplies, and other related materials including print and electronic resources; and
- *Computer Costs*: Computers, software, telecommunications equipment, lines, networks, and services.
- *ISP Costs*: The yearly amount paid for Internet services for wired and wireless connections.

The survey asked participants to estimate the annual cost of purchases of these categories for support of their e-government service provision. Survey participants provided these numbers by referencing purchases made in FY 2011.

### **Methodology**

The method for estimating the cost of equipment, materials, and computers included two elements, as follows:

- Determining average yearly equipment, materials, computer, and ISP costs; and
- Calculating estimated equipment, material, computer, and ISP costs to support e-government in Indiana public libraries.

This two-step process produced variables such as (1) average yearly equipment, materials, computer, and ISP costs for Indiana public libraries, (2) total statewide urban and rural equipment, materials, computer, and ISP costs, and (3) estimated total statewide equipment, materials, computer, and ISP costs. The following sections detail both components.

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### *Average Yearly Equipment, Materials, Computer, and ISP Costs*

First, the study team created a worksheet for the library system equipment, materials, computer, and ISP yearly costs for FY 2011 according to the user-reported results submitted through the online survey. The study team then designated each library system as either rural or urban based on the county's rating in the IRR (See the *Methodology Addendum: Locality Designation Methodology* for more information on the IRR).<sup>78</sup>

Second, the study team averaged the data from the resulting categories to determine the average equipment, materials, computer, and ISP costs for urban and rural libraries. In order to accomplish this, the study team averaged the equipment, materials, computer, and ISP costs for each system separately according to their locality designations, and then computed the resulting average of all of the urban libraries and rural libraries to get an average for each locality type.

The resulting averages are included in Table N-1. While the actual costs for individual libraries in each library system differ, these figures offer statewide averages that are based on available data and can be used as inputs in further e-government service support costing exercises. Note that these estimated average yearly equipment, materials, computer, and ISP costs include libraries that reported that they spent \$0 in the past year since it is possible that a system did not make any new purchases in FY 2011 or that a library did not pay for resources with its own budget (paying instead through options, such as donations and shared resources not purchased by the library).<sup>79</sup>

Table N-1: Estimated Average Equipment, Materials, Computer, and ISP Yearly Costs for Indiana Public Libraries

Type of Resources	Locality Designation		
	Urban (n=30)	Rural (n=45)	All Libraries (n=75)
Equipment	\$896.63	\$922.18	\$911.96
Materials	\$1,715.43	\$1,148.89	\$1,375.51
Computers	\$14,201.67	\$10,987.51	\$12,273.17
ISP	\$11,534.90	\$12,126.43	\$11,858.96
<b>Total Resource Costs</b>	<b>\$28,348.63</b>	<b>\$25,185.01</b>	<b>\$26,419.60</b>

These numbers demonstrate that of the four categories of costs discussed in this section, computer and ISP costs comprise the largest portion of libraries equipment, materials, and computing (computers and ISP) costs. Computer costs are 50.1% of the average total resource costs for urban libraries, 43.6% for rural libraries, and 46.5% for all libraries. ISP costs are 40.7% of the average total resource costs for urban libraries, 48.1% for rural libraries, and 44.9% for all libraries. Together these costs equal over 90% of the average total resource costs for all libraries. There does not appear to be much discrepancy in the resource costs for urban versus

<sup>78</sup> Waldorf, B. S. (2007). *What is rural and what is urban in Indiana* (Research Report No. PCRD-R-4). Retrieved from the Purdue Center for Regional Development website:

[http://www.pcrd.purdue.edu/documents/publications/What\\_is\\_Rural\\_and\\_What\\_is\\_Urban\\_in\\_Indiana.pdf](http://www.pcrd.purdue.edu/documents/publications/What_is_Rural_and_What_is_Urban_in_Indiana.pdf)

<sup>79</sup> The survey instructed libraries to include any costs attributed to E-Rate refunds or other grant assistance.

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rural libraries, with urban libraries spending more on average for materials and computers costs, but rural libraries spend more on average for equipment and ISP costs. On average, urban libraries spend \$3163.62 more than rural libraries on resource costs (about 10% more).

### *Estimated Total Equipment, Materials, Computer, and ISP Costs to Support E-government in Indiana Public Libraries*

Next, the study team utilized these estimated average yearly equipment, materials, computer, and ISP costs along with the total number of urban, rural, and all library systems in order to calculate the estimated total yearly statewide equipment, materials, computer, and ISP costs for support of e-government service provision. Table N-2 shows the total number of Indiana public libraries classified as urban or rural according to the IRR locality designations, as well as the total number of all libraries.

