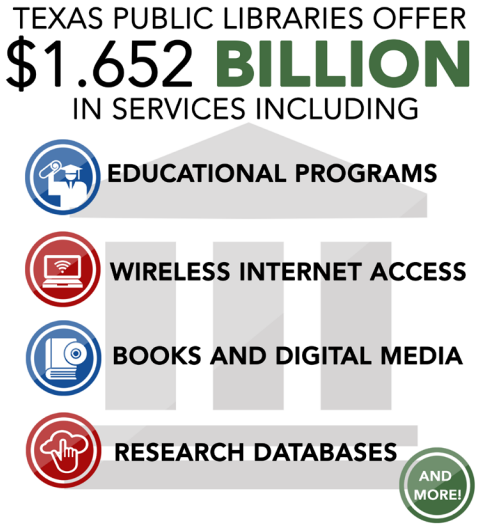
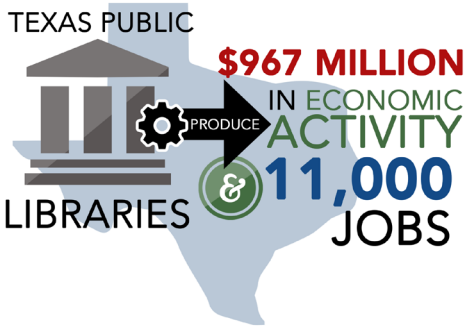
Texas Public Libraries

Economic Benefits and Return on Investment





Texas State Library and Archives Commission

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Executive Summary

Public libraries in the State of Texas provide significant economic benefits for their communities. Collectively, in FY2015, Texas public libraries were found to provide $2.628 billion in benefits while costing $566 million, a return on investment of $4.64 for each dollar.

A data-intensive research design was developed to document and to quantify these economic benefits. Extensive databases from the Texas State Library and Archives Commission (TSLAC) were used in conjunction with the input-out economic modeling software, IMPLAN. Based on the IMPLAN model, which analyzed public libraries purely as business and organizational entities, libraries produced $976 million in economic activity. Further, in FY2015, more than 11,000 jobs in Texas were dependent on public library expenditures.

Another major component of the quantitative analysis examined services offered by most public libraries in Texas. Economic estimates were derived for those services as well as for wireless internet usage and volunteers at public libraries:

- Reference services;
- Educational programs;
- Volunteers
- In-library use of books, serials, and periodicals;
- Computer terminals and internet access;
- Wireless internet access;
- Electronic databases; and
- Circulation of books and digital media.

A conservative approach was utilized that provides much greater certainty that the estimated services values are minimums. The total value of these public library services was estimated conservatively at $1.652 billion. The Texas ROI of 4.64 compares favorably to results in prior studies of other states and cities, given the conservative approaches used in this analysis.

This report updates portions of an analysis performed in late 2012 for FY2011. Compared to that analysis, the value of the same services has increased by 7.8%, and the value of all public library services increased by 21.2%, primarily due to two new services being included. The ROI increased from 4.42 to 4.64, or approximately 5 percent.

Chapter I. Introduction: Scope, Methodology, Limitations

Project Goals

Libraries are collections of books and periodicals, sources of access to digital repositories, entry points to municipal, state, and federal government programs, and destination points for children and adults. They can assist in rejuvenating neighborhoods and preventing population loss in rural communities. Public libraries also have economic impacts, both short- and long-term. This study examined the economic benefits, economic impacts, and contributions to economic growth by public libraries in the State of Texas in FY2015. Both quantitative and qualitative, difficult-to-measure economic benefits were included.

Methodology

To determine the economic impacts of public libraries in Texas, a data-intensive research design was developed. Databases from the Texas State Library and Archives Commission served as the primary basis for the quantitative estimates of economic benefits.[1] TSLAC data was used in conjunction with the input-out economic modeling software, IMPLAN. IMPLAN is commonly used by economists and is widely accepted as one of three software modeling programs for impact analyses (the others are REMI and RIMS II). The IMPLAN software, as well as the accompanying multipliers, social accounting matrices, and trade flows, allow for economic analysis of public libraries as well as other related service industries. The software used in this report is unique to the economic activity in the State of Texas.[2] Identified expenditures and jobs from public libraries, obtained from the TSLAC databases, served as the primary inputs to IMPLAN.

Another major component of the quantitative analysis examined major services offered by most public libraries in Texas: circulation of books and other media; computers and internet; educational programs; electronic databases; and reference services. This analysis required combining statewide totals for each of the services from the TSLAC database, with values for each service, e.g. each educational program, a reference inquiry, or a book checked out. Prior studies of libraries in other

1 The annual survey of public libraries by the Texas State Library and Archives Commission is conducted and checked by experienced staff. Other data sources, and any cautions, are noted in the respective service function.

2 IMPLAN utilizes a 500+ industry matrix, allowing for detailed industry analysis. For this report, such detail was unnecessary and results were described in terms of direct, indirect, and induced impacts on output, employment, and wages. More details, including a table of definitions, are provided in Chapter II of this report.

jurisdictions were reviewed as part of the valuation process. Economic estimates also were generated for the benefits from volunteers working at public libraries, in-library use of books, serials, and periodicals, and wireless internet access.

As part of the overall methodology, the research team conducted a review of recent return-on-investment studies of public libraries. This review documented the range of methodologies used previously, showed variation in library services' values, and provided a context for the quantitative results from the IMPLAN modeling and the overall ROI figure in Texas. Summaries of each recent study appear in Appendix A.

Throughout this report, a conservative approach has been utilized in valuing library services. For some services, we have adapted approaches previously used in other studies, although not necessarily the valuations of the services. Often there is room for judgment about valuation, and when that has occurred, we have chosen the lower figures because of the uncertainty within the estimation process. By using the lower, more conservative values, this analysis is able to report with certainty that public libraries in Texas provide a minimum aggregate value to their patrons and communities. Any errors in the estimates are much more likely to be understatements, rather than overstatements.

Report Overview and Organization

Chapter II provides key financial characteristics of Texas public libraries and then documents the direct and indirect economic and employment impacts statewide of public library expenditures.

Chapter III details major library services, offers alternative approaches to valuation of these services, and estimates statewide values for each.

Chapter IV summarizes the economic impacts from library expenditures and services and then compares the return-on-investment to those in recent impact studies and then to earlier reports.

Three appendices appear after the main report:

- Summaries of Four Recent Library Impact Studies
- References and Citations
- Performing Organization and Project Staff

Chapter II. Key Financial Data of Texas Public Libraries

This chapter describes key characteristics of Texas' approximately 550 public libraries. In a later section of this chapter, data and information are presented that assesses the economic contributions of library spending on the State of Texas based on expenditures and employment in fiscal year 2015.

Library Data

The Texas State Library and Archives Commission provided operating and capital expenditure data for public libraries across Texas in their Annual Reports for Local Fiscal Year 2015. Economic impacts were estimated by examining operating expenditures, capital expenditures, employee salaries and benefits, and construction expenditures.

The TSLAC database for FY2015 included more than 100 variables. These data and information are collected through an annual survey.[3] The variables used to evaluate economic impacts included:

- Wages and benefits
- Size of collection
- Other operating expenses including replacement furniture and equipment
- Expenditures on wages and benefits, collection, and miscellaneous
- Indirect costs
- Total operating expenses
- Capital outlay
- Total full-time equivalents of paid library staff
- Local fiscal year beginning date

Data was provided for each library's fiscal year, which began October 1 for 71% of Texas public libraries, January 1 for 20% of libraries, with the other 9% having different start months. The monthly timing difference for the fiscal years was inconsequential for the economic impact study.

Capital Outlay

Of the 548 public libraries, 127 reported capital outlays totaling $62 million in FY2015. These outlays may include building sites, new buildings, additions, or renovations. These outlays may also include purchases of furniture, equipment,

3 The report form and variable descriptions may be found in either word or pdf formats under the heading *2015 Annual Report Blank Worksheet* at: https://www.tsl.texas.gov/ld/pubs/arsma/index.html#LibPAs.

books, vehicles, computer systems, and other one-time extraordinary purchases noted in the reporting form.[4]

Operating Expenditures

Operating expenditures in FY2015 totalled $501.4 million. These expenditures are comprised of labor costs, library collections (e.g., books, periodicals, etc.), and other supplies and services purchased for library operations. Wages and benefits comprised 67.8% of operating expenditures, demonstrating the largely labor-intensive nature of library operations. Operating expenditures are less volatile than capital expenditures.

Employment, Wages, and Benefits

Library full-time equivalent (FTE) employment totaled 6,861 in FY2015. This number was converted to a headcount based on micro-data for the input-output model, yielding 8,232 full- and part-time employees. These workers earned $340.1 million in FY2015, of which 27.4% was paid for employee benefits. Wages totaled $247 million.

Collection

Library collections are reported in three formats: print, electronic, and other (e.g., microforms and audiovisuals). Libraries make ongoing purchases of collection items, and these ongoing purchases amounted to $63.0 million in operating expenditures in FY2015, with $36.2 million directed towards print materials, $16.6 million for electronic materials and $10.1 million for other collection items.

Other Operating Expenditures

Other operating expenditures reference the non-labor, non-collection library operations. These include supplies, software licenses, networks, Internets, and contracted personnel (i.e., facilities maintenance, consultants, auditors, etc.). Other operating expenditures totaled $92.9 million in FY2015.

Library Revenue

Revenue for a private enterprise derives from the sale of goods and services, in which value was added to raw materials or intermediate inputs and resold with a margin. Public enterprises, like libraries, receive "income" through taxes, fees, and grants. Given the nonprofit status of libraries, revenues largely match expenses. For the public libraries in Texas, operating revenues totaled nearly $508.3 million, and capital revenues totaled $56.1 million, for a total of $564.4 million in FY2015. Libraries have various revenue conduits, ranging from federal, state, and local sources, foundation and corporate grants, and fines and donations. While funding sources are varied, more than $0.95 of every $1.00 in library revenue (operating and capital) is from a local source, (i.e., from cities, counties, school districts, local donations etc.).

4 A variety of available data and longitudinal comparisons are available at: https://www.tsl.texas.gov/ld/pubs/pls/index.html

Statewide Economic Impacts from Library Expenditures

Library expenditures represent the employment of individuals in local communities and purchases of goods and services, primarily from private industry vendors. The locale of these purchases varies by library, with the composition of the local economy often dictating what may or may not be sourced locally. Companies supplying products to libraries, in turn, employ and purchase from other companies, thus creating a multiplier effect. To calculate the multiplier effects and overall economic impacts, the research team used the input-output economic modeling tool IMPLAN. The IMPLAN software incorporates data (expenditures, jobs, etc.) and publically available secondary data on labor, wages, and output. The main input data were (1)

The $563.4 million in direct library operating and capital expenditures in FY2015 ($501.4 million in operating expenditures and $62.0 million in capital expenditures as described earlier in this chapter); and (2) A total of 8,232 full- and part-time employees (6,861 full-time equivalent (FTE)).[5] This direct spending in the State of Texas multiplies through other industries in the supply chain, ranging from real estate and wholesale trade, to food services and health care. IMPLAN captures this economic activity by using economic multipliers, social accounting matrices, and trade flow data unique to the State of Texas. In other words, statewide impacts were estimated using the Texas model of IMPLAN. The model then produced results expressed in terms of direct, indirect, and induced impacts on output, employment, and wages.[6]

As shown in table 2.1 library expenditures in FY2015 led to approximately $976 million in total economic activity in the State of Texas. Total employment, full- and part-time, due to public library expenditures was 11,192.

These economic benefits were derived from the upstream economic linkages for library operations and construction, as well as from household spending on goods and services in the community. In other words, based on libraries' operating and capital expenditures, spending by vendors and households generated an additional $453 million in economic impact and 2,960 jobs in Texas.

Overall, based on the $566 million in direct expenditures, economic benefits as calculated by IMPLAN were $976 million, for an ROI of 1.72—for every dollar expended, there is $1.72 in statewide economic activity.

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5 An additional $2.63 million was added for the TSLAC share of electronic databases, as described further in chapter III.

6 Operating expenditures for leakage estimates were calculated by the IMPLAN model. Operating expenditures were categorized as Other Information Services in the model. Estimated construction expenditures were assigned as Nonresidential Building in the IMPLAN model.

Definitions

Gross Domestic Product (GDP): A measure of economic activity, GDP is the total value added by resident producers of final goods and services.

Gross Output (Output): The total value of production is gross output. Unlike GDP, gross output includes intermediate goods and services.

Value Added: The contribution of an industry or region to total GDP, value added equals gross output, net of intermediate input costs.

Leakage: Refers to spending that occurs outside the region of study.

Direct Impact: The measured economic activity (expenditures, employment, wages) recorded by the organization, in this case, public libraries.

Indirect Impact: Captures the additional activity related to libraries' business supply chains.

Induced Impact: Captures the impact of household spending driven off salaries earned by library employees, as well as indirect employees.

Multiplier Effect: Includes the direct, indirect, and induced impacts related to libraries spending to demonstrate the rippling effect of economic activity related to expenditures, employment, and wages.

TABLE 2.1. STATEWIDE ECONOMIC IMPACT OF LIBRARY EXPENDITURES, FY2015

Impact	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	8,232	$371	$402	$566
Indirect Effect	580	$32	$52	$92
Induced Effect	2,380	$113	$199	$351
Total Effect	**11,192**	**$516**	**$653**	**$976**

Chapter III. Market Values of Library Services

Introduction

The economic impact of a library is comprised of two distinct types of impacts. The first type is the same as any other organization or business, regardless of its service, goal, or intent. An organization or business that hires individuals and purchases supplies will have a beneficial economic impact on its local community. As described at the end of Chapter II, total statewide economic activity from library salaries, operating expenditures, capital expenditures, and associated purchases by supplier companies and household spending in Texas surpassed $976 million in FY2015.

The second major category of economic impacts/economic benefits is the value of services provided by the public libraries. This chapter enumerates eight types of services, adopts methodologies for capturing benefits, and derives an aggregate monetary value for each. Note that there are a variety of services that some public libraries perform that are not included. For example, some libraries serve as a locale for services provided by outside organizations, for instance private tutors who conduct sessions at a library and business organizations who counsel clients in rooms within a library. Some libraries rent meeting room and auditorium space. These are missing from the calculations.

Reference Services

One of the traditional services provided by libraries is a reference service in which patrons can ask librarians specific questions, and obtain reliable answers in a relatively short period of time. Unlike some other library services, there is no market equivalent for public libraries' reference services.[7] Another problem in valuing reference services is determining the value of an accurate or inaccurate answer. How is it possible to calculate the economic effect of accurate answers for community residents or the costs to a community of having inaccurate answers? And how does one compare the value of accurate answers to different questions—are all questions of the same importance?

7 While there are many alternatives to library reference services that are free to use, these online mechanisms have a limited history and provide answers of undependable accuracy. See for example: www.google.com, www.yahoo.com, www.ipl.org, answers.yahoo.com, www.ask.com, www.wolframalpha.com, www.answers.com, and www.wikipedia.org. There have been bidding schemes operating at such sites as www.justanswer.com and www.mturk.com .

Without a reasonable market-based option, one method to value a library's reference service is by determining the amount of time librarians spend on patrons' questions and then factoring in compensation for librarians. This method has its own difficulties.[8] In this approach the first step is to characterize reference questions. One major study found that 70.9% of reference questions take between 1-5 minutes to answer, 19.1% take between 6-10 minutes to answer, 7.9% of reference questions take more than 11 minutes to answer, and 2.1% of reference questions take an unknown time to answer.[9]

As with valuing other services in this report, we adopt conservative assumptions whenever such steps are needed. For the large proportion of reference questions, those that take between 1 and 5 minutes to answer, we will use an average of three minutes. For reference questions requiring 6-10 minutes to answer, we will use an average of 8 minutes. For those questions taking ***more*** than 11 minutes to answer, we will use 11 minutes. And for the small percentage of reference questions requiring an unknown amount of time, we will use the weighted average of the prior three categories (11, 8, 3), rounded down to 7 minutes.[10]

In 2015, Texas public libraries reported that they answered 14,628,965 reference questions. [11]

If we use the percentages from the detailed 1998 study of Spencer and Dorsey, 70.9% would be questions that take between 1 and 5 minutes, or 10,371,936 reference questions. Multiplying that number of reference questions by three minutes and then dividing by sixty minutes per hour, equates to 518,597 hours.

Similar computations were made for the other categories of reference questions, which yielded the following:

> 19.1% were reference questions that require between 6 and 10 minutes, or 2,794,132 reference questions; multiplying by eight minutes and then dividing by sixty minutes per hour, gives 372,551 hours.