Table N-2: Number of Urban and Rural Indiana Public Library Systems

<b>Type of Public Library System</b>	<b>No. of Library Systems</b>
Urban	112
Rural	126
All	238

Using these figures, the study team then produced the estimated total statewide cost for resources in support of e-government services in two steps. First, the study team multiplied the average yearly equipment, materials, computer, and ISP costs for Indiana public libraries by the total number of urban and rural Indiana public library systems in order to get the total statewide urban and rural equipment, materials, computer, and ISP costs (Figure N-1). Second, the study team summed the resulting urban and rural totals for each category of costs in order to find the estimated total yearly statewide cost for e-government services for each category of resource costs.

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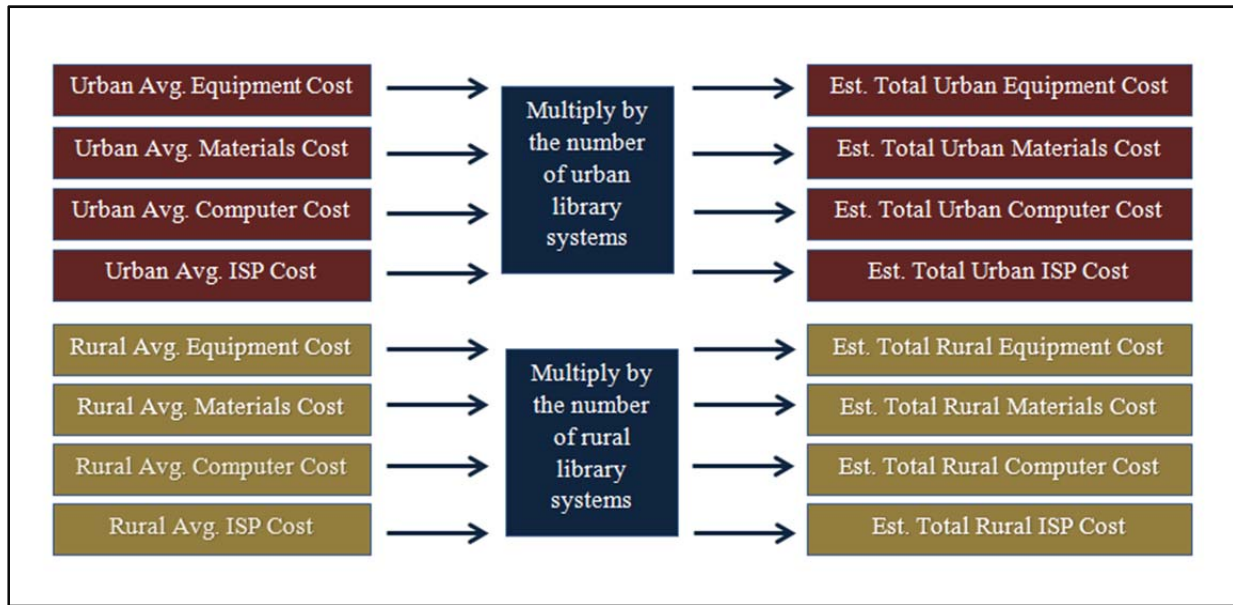


Figure N-1. Step 1 of the Process for Calculating Estimated Total Yearly Statewide Urban and Rural Equipment, Material, Computer, and ISP Costs

The resulting figures of this step are the (1) estimated total urban equipment cost, (2) estimated total rural equipment cost, (3) estimated total urban materials cost, (4) estimated total rural materials cost, (5) estimated total urban computer cost, (6) estimated total rural computer cost, (7) estimated total urban ISP cost, and (8) estimated total rural ISP cost. Table N-3 displays the numerical results of this process.