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8 The problem with an equation based on this premise is that a more experienced librarian capable of answering fifteen questions in an hour will be valued less than a less experienced librarian only capable of answering five questions in an hour. In all cases, simple "directional" questions and "how to" questions about fines, library cards and so forth, are specifically excluded from being counted as reference questions.

9 Spencer, John S. & Dorsey, Luene (1998) Assessing time spent on reference questions at an urban university library. The Journal of Academic Librarianship, 24(4), pp. 290-294.

10 Presumably these times include that time in which library patrons must communicate their inquiry and reference librarians must understand the inquiry/question before being able to research and answer the inquiry.

11 This is an adjusted number that reflects additional (632,479) reference questions from the Pecos and Dallas Public Libraries. Nearly all of those questions were for the Dallas Public Library. The basic procedure was to use the per capita ratio of reference questions to population served for Dallas in 2011 (0.4887) and then use that same ratio for the 2015 population served.

7.9% were reference questions that require 11 minutes or more, or 1,155,688 reference questions; multiplying that number of reference questions by eleven minutes and then dividing by sixty minutes per hour, gives 211,876 hours.

2.1% or 307,208 were of unknown duration and assumed to require an average of 7 minutes to answer; multiplying by seven minutes and then dividing by sixty minutes per hour, yields 35,841 hours.

These different categories of reference questions combine to 1,138,865 hours in 2015. A gross estimate from the 2015 survey is that a library employee on average has an hourly cost (salary and benefits) of $23.83, based on 2080 hours per year. Multiplying the 1,138,865 hours by the hourly rate of $23.83 yields a total value of $27.1 million ($27,141,069) for reference services.

By this method, the average value of a reference question statewide would be approximately $1.86 ($27,141,069 divided by 14,628,965 reference questions).

This value is extremely low compared to other libraries and online library calculators. The current ALA online value calculator estimates the value to be $7.00 per question, [12] while the state of Maine estimates the value at $15.00. [13] In the recent reports, the value from Salt Lake County was $7.24, Santa Clara County was $16.72, and Toronto was the equivalent of $14.11. Because of the extremely low figure derived by the hourly approach ($1.86), in this instance we believe there is ample justification for using a different value. However, rather than choosing one of the three alternative values, the hourly value will be increased by 50% to $2.79. Using that value per reference question yields a total value of $40,814,812.

Every other possible per unit value would have generated totals in excess of $105 million, and nearly $245 million if the Santa Clara County value had been used. Even those numbers may be low estimates as the per unit values from Salt Lake County, Santa Clara County, and Toronto were from several years ago.

12 See http://www.ala.org/advocacy/advleg/advocacyuniversity/toolkit/makingthecase/library_calculator

13 http://www.maine.gov/msl/services/calculator.htm

Programs

Programs provided at Texas public libraries are conservatively valued at slightly below $49 million ($48,795,845). Of the 548 public libraries responding to the FY2015 TSLAC annual report, only 11 did not conduct training programs or workshops to their patrons. In 2014-15, public libraries provided 251,258 workshops, training, or other educational programs to more than 6 million library patrons. A majority of these programs, 54%, were provided for children. The programs for children were also more widely attended--71% percent of those who attended any program were children and parents at children's programs.

Programs for young children are focused on instilling a love of books, promoting reading, and frequently involve story-telling or craft projects. Programs for young adults and adults are more varied. While there are book discussion clubs and hobby-oriented programs, many adult programs are devoted to improving an individual's literacy, computer literacy, job skills, or job prospects. And many are oriented to businesses. In the 2012 Bureau of Business Research survey of public libraries, more than 40% of the library directors who responded to a specific question said their libraries provided programs and workshops specifically focused on business-related skills such as:

- preparing/updating a resume and searching for a job;
- developing marketing literature;
- researching issues related to their business; and
- business counseling.

Ideally, we would be able to derive an estimate by reviewing similar types of programs offered by other organizations. Unfortunately, similar types of programs are relatively uncommon. Perhaps the most similar are provided by YMCA and YWCA-type organizations. However, these services are generally provided to members who pay both membership fees and program fees for multiple events, making it difficult to estimate the value of a single-session workshop. Another potential comparison involves museums, as museums often have traveling exhibits and events with a supplemental fee for the exhibit. These fees can be quite expensive but such exhibits rarely are oriented to children per se. The best available estimates for the values of

Texas public library programs, however, are probably those provided by libraries elsewhere. After reviewing such estimates and the online library calculators, a conservative estimate for each type of library program is shown in the third column of Table 3.1. below.

TABLE 3.1. STATEWIDE VALUE OF LIBRARY PROGRAMS IN FY2015

	Number of Patrons	Fee/Value Per Patron	Total Value
Children's Programs	4,315,355	$6.50	$28,049,807
Young Adult Programs	427,754	$9.50*	$ 4,063,663
Adult Programs	1,334,590	$12.50	$16,682,375
Total	**6,077,699**		**$48,795,845**

** This value was determined by being halfway between that of an adult fee and a child fee.*

The most recent library studies and calculators have estimated program values ranging from $7 to $42 per patron, per event.[14] Using this methodology the average fee per patron would be $8.03, which is similar to the lower amounts in that range of $7 to $42 in other library reports.

A final note on the value of programs—More than 1,881,000 individuals were trained in the use of electronic resources in 2015. No value has been calculated for this training for two reasons. First, there is likely to be some overlap between this number and the attendance at programs. To include a separate value would effectively be valuing the training twice. Second, it is unknown to what extent there is overlap. Simple correlation values of the training numbers with program attendance by young adults, adults, and total are low, suggesting the overlap may not be substantial. Yet, it is unclear how much overlap there is, and in such an instance, we provide no estimate of a value in keeping with the overall conservative approach used throughout this analysis.

14 The Salt Lake County library study of July 2013 estimated values of $9 for adults and $7 for young adults and children. Santa Clara County (California) estimated adult and young adult programs at $16 and children's programs at $14. In Toronto's late 2013 report, adult and senior program values were estimated at the US equivalent of $14.11, while the program values for children and teens at the US equivalent of $42.34.

Volunteers

Volunteers in libraries provided their communities with $20 million worth of services ($20,159,826) in FY2015. The vast majority of public libraries in Texas supplement their full- and part-time staffs with volunteers to provide services. In FY2015, more than 1.1 million hours (1,128,138 hours) were donated to Texas' public libraries, providing the volunteers with professional experience and the community with additional services.[15]

Information from the 2015 statewide survey illustrates the importance of volunteer staff for Texas' libraries. All but a handful (15) of libraries utilize volunteers: 20 libraries had the equivalent of 5 or more full-time employees, three libraries had the equivalent of more than 20 full-time employees, and a fourth library had more than 68,000 volunteer hours, the equivalent of 32 full-time employees donated in a year. Ten public libraries are run exclusively by volunteers.

The Financial Accounting Standards Board (FASB) specifies that the value of volunteer services be included in financial statements, grant proposals and annual reports based on the fair market value of those services.[16] To comply with that standard, Independent Sector, a nonprofit support organization, creates an annual report on the average value of volunteer hours by state.[17] In 2015, Independent Sector identified the average value of volunteers for the State of Texas to be $25.11 per hour.[18] (Please see Table 3.2.)

A gross estimate from the 2015 TSLAC survey is that a public library employee on average has an hourly cost (salary and benefits) of $23.83, based on 2080 hours per year. This is a composite of all employees: those who have master's degrees or otherwise hold the title of "Librarian;" administrators, coordinators, conservators, instructors, information technology specialists, clerical staff, and shelving assistants.

Based on the TSLAC Annual Report information, approximately 32% of employees at Texas' public libraries have master's degrees from ALA accredited programs or otherwise hold the title of "Librarian." Other employees include administrators, coordinators, conservators, instructors, information technology specialists, clerical staff, shelving assistants, and many other specialists in larger libraries.[19]

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15 This total was based on the TSLAC survey results and supplemented with 1476 hours, which was the number from 2011 for 15 libraries in 2015 that had missing data for volunteers. This adjustment comprised about 0.13 percent, or slightly more than one-tenth of one percent.

16 FASB Standard No. 116 & 117

17 http://www.independentsector.org/volunteer_time

18 In the past, a unit of Points of Light, HandsOn Network, provided estimates for volunteers specified by job title rather than by state. In 2011 there were three job titles for volunteers in libraries, with hourly compensation ranging from $12.43 per hour to $28.86 per hour. Such information no longer appears to be available.

19 http://www.ala.org/educationcareers/careers/paths/listsupportstaff

TABLE 3.2. POTENTIAL VALUES OF VOLUNTEER HOURS IN FY2015

Independent Sector (2015)	
National average for volunteers	$23.56
Texas average for volunteers	$25.11
Average Salaries/Benefits for FY2015 TSLAC Survey—Average Hourly Rate	**$23.83**

Note: All amounts are salaries and fringe benefits.

Because detailed information about the types of services provided and donated by volunteers in Texas' public libraries are unavailable, one must make assumptions. Volunteers provide a range of services from unskilled labor to specialized assistance, and volunteers have all types of skills and experiences. However, we do not know what proportions of volunteers possess and contribute different skills. If one makes the assumption that volunteers mirror the paid employees, then an hourly rate of $23.83 for volunteers is appropriate. It seems doubtful, however, that the volunteers' duties and responsibilities match those of full-time employees; therefore, a discount of 25% is being applied to the average hourly rate of $23.83, yielding a volunteer hourly rate of $17.87. That is certainly higher than what many library volunteers could command but also lower than what volunteers would receive for operating an entire library and substantially lower than the Texas average hourly compensation for volunteers.

With 1.12 million hours of volunteer services provided to public libraries, with each hour valued at slightly less than $18, volunteers contributed services to their communities valued at approximately $20.16 million.

In-Library Use of Materials

Library patrons not only use computers, electronic databases, wi-fi, and check out books and electronic media in different formats, they read periodicals and other materials inside a library. Identifying the extent of this activity and placing a value on it statewide is challenging. Yet an attempt must be made as value is being provided to users.

Data have been collected regularly about in-library use of materials on the annual, nationwide Public Library Data Surveys (PLDS), even though fewer libraries report data for that metric than for any other library metric. For instance, in the 2013 PLDS (2012 results) there were 473 reporting libraries for in-library use of materials, whereas 1,579 libraries reported data for programs, 1590 libraries reported interlibrary loans, 1,647 libraries reported annual circulation, and 1,262 libraries reported print circulation.

The normal procedure for compiling in-library usage data is "observational counts." Instructions to public libraries by the Ontario Ministry responsible for libraries are as follows:

> *In your typical week survey,…Report the number of materials used inside the library and not checked out. Count any items removed from their usual location by staff or library users. Include reference materials, circulating materials, magazines, newspapers and all other materials used in the library.*
>
> - *Count a vertical file, pamphlet file, multi-media kit or language learning kit as a single item - do not count each as a separate element;*
> - *Do not count audio-visual items unless they were used at viewing/listening stations available in the branch;*
> - *Do not include items returned from an outside circulation*[20]

A number of academic articles have identified limitations of the observational counts.[21] Yet if the alternative is to omit any value for an activity that is known to occur regularly, then it seems preferable to provide at least some estimate of value.

Because the annual TSLAC surveys do not request data on in-library usage, a circuitous method was devised to provide a gross estimate. The first approach reviewed the annual PLDS survey reports and compared the mean and medians for

20 Ontario Ministry of Culture, Tourism, and Sport, based on personal correspondence with Kimberly Silk, September 2016.

21 See Richard E. Rubin, "Measuring the In-house Use of Materials in Public Libraries," ***Public Libraries*** 25 (1986) and Rebecca D. Richardson, "The State of In-Library Materials Use at the Cresson Public Library: A Case Study," Current Studies in in Librarianship; Fall2011, Vol. 31 Issue 1.

In-Library Usage and Print Circulation. For 2013 the numbers were:

	Mean	**Median**
In Library	271,500	25,891
Print Circulation	706,751	157,581
Percentage	38.4%	16.4%

For 2011, only the means were calculated in the PLDS data:

	Mean
In Library	309,926
Print Circulation	822,005
Percentage	37.7%

The Toronto Library Report also provided In Library data and Print Circulation data:

In Library	7,141,558
Print Circulation	19,714,304
Percentage	36.2%

The three percentages (mean for the 2013 PLDS, mean for the 2011 PLDS, and mean for Toronto) are quite similar: 38.4%, 37.7%, and 36.2%. Because of the conservative approach, the lowest of the three will be selected: 36.2%. From the latest TSLAC annual survey, print circulation for public libraries was 103,553,860. In-library usage therefore would be a maximum of 37,279,390 (103,553,860 X .362).

Researchers performing the analysis of the Toronto Library utilized a range of unit values: a value without any discount (a high value in their view); a value that was discounted 80% from the high value, and a midpoint value. For In-Library Use, the high value was the same as that for adult circulation (the equivalent of $19.75) and the discounted value was the equivalent of $3.95.

Again, in this report the most conservative choice will be made. Consequently, the 2015 print book circulation value for Texas will first be discounted by 80%. Based on the 2015 print book circulation value of $8.78, the after discount value would be: $1.76 ($8.78 X .20). Then because of potential data issues with determining in-library usage, this value will be further discounted by half. Multiplying the discounted value of $0.88 with the in-library use figure of 37,279,390 generates an estimated value for this activity of $32,805,863.

Computer Terminals and Internet Access

Computer terminals with internet access are a significant economic resource provided by Texas public libraries. Library directors in a statewide survey said patrons used the internet for a wide variety of purposes that ranged from education to employment to basic needs. [22] Some of the online activities specifically mentioned were to:

- perform homework and research for classes from grade school to college;
- take continuing education courses, online training, and webinars;
- train and test for job certifications and licenses;
- search, and apply, for jobs;
- apply for unemployment benefits and social assistance;
- apply for disaster aid as well as find family and friends during and after natural disasters;
- work short-term, paid, online jobs, such as on Mechanical Turk™;
- develop and operate online businesses by placing and receiving orders;
- research price comparisons;
- market new products;
- use online banking; and
- file taxes.

Multiple libraries stressed the value to their patrons of being able to secure, maintain, and update their certifications and licenses by using library internet access. Without internet access, directors said these patrons would lose their jobs. Other library directors reported that without internet access, some patrons would lose their businesses--numerous library directors mentioned that patrons were running small businesses entirely via internet at their library. These businesses ranged from an independent real estate inspector, to a trader in used car parts, to various direct selling members, and other types of businesses.

Directors pointed out that even those patrons who have home internet access often use the library internet access because of its greater bandwidth and faster service. And as one library director commented, not all patrons have the option of having personalized internet access at their residence. Ranchers and others in rural areas in particular have difficulty obtaining reliable and reasonably priced internet at their residences. The same can be said for many disadvantaged individuals in urban areas—while broadband is theoretically available to them in their neighborhood, in practical terms they often lack the resources for an up-to-date computer or broadband access in their residence.

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22 More than 62% of the library directors who responded to the 2012 survey by the Bureau of Business Research said that internet access was "extremely beneficial," while a further 20% said it was "quite beneficial" for their patrons. Furthermore, 56% of library directors statewide reported that internet access was the single most important resource provided by their libraries.

Economic Benefits

Long-term economic benefits to library patrons and the community at large from internet access are difficult to estimate precisely. One approach would be to solicit information from patrons about the value of internet access to them. Because that would entail a large user survey, this report used a different method: examining the cost of obtaining internet access from an alternate source. [23]

While public libraries provide internet access free of charge to their patrons, there are a few companies from which the resource can be purchased.[24] The standard rate set by these for-profit companies is $18-$21 per hour, using a rented computer. (Commercial options do not exist in many smaller communities, or even in some areas of larger metropolitan areas.) Nonetheless, for the purpose of deriving an estimate of the monetary value of internet access via a public library, the commercial rate is the best option.

An elaborate procedure was used in the 2012 report and will not be repeated here. (Please refer to that report for a complete description of the procedure.) Basically, from that procedure we calculated that the average session length was 1.16 hours. Because some libraries did not report a maximum length, we believe the figure of 1.16 hours is very conservative.

Second, we applied the hourly rate of $15 per hour and then computed the average internet session at $17.40 (1.16 hours multiplied by the same hourly rate that was used four years ago, $15.00. [25]

Third, we calculated the statewide estimate, utilizing the total number of internet access sessions, information that was obtained from the 2015 Public Library Annual Report. In calendar year 2014, there were 16,876,575 sessions on internet-accessible computer terminals in public libraries in Texas.[26] At an average value of $17.40 per session, public library computer terminals saved users an estimated $293,652,405 in 2015.