Table N-3: Estimated Total Equipment, Materials, Computers, and ISP Costs

Type of Resources	Locality Designation		
	Urban (n=112)	Rural (n=126)	Average All Libraries (n=238)
Equipment	\$100,422.93	\$116,194.40	\$108,308.67
Materials	\$192,128.53	\$144,760.00	\$168,444.27
Computers	\$1,590,586.67	\$1,384,426.40	\$1,487,506.53
ISP	\$1,291,909.23	\$1,527,930.00	\$1,409,919.62
<b>Total Resource Costs</b>	<b>\$3,175,047.36</b>	<b>\$3,173,310.80</b>	<b>\$3,174,179.08</b>

When multiplying the estimated yearly average costs for urban and rural libraries by the actual number of libraries, the figures begin to vary from the results discussed in Table N-1. While urban libraries continue to spend more on materials and computers and rural libraries spend more on equipment and ISPs, the total amount by which urban libraries outspend rural libraries for total resource costs plummets. Instead of spending \$3,163.62 more per library, the urban library collective only outspends the rural library collective by \$1,736.56 per year, or by about 0.05% of total resource cost spending. Additionally, while Table N-1 demonstrates that individual urban libraries spend 97.2% of what rural libraries spend for equipment; Table N-3

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demonstrates that the urban library collective spends 86.4% of what the rural library collective spends on equipment. For materials, while Table N-1 demonstrates that individual rural libraries spend 66.9% of what urban libraries spends for materials, Table N-3 demonstrates that the rural library collective spends 75.3% of what the urban library collective spends on materials. For computers, while Table N-1 demonstrates that individual rural libraries spend 77.4% of what urban libraries spends for computers, Table N-3 demonstrates that the rural library collective spends 87.0% of what the urban library collective spends on computers. Finally, for ISP costs, while Table N-1 demonstrates that individual urban libraries spend 95.1% of what rural libraries spends for ISP costs, Table N-3 demonstrates that the urban library collective spends 84.6% of what the rural library collective spends on ISP costs. While these differences do not affect the total yearly statewide equipment, materials, computer, and ISP costs, they are interesting figures to consider when comparing spending for rural and urban libraries in Indiana.

In order to produce the estimated total yearly statewide equipment, materials, computer, and ISP costs, the study team then added the resulting urban and rural variables from Step 1 (Figure N-2). The resulting figures of this step are (1) total statewide equipment costs, (2) total statewide materials costs, (3) total statewide computer costs, and (4) total statewide ISP costs. These totals then were included in the calculation of the estimated total costs for e-government service provision (see Findings section above). Table N-4 displays the numerical results of these calculations.



Figure N-2. Step 2 of the Process for Calculating Estimated Total Statewide Equipment, Materials, Computer, and ISP Costs

Table N-4: Estimated Total Statewide Equipment, Materials, Computer, and ISP Costs

Type of Resources	All Libraries (n=238)
Equipment	\$216,617.33
Materials	\$336,888.53
Computers	\$2,975,013.07
ISP	\$2,819,839.23
<b>Total Resource Costs</b>	<b>\$6,348,358.16</b>

These numbers demonstrate that of the four categories of costs discussed in this section, computer and ISP costs continue to comprise the largest portion of libraries equipment, materials, computer, and ISP costs (a trend first observed in Table N-1). Computer costs are 46.9% of the total statewide resource costs for libraries and ISP costs are 44.4% of the total statewide resource costs for libraries. Together these costs equal over 90% of the average total resource costs for all libraries. Equipment costs are only 3.4% of the total statewide resource costs and materials are only 5.3% of the total statewide resource costs for equipment, materials, computers, and ISP. With a total resource cost of \$6,348,358.16, the cost of providing equipment, materials, computers and ISP for Indiana e-government service provisions is lofty.

## **Conclusion**

Determining the cost of equipment, materials, computers, and ISP services for e-government services in Indiana public libraries is challenging due to the great variety of amounts that were reported on the survey. The study team calculated estimated yearly average equipment, materials, computer, and ISP costs for Indiana public libraries for urban and rural library systems by designating each reporting library system as rural or urban according to the IRR and then averaging the self-reported amounts for each of the four cost categories.

The study team then used these averages to compute statewide estimates through a two-step process that accounted for urban and rural libraries' costs individually and then combined them to calculate statewide totals for urban libraries, rural libraries, and all libraries for a total statewide cost for each category of resource costs. This process produced variables such as (1) average yearly equipment, materials, computer, and ISP costs for Indiana public libraries, (2) total statewide urban and rural equipment, materials, computer, and ISP costs, and (3) estimated total statewide equipment, materials, computer, and ISP costs. The resulting figures identified several trends among these variables, most notably that computer and ISP costs comprise the largest portion of the libraries' costs individually and statewide and that there is little discrepancy for rural and urban costs. These three variables ultimately contribute to the estimated total cost for e-government service provision discussed in the Findings section above.

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