This figure is conservative. As noted earlier, some libraries do not report a maximum length so the average session length in reality is likely to be greater than 1.16

23 Salt Lake County's report asked about willingness to pay for computer access, and the value was estimated at approximately $80 annually per user. Slightly over one-fourth of patrons in Salt Lake County reported that they used computer terminals at one of the public libraries.

24 The largest business to provide this resource is FedEx Office, which only provides it in a small portion of their store fronts. Many other studies have used this commercial comparison.

25 There is mixed information about the values of computer terminals in other studies. The current ALA calculator is $12/hour. The Toronto and Santa Clara County reports use values less than $10/hour. Salt Lake County uses $18/hour. Because the majority of values are less than the commercial rate of $21/hour, using the prior hourly rate in the 2012 report seems appropriate. A lower rate does not seem reasonable given distance and access issues in Texas compared to library systems in more urban areas.

26 This number was derived after including an estimate in 2014 for the Dallas Public Library, based on their reported usage in prior TSLAC reports and a review of computer usage in seven other large Texas public library systems.

hours. This report also cannot reasonably estimate the values of internet access at public libraries in areas of Texas (largely in the Panhandle, West Texas, and parts of South Texas) without commercial alternatives within a ninety-mile radius. In these situations, users would have a significant commute when they wanted to access the internet, and the value to patrons of having internet access locally would be much higher than $15/hour. Thus the value of internet access statewide is almost certainly underestimated, rather than overestimated.

Wireless Internet Access

Wireless internet is offered by nearly all public libraries in Texas and is a service widely used and considered extremely important by librarians. While somewhat dated, in the 2012 statewide survey of public library directors conducted by the Bureau of Business Research, wireless internet access was listed as the single most important resource provided to their patrons by 13% of the directors.[27]

Library patrons use wireless internet connections for the same purposes as they use the computer terminals within a public library, but wireless provides several advantages. First, it allows patrons to use their own portable computers and digital devices. This enables users to save documents on their own computers as well as keep materials without having to print a hardcopy version. Second, users generally have unrestricted access via wireless, as there is no competition with other users for a computer terminal or limits on the time they have access. Third, users can access a library's wireless service after normal library hours, if they are willing to work within a small distance beyond the walls of their library building. Many examples were cited by library directors of users parking near the library after hours to access wireless (wi-fi) signals.

Although nearly all public libraries offer wi-fi, not all libraries methodically track the number of digital devices accessing their wireless networks. In the 2015 TSLAC annual survey the number of wi-fi sessions was documented at 15,853,077. However, this was the number from only about 73% of public libraries. In other words, more than 140 public libraries did not report data on wi-fi sessions. To provide a more accurate estimate, two different methods were employed. First, a simple proportional approach assumed that if 15.8 million sessions occurred from 73% of the libraries, then if the additional 27% of public libraries had reported, a total of 21.6 million sessions would have occurred. A second approach assumed that the number of wi-fi sessions would be directly proportional to the number of available computers in libraries.[28] In this approach we eliminated those libraries that did not collect wi-fi data and then examined what percentage of the total number of available computers existed, compared to the total number before excluding any of the libraries. That percentage was 76.1%. Because the two methods provided reasonably close percentages (73% and 76.1%) and because the correlation was relatively strong, it is reasonable to assume that actual wi-fi usage is considerably higher than the number provided by librarians in the TSLAC survey. The more conservative percentage of 76.1% would indicate that the actual number of wi-fi sessions in 2015 was 20,831,901 (15,853,077 / 0.761).

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27 An additional 52% of library directors said that internet access in general was the most important resource they provided.

28 A correlation of .75 exists between number of computer terminals and number of wi-fi sessions, a relatively strong relationship. This provides justification for the assumption and also indicates that libraries which do not collect wi-fi data are quite similar to those that do.

Economic Benefits of Wireless Internet Access

As with the earlier section which examined the value of computer terminals and internet access within libraries, we could estimate the monetary value of wireless access by looking at alternative providers. Costs of wireless internet, however, vary from provider to provider and generally involve long-term contracts or are subject to indirect costs, or both. Because of the variety and complexity for alternative providers, in this instance, a more direct approach is appropriate. The Santa Clara County unit value for wi-fi in 2012 was $6 and in Toronto it was the equivalent of $4.70. In the 2012 report we used a unit value of $5, and that seems reasonable for 2015 as well. The unit value is for each use, regardless of the length of that use.

Therefore, the aggregate value of wireless internet access provided by Texas public libraries in 2015 is more than $104 million annually ($104,159,505). This estimate is a straightforward multiplication of $5.00 per use applied to 20,831,901 uses.

Electronic Databases

Increasingly, electronic databases are being used by patrons of Texas public libraries. In FY2015, more than 500 public libraries offered a minimum of TexShare's 62 databases, a co-operative program of TSLAC and local public libraries. Under the TexShare program, patrons have access to databases in the following categories:

Books and Literature—12
Science and Technology—12
Homework—11
General Information—9
Business—7
Genealogy and History—6
Health and Medicine—6
Spanish Language—3
Career Development, Language Learning, Newspapers—1 each

A more detailed description of the databases available for the time period is available at: https://www.tsl.texas.gov/texshare/databasecontractlistfy2015.html

The scope and size of the databases is more apparent in the number of full-text titles available through the TexShare resources:

Newspapers and Newswires	11,080,696
Full text Journals	5,087,966
Primary Source Documents	310,082
EBSCO eBooks	28,281
Reference Books	5,718
Genealogy Documents	2.7 billion

Accessing this wealth of information has become increasingly common. In the FY2015 period, patrons at public libraries performed more than 75 million searches, up dramatically from 9.7 million searches four years earlier.[29] As another perspective, there are more than 200,000 TexShare searches conducted every day by public library patrons, based on vendor data provided to TSLAC.

Because of this large number, it is reasonable to ask if there may be overlap between the number of database searches and other public library services: reference questions, computer usage, and wi-fi sessions. Undoubtedly there is some overlap; the issue is whether it is significant or minimal.

On reference questions, there appears not to be overlap to a great extent. According to a researcher at the TSLAC, *"…Reference transactions are generally face-to-face interactions between library staff and patrons, and the libraries track those numbers and then report them to us."* In many cases, electronic databases are used by patrons

29 There were approximately 10% fewer sessions, roughly 68 million, in contrast to the number of searches, 75 million. The number of searches will be the unit of analysis in this description.

in lieu of asking reference librarians specific queries, as well as for conducting searches and research that patrons know cannot be performed by librarians.

Yet, there is certainly some overlap with computer usage and wi-fi usage by patrons. At present there is no good method for determining the extent of this overlap. And for this reason, again, we will adopt a conservative approach and conservative assumptions to valuing this service.

In the other recent reports about library impacts, a fairly consistent value has been used for database searches:

ALA Calculator:	$19.95
Toronto (US equivalent):	$23.52
Salt Lake County:	$20.00
Santa Clara County (CA):	$37.40[30]

There are multiple reasons, however, for adopting a lower value than those used in other studies. First, there is some overlap of this service with computer usage and wi-fi. How much is unknown, and there is no current way of identifying the extent. Second, TSLAC acknowledges that there is some uncertainty about the data, given the available tracking technologies of the vendors. Also there are some known cases of particular library systems showing dramatically large increases in monthly search numbers. Finally, per capita search metrics for Texas appear much higher than other jurisdictions. While the content of the database packages may be quite different, this is another possible reason to err on the conservative side.

For these reasons, a very conservative value per search of $2 was selected. Based on this per search unit value, the total value of database searches in public libraries was $150,167,176 in FY2015.[31]

30 Different classes of database searches were valued differently, ranging from $5 each for foreign language and indexes/directories, to $25 each for most categories, and at $200 each for company/business information. Dividing the total value of all searches by the total number of searches yielded $37.40 for the mean.

31 According to TSLAC, if each public library would have purchased the same package of 62 databases, the total cost would have been at least 10 times more than that in the absence of the group discount.

Circulation of Materials

To derive the value of circulation materials provided by Texas public libraries requires several different data sources, information about circulation materials (books, DVDs, e-books etc.) and a few reasonable assumptions. First, books will be considered, then other materials, and finally total values will be computed for circulation transactions by public library patrons.

For books, in the prior study, a complicated, multi-step process was performed. The first step was to determine the proportion of new book purchases, by category. Then one category, Higher-Education, Professional, and Scholarly, of books was deleted as that category is rarely purchased by public libraries. The re-computed proportions for several categories were then compared against actual circulation proportions for public libraries in Texas. The comparisons showed some differences, but within reasonable approximations. Then we determined the average cost of a new hardcover book in each category. We then multiplied that average cost by the proportion of new book purchases by proportion of new book purchases by category to determine the average new book cost. Then that price was severely discounted (80%) for a variety of reasons, to arrive at a per book circulation value of $8.63.

In retrospect, that complicated process seems unnecessary, and for FY2015, a less complicated approach will be used. As can be seen in Table 3.3 below, a variety of values have been identified in recent analyses. (Blanks indicate no value was assigned to that category.)

TABLE 3.3. POTENTIAL VALUES OF BOOKS, BASED ON OTHER SOURCES

	ALA Calculator	State of Maine	State of Minnesota	Santa Clara County*	Salt Lake County	City of Toronto**
	2015	**2014**	**2010**	**FY 2012**	**2013**	**2013**
Adult Books	17	18	7.48	9.5	8.61	7.04
Young Adult Books	12		6.48			6.10
Children's Books	17	10	6.48	8.75	4.81	6.10

**Average of Low/High*
***Discounted 50%*

Because of the variation, one approach is to exclude the highest and lowest values for adult books and children's books, and then take the mean or average. That would provide the resulting values in Table 3.4.

TABLE 3.4. DERIVED VALUES OF BOOKS, BASED ON OTHER SOURCES

	ALA Calculator	State of ME	State of MN	Santa Clara Co.*	Salt Lake County	City of Toronto**	Average
	2015	**2014**	**2010**	**FY 2012**	**2013**	**2013**	
Adult Books	17		7.48	9.5	8.61		$10.65
Young Adult Books	12		6.48			6.10	$8.19
Children's Books		10	6.48	8.75		6.10	$7.83

**Average of Low/High*

***Discounted 50%*

Because the 2015 TSLAC survey does not differentiate between young adult books and adult books, a blended rate of $9.42 will be used.

There were a total of slightly more than 103 million book items in physical format circulated in FY2015. Of that number, approximately 40% were items marked as children's and 60% as adult or young adult. Therefore, the value of book circulation transactions:

Children	41,486,566 X $7.83 = $324,839,812
Adult/Young Adult	62,067,294 X $9.42 = $584,673,909
Total Book Circulation Value:	$909,513,721

Non-book, that is digital fomat, circulation values follow a somewhat different approach. Non-book items can be divided into two main categories:

Video and audio items: 51.6%,
E-books: 48.4%.[32]

DVDs are available as a single purchase item from one company (RedBox) at many locations in Texas and could be rented for $1.50 per day in FY2015. Alternative sources for multiple rentals are NetFlix, Amazon, and several smaller services. A per unit value of $1.50 will be used for both DVDs and CDs.

32 Because circulation data does not distinguish between audio and video items, these percentages were based on the classification of items in the collections. In terms of actual circulation, it is reasonable to assume that e-books comprise a higher proportion than video and audio formats.

E-books are a different matter. Other library valuation research present values that vary considerably both in absolute terms and in relation to the value of a book in physical format. And there are choices available online from free e-books up to and including e-books of new releases at $14.99. While many cost below $10, there is also data that a higher per-unit value should be used for e-books: the average per volume price for more than 232,000 e-books in 2013 was $27.83.[33] Without choosing a large sample of genres, authors, etc. and deriving a blended per unit value, any choice of value will be somewhat subjective. For this report, we see no reason to value e-books differently than a hardcopy format.

Based on circulation data from the 2015 public library survey, the statewide calculations for digital formats are:

Video and audio items: 5,424,113 X $1.50 = $8,136,170
E-books: 5,091,087 X $8.78 = $44,699,744

And the value for all circulation transactions are:

Total Value of Book Circulation Transactions: $909,513,721
Total Value of Digital Circulation Transactions: $52,835,914
Total Value of Circulation Transactions in FY2015: $962,349,635

33 See Catherine Barr and Constance Harbison, "Book Title Output and Average Prices: 2009-2013," in Library and Book Trade Almanac (formerly The Bowker Annual), 2014, 59th Edition, Information Today, Inc.: Medford, NJ., page 473.

Chapter IV. Summary of Quantifiable Economic Impacts

Public libraries in the State of Texas generate significant economic impacts. In FY2015, more than 11,000 jobs in Texas were dependent on public library expenditures. When analyzed as business and organizational entities, public libraries produced $976 million in local economic activity. In addition, the total value of eight public library services was conservatively estimated at $1.652 billion.

TABLE 4.1. STATEWIDE VALUES OF PUBLIC LIBRARY SERVICES, FY2015

Service	Value
Reference Services	$40,814,812
Programs	$48,795,845
Volunteers	$20,159,826
In-Library Use	$32,805,863
Computer Terminals	$293,652,405
Wireless Internet Access	$104,159,505
Electronic Databases	$150,167,176
Circulation (All Formats)	$962,349,635
Total All Services	**$1,652,905,067**

Total economic benefits from Texas' public libraries in FY2015, therefore, were approximately $2.629 billion.

Spending by public libraries in FY2015 totaled $566.0 million: $504.0 million in operating expenditures and $62.0 million in capital expenditures.[34]

Overall, with economic benefits of $2.629 billion and expenditures of $566 million, there was an ROI of 4.64—for every dollar, there was $4.64 in statewide economic activity.

Table 4.2 shows the financial benefit ratio (return on investment) for recent prior studies of library impacts. Comparisons of these ratios across different jurisdictions must be conducted with caution and, in some instances, may be inappropriate due to different types of services and other localized conditions. Nonetheless, the Texas ratio appears in line with the ratios evident elsewhere.

34 The operating expenditure total includes $2.65 million from TSLAC for its share of the TexShare electronic databases.

TABLE 4.2. RETURN ON INVESTMENT IN RECENT REPORTS

Jurisdiction	Year	Return on the Dollar
STATES		
Minnesota	FY2010	$4.62
COUNTIES		
Salt Lake County, UT	2012	$5.47-$6.07
Santa Clara County, CA	2012	$2.50-$5.17
Toledo Lucas County, OH	2015	$3.87
CITIES		
Toronto	2012	$4.63
Texas	**FY2015**	**$4.64**

Table 4.3 on the next page shows the respective ROI figures as reported in the earlier 2012 report. Again, Texas appears in line with many other jurisdictions.

TABLE 4.3. RETURN ON INVESTMENT IN SELECTED EARLY REPORTS

Jurisdiction	Return on the Dollar
STATES	
Colorado	$4.99
Florida	$8.32
Indiana	$4.76
South Carolina	$4.48
Texas – Statewide 2011	$4.42
Wisconsin	$4.06
CITIES	
Charlotte	$4.61
Southwestern Ohio	$3.81

Note: Summary statistics were unavailable for Philadelphia and Seattle.

Compared to the earlier analysis performed in late 2012 for FY2011, the ROI increased by 5%, with most of that due to inclusion of new service values. The ROI

would have increased by a greater percentage but total economic impact is quite dependent on the mixture of spending. Compared to FY2011, overall spending increased in FY2015, although there were fewer capital expenditures and more operating expenditures.[35]

The impact of Texas public libraries is still underestimated. Public libraries serve their communities by making information and learning readily accessible to any individuals who choose to enter a library's doors or, in recent years, use a library's online portal. The individuals who use the libraries directly benefit by gaining knowledge and ideas. Even those who choose not to use their local public library benefit by being part of a more educated community. Substantial research has concluded that economic growth and leadership is highly correlated with highly educated communities. Public libraries offer every person an opportunity to improve his or her education and every business an opportunity to improve their productivity. Public libraries are an overlooked factor in economic leadership among states.

35 Capital expenditures, for instance, construction outlays, have high multipliers and greater "ripples" in terms of economic impacts.

Appendices

Appendix A: Summaries of Recent Impact Studies

Appendix B: Bibliography and References

Appendix C: Performing Organization and Project Staff

Appendix A: Summaries of Recent Impact Studies

States

Minnesota

Counties

Santa Clara County, California

Salt Lake County, Utah

Toledo Lucas County, Ohio

Cities

Toronto, Ontario

State of Minnesota

Title

***Minnesota Public Libraries' Return On Investment*, University of Minnesota Duluth, Labovitz School of Business and Economics, December 2011**

Goals

This research was designed to answer several questions: (a) what are the levels of support among the state's residents for public library services; (b) how do state residents want public library services to be financed if changes were required to maintain or expand services; (3) what economic impacts are due to public libraries in the state; and (4) what is the cost-benefit ratio/ROI of public libraries.

Methodologies

Two surveys were conducted: a statewide, general population survey of 804 households and a more detailed survey of 557 public library users throughout the state. The user survey was the main method used in determining the value of public library services. Rather than estimating benefits for specific library services, researchers relied on contingent valuation, asking patrons directly how much they would pay or exchange for all library services, that is a bundle of library services rather than individual library services. Contingent valuation is essentially a "willingness-to-pay" approach or the "willingness-to-accept" approach, which generates estimates for how much a patron say they would pay to obtain a service, or how much they would accept to give up the service.

Another component of the research was determining the economic benefits of public libraries with the economic model IMPLAN. Indirect/induced employment, indirect/induced labor income, and indirect/induced economic impacts were computed based on public library employment, labor income, and spending/expenditures as well as the economic profile of the State of Minnesota.

Results

Based on the user survey, researchers estimated that the average household would be willing and able to donate between $31.7 and $38.3 dollars annually, resulting in a total donation of $65.4 to $79.0 million annually, based on the number of Minnesota households. The researchers stated the estimated amounts should be considered "snapshots," as demand conditions could change frequently.

The combined totals for capital expenditures and operational expenditures in 2010 dollars were computed to be:

Employment	4,202
Payroll	$296,329,531
Output	$431,793,024

ROI Ratio(s)

Based on the willingness to pay estimates, the economic model amounts, and Minnesota's population, the economic contribution per capita totalled $169.32. With local and county tax support per capita at $36.67, the annual return per dollar of public tax support equalled $4.62. That is the generally used ratio throughout the report, although in several sections, a lower ratio of $2.50 was cited.

Other Findings:

The general population survey indicated that Minnesotans felt that public libraries are a very important part of a community, and that public library funding should remain the same or be increased. If additional resources were needed for public libraries to continue, there were divergent views about user fees, taxes and/or reducing services. The most frequently favored option was to raise taxes, not user fees and/or reduce services. However, the next most favored option was to increase user fees and/or reduce services and not alter taxes. Findings varied by the pattern of respondent and household use of public libraries, and background items such as household income, respondent gender, age, and geographic location.

Other pertinent details from the general population survey:

There was a higher level of household usage of public libraries among those in the Twin Cities area (83%) than elsewhere in Minnesota (72%).

There was no statistically significant difference in reported household usage of public libraries by men or women, although gender differences showed up in other patterns of usage.

There was no statistically significant difference between men and women on the question of whether public library support should be increased, remain the same, or be reduced.

In all income categories, to increase support, the highest percentage of respondents favored using taxes and oppose user fees or reduced service.

Those individuals with more education were more likely to report household use of a public library in the past year: 62% among those with some college or less education, 83% among those who have graduated from a technical or other college, and 92% among those with post-graduate work. There was no statistically significant difference between these education groups in their feeling of the importance of having a public library in every community as all groups felt this was important.

There was no statistically significant difference among age groups in the importance they expressed for there being a public library in every community, or on the question about whether public library support should be increased, remain

the same, or be reduced.

Researchers also identified the social return on investment (SROI) from Minnesota public libraries without attempting to measure the educational programs, literacy benefits, the expertise of the library staff, the library facility as a community gathering place, the "halo" spending by library users at establishments close to the library, and the value of a library's enhancement to neighborhood real estate and community partnerships.

Santa Clara County, California

Title

***Santa Clara County Library District, 2013 Return on Investment Report*, Berk Consulting, Seattle Washington.**

Goals

The Santa Clara County Library District (SCCLD), which has 8 libraries and a bookmobile, serves more than 400,000 residents in the unincorporated portions of Santa Clara County and the cities of:

- Campbell
- Cupertino
- Gilroy
- Los Altos
- Los Altos Hills
- Milpitas
- Monte Sereno
- Morgan Hill
- Saratoga

Besides quantifying the SCCLD's benefits to the extent possible, the report sought to describe SCCLD's unquantified benefits. An extensive portion of this report is devoted to the library district's activities in:

Enhancing early literacy and youth education;
Promoting lifelong learning and personal growth;
Building and bridging diverse communities;
Providing access to information and technology for all; and
Supporting personal recreation and quality of life.

Examples are provided of the district's impacts on health and wellness, adult education, job and employment services, literacy, and being anchors of community life for county residents. Santa Clara County has an extensive variety of economic, social, linguistic, and ethnic backgrounds, with over 100 languages and dialects are spoken by county residents according to the report. The

Library District has tailored its collections and programming to reflect the highest used languages and actively collects in 19 languages.

Methodologies

Five major categories of activities and services were examined in fiscal year 2011-2012:

- Circulation
- Programs
- Reference Services

- Space Usage
- Technology Usage (in-library terminals, wireless, and databases)

The quantitative methodology was standard: (a) identify the quantity of a service; (b) assign a value, usually both a high and a low value, based on the going rate to acquire a comparable good on the open market; and (c) for all circulation categories, apply a discount rate to the low value only. Unquantified benefits were identified primarily through interviews.

Results

Circulation values dominated the total benefits. The low and high calculations for each major category were as follows:

	Low Estimate	High Estimate
Circulation	$50,995,113	$105,631,651
Programs	$1,621,340	$4,161,784
Reference Services	$2,945,808	$8,849,375
Space Usage	$77,350	$324,050
Computers	$1,936,901	$4,439,814
Databases	$24,848,725	$47,706,559

ROI Ratio(s)

Total estimated benefits were computed at approximately $83 million for a low estimate and $171 million for the high estimate. Total expenditures were slightly over $33 million for cost-benefit ratios of $2.50 and $5.17.

City of Toronto, Ontario

Title

***So Much More: The Economic Impact of the Toronto Public Library on the City of Toronto*, University of Toronto, Martin Prosperity Institute, December 2013**

Goals

Determine the ROI and total economic impact of the Toronto Public Library based on calculations for tangible benefits and spending. According to the report, direct tangible benefits are those that have an identifiable beneficiary while indirect tangible benefits are those from the re-spending of dollars within the community.

At the time of the study, Toronto's population was nearly 2.8 million. The library had 98 branches located across the City of Toronto, and most Toronto residents lived within a two-kilometer radius of a branch.

Based on a 2012 survey cited in the report, the Toronto Public Library is heavily utilized:

Over 2 million residents are members;
72% of respondents used the library in the past year;
44% of the adult population uses the library once a month or more; and
Nearly half of the adults taking a child to a library branch do so two or three times each month.

Methodologies

The study analysed the five main categories of Toronto Public Library programs and services:

- Collection Use – books, eTitles, CDs, DVDs, magazines, newspapers, and a museum and arts pass providing discounts;
- Programs – for children, teens, adults, and seniors to support literacy, culture, workforce development, and lifelong learning;
- Reference & Database Services – to support study and business development;
- Technology – access to computer technology and the Internet to support career development, personal research, and lifelong learning; and
- Space – used for reading, personal study, meeting, and collaboration.

Values for each service were based on the local comparative market price for a similar service, according to researchers. And in the case of circulation materials and materials used in the library, the actual cost of the item was discounted by 80% to account for the differences between borrowing and owning a book or other media item. (That left a residual value of 20% per item.) Whenever possible and appropriate, local Toronto prices were used to determine the value.

Two approaches were used that were different than those in other jurisdictions. First, all spending data were from a single year (2012), except for capital expenditures. For renovations, the average annual spending from 2007–2012 was used. Second, to calculate the indirect benefit, researchers applied a multiplier range of 1.4 to 2.0 instead of performing calculations with a specific economic model. To justify this approach, researchers provided information about multipliers in other recent economic impact studies evaluating comparable services. They also state that the 1.4 to 2.0 multiplier range is consistent with national and provincial multipliers used by Statistics Canada.

This report also introduced new measures to estimate the value of library space and materials delivery.

Results

Three estimates were computed for the values of services: low, mid-point, and high. Those amounts were: CAD $352.5m, CAD $680.8m, and CAD $1,009.1m. [36]

Three amounts also were generated for total economic impacts: Low – CAD $ 612.1m, mid-point – CAD $1,000.6m, and high – CAD $1,389.1m

In general, the mid-point numbers were cited most frequently.

ROI Ratio(s)

Low, mid-point, and high ROIs were 244%, 463%, and 681%.

Other Findings

Values for individual services were:

	Low	Mid-Point	High
Collection Use	$183.7	$512.1	$840.4
Programs		26.4	
Reference & Database Services		78.8	
Technology Access		25.9	
Meeting & Study Space		37.7	

Total economic impact for each household within the City of Toronto: $955 CAD;

Total economic impact for each of Toronto's residents: $358 CAD.

Based on the $1 billion in direct tangible benefits (the High estimate) provided by the Toronto Public Library, each of the two million library members received as much as $502 in total direct benefits.

36 In millions of Canadian dollars (CAD$). The exchange rate as of 12/31/2013 was 1 USD=1.0628 Canadian or CAD$= 0.94095 USD.

Materials delivery was valued as a service at approximately $15 million. Library members may place a circulating item on hold and have that item delivered to a branch chosen by the resident for pick-up. The value per "hold" was deemed equivalent to the cost of single fare for the Toronto Transit Commission at that time.

The meeting and study space amount of $37.7 million was based on a series of assumptions and calculations. To calculate the economic benefit of meeting space, bookings of meeting rooms at branches were multiplied by the Library's commercial rental rate, which was deemed comparable to the Toronto District School Board space rates of $12.20 to $50 per hour. That value was relatively small at $1.4 million. The bulk of meeting space value ($36.2 million) was derived by multiplying the 9 million annual visitors by a conservative value for work space in the Toronto.

Salt Lake County, Utah

Title

***A Return on Investment Study of Salt Lake County Library Services*, Javaid Lal, University of Utah, July 2013**

Goals

Due to the financial contraction of 2008, all Salt Lake County departments were asked to justify their expenditures in conjunction with a countywide tax increase. This led library officials to support a study to quantify the monetary value of the library services and inform the public and other stakeholders about their return on investment (ROI). In addition to providing measurable results, the study obtained information from library users about their priorities.

At the time of the report, the Salt Lake County Library (SLCoLibrary) operated 18 community libraries and three reading rooms in 17 cities serving a population in excess of 825,000. During 2012, more than 4.5 million people visited SLCoLibrary branches and over 10.1 million connected virtually via the library website. More than 16 million items were checked out, which made SLCoLibrary the 12th largest circulating library in North America with 22.2 books per capita circulation. Salt Lake City and Murray City, with a combined population of more than 235,000, have their own libraries.

Methodologies

To calculate ROI for Salt Lake County Library Services (SLCoLibrary), a mixed-methods, multi-phase approach was employed, In the first phase of the study, an online survey was fielded to collect data from library patrons. The survey used the contingent valuation method by asking specific questions about patrons' library use and their willingness to pay for similar services in the absence of a library. Questions were asked about discrete services and not a bundle of services.

In the second phase of the study, 2012 library use statistics from SLCoLibrary were utilized in calculating monetary equivalents of the services provided by the library.

Actual usage and willingness to pay were determined for:

- Help from Library Staff
- Magazine borrowing
- Newspaper borrowing
- Book borrowing (hardcover, softcover, children's, E-book, audiobook)
- Computers
- Electronic resources
    - Electronic News & Magazines Subscription

Professional Journals Subscriptions
Business & Investment Resources Subscription
Consumer Reports Subscription
Genealogy And Family History Search

DVDs, CDs

Children's and adult's programs

In the third phase, indirect economic impact analysis was performed with the Rims II Regional Input-Output Modeling System. This analysis generated the economic ripple impacts on the local economy from library expenditures for employee wages, book, supplies, and construction activities.

The final phase aggregated the benefits from services and the direct and indirect economic impacts, and compared them to taxpayer costs. Unusually, capital/ construction expenditures were considered one-time benefits and separated from other benefits, although not excluded from the ROI.

Results

ROI Ratio(s)

Salt Lake County taxpayers' combined return on investment was calculated at between $5.47 and $6.07 for every $1.00 invested in library services. This was comprised of between $3.09 and $3.69 in direct benefits, $1.57 in indirect benefits, and $0.81 in one-time benefits for every $1.00 invested by the Salt Lake County taxpayers.

Overall, SLCoLibrary provided goods and services worth $121 million in measurable direct benefits to the County residents.

Other Findings:

An average SLCoLibrary cardholder saved $4,581 annually by not having to purchase similar material in the marketplace.

When asked how much they would be willing to pay, the average cardholder specified $487.96.

There were 608 responses to the user/patron survey. More than 100 questions were asked. The first section addressed inclusion criteria, in person and online visitation purposes, and visitation frequency. The second section contained approximately 60 questions pertaining to current usage and willingness to pay for alternative services as well as questions about satisfaction with library services. The third section collected demographic information for statistical purposes.

The majority of survey respondents were satisfied (24.36%) or very satisfied (71.88%) with library services—a combined satisfaction rate of 96.24%.

Toledo Lucas County, Ohio

Title

***Return on Investment Analysis of Toledo Lucas County Public Library*, Fleeter & Associates, Columbus, Ohio, April 2016**

Goals

The Toledo Lucas County Public Library has a collection of nearly 2.2 million print, video, audio, and digital materials, ranking it as the fifth largest in the State of Ohio. There are nearly 300,000 cardholders from the Lucas County population of approximately 442,000. There is a downtown main library and 18 branch libraries.

Methodologies

Library services were broken into the following categories:

A. Circulation of Physical Materials--books, periodicals, dvds, and cds

B. Circulation of Digital Materials--eBooks, downloadable audio books, digital magazines, & streamed movies

C. Computer & Technology Services--loaning of laptops and tablet devices, patron use of library computers, wireless provision, and computer training

D. Reference Services--non-circulating books and periodicals, provision of answers to reference questions, and electronic database usage

E. Other Library Services, Programming and Outreach--meeting room use, children's, young adult, and adult & family programs, bookmobiles, genealogy, job & employment and personal finance workshops,

Values for each service were based on comparative market prices for similar services. For instance, based on information about the cost of computer training in northwest Ohio, a value of $25 per hour per patron was assigned to the computer training offered by the library. The number of patron hours of training was then multiplied by $25.

For physical books, this study assigned an average discount of the purchase price of 50%. In other words, the assignment of the net value when a patron borrowed a book assumed that the net value of the use of the book equaled its acquisition cost less a resale value of 50%. The formula for computing the value of books borrowed equaled:

Number of Books Borrowed X (Acquisition Cost– 50% Discount) = Total Economic Benefit of Book Circulation

To calculate the indirect benefit, researchers applied a multiplier of 1.41 instead of performing calculations with a specific economic model. This specific multiplier was selected because it was the "Household Consumption" economic multiplier for Ohio,

as computed by the Bureau of Economic Analysis, U.S. Department of Commerce.

Unlike all other prior ROI library impact reports, this multiplier was applied quite differently: to multiply to the value of library services and not to multiply library expenditures.

Results

ROI Ratio(s):

When compared to the library's expenditures of $37.1 million in 2015, the total Return on Investment was determined to be 3.87.

Other Findings:

Values and proportions of values for categories of services were:

Library Service	Estimated Value	Share of Value
Physical Circulation	$40,949,070	40.30%
Electronic Circulation	$9,125,812	9.00%
Computer & Technology Services	$19,770,644	19.40%
Reference Services	$27,894,521	27.40%
Library Programs & Other Services	$3,937,933	3.90%

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Appendix C: Performing Organization and Project Staff

The Bureau of Business Research, IC² Institute, The University of Texas at Austin

The Bureau of Business Research (BBR) was established in 1926 to provide small business owners and policymakers with applied economic research and data to strengthen the state's business environment. Throughout its history, the Bureau and its work has been characterized by objectivity and independence. The IC² Institute was established in 1977 with the vision that science and technology are resources for economic development and enterprise growth. In addition to the BBR, the Institute oversees several programs that include the Austin Technology Incubator and the Global Commercialization Group. The Bureau's prolific publications history includes numerous economic assessments and program evaluations.

Project Staff

Dr. James Jarrett, Senior Research Scientist, Bureau of Business Research, IC² Institute, The University of Texas at Austin, served as the principal investigator. Brian Lewandowski, Associate Director, Business Research Division, Leeds School of Business, University of Colorado Boulder, performed the economic modelling. The research was conducted in calendar year 2016.


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