

Analyzing the Return on Public Investment in Johnson County Library

November 2015



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Executive Summary

The University of Kansas, in partnership with Johnson County Library (JCL), conducted research to analyze the return on investment in Johnson County Library. As many past studies have suggested, public libraries are not only local facilities in which local residents, regardless of their socio-economic and educational background, gain convenient access to books, multi-media materials, and internet access, but are also major contributors to children's literacy and life-long learning for all ages and serve as community focal points where cultural and educational programs and essential informational services for businesses and local community organizations are provided. As a result, local residents not only benefit from the usage of various library services directly, but also from many diffused social and economic impacts indirectly.

This study built on the work of 40 national studies of public libraries' return on investment. These previous studies have primarily used one of the following two major methods for determining the value of libraries: a market value approach, where the economic value of services and materials and the monetary value of the economic impact of the Library are calculated, and a contingent valuation approach where customers are surveyed to assess the value they place on library services. This research study adopted a new approach by using both methods to gather data and conduct a return on investment analysis. The research design developed for this study served the needs of Johnson County and provided the most academically rigorous, innovative, and conservative estimate possible.

The results of the aggregate individual user and community-wide benefits show the return on Johnson County's public investment in its county library system to be more than three hundred percent. In addition, more than ninety percent of Library patrons surveyed were satisfied or very satisfied with most services provided by Johnson County Library.

Overall, the study shows a positive view of the Library by those who participated in the study. Strong support for increasing the financial support of the Library was also found given the Library's interest in strengthening its broad profile of services and its commitment in supporting education, arts and cultural development, and quality of life improvement in Johnson County.

Study Definition

In January 2015, Johnson County Library approached the Edwards Campus of the University of Kansas with a proposal to collaborate on a study about the Library's return on investment for Johnson County. KU Edwards proposed conducting the study according to the University's engaged scholarship program. Engaged scholarship projects at KU involve a KU faculty member partnering with a community organization to define a research project, jointly collect data, and disseminate the results back to the community for action as well as publishing the results in professional and scholarly literature.

Dr. Alfred Ho from the School of Public Affairs and Administration agreed to lead the study team for the project. Dr. Alfred Ho's research focuses on public budgeting, public performance management, and citizen engagement, and he has extensive experiences in helping local governments understand citizen perspectives and expectations of public programs and performance.

The goals for the study were defined in four areas.

- Estimate the private market value of library services based on the administrative data provided by the Library, such as the titles of book and multi-media collections, the usage pattern of various services, and the time investment by volunteers;
- Analyze the direct and indirect economic benefits of library activities, including the impact on the local economy from the library payroll, the usage of local vendors and suppliers, and the spillover effects on local businesses as a result of library visits by users;
- Identify indirect social benefits provided by Johnson County Library to children, youth, and the wider community and to use the contingent valuation method to estimate the economic value of these social benefits;
- Aggregate all direct and indirect benefits of Johnson County Library, calculate the amount of local tax investment and the resulting rate of return on public investment, and compare the rate of return with the findings in other studies and with the rate of return from governmental bond investments in the past few years.

Fred Logan, a long-time supporter of Johnson County Library and the Johnson County Library Foundation, generously provided funding for the study. In-kind staff time, information technology resources and supplies were donated by KU Edwards.

In April 2015, the research team began the study under the leadership of Dr. Ho. Dr. Ho and Dr. Cho, a post-doctoral researcher at KU, formulated the research design. Dr. Goodyear and Dr. Marris, both of KU Edwards, assisted with survey construction, focus groups, and collaborative processes with the Library. John Helling worked as the lead data analyst from the Library. Sean Casserley (County Librarian), Susan Mong (Executive Director of the Johnson County Library Foundation), and Daniel Molina (Marketing Coordinator) assisted with project outlines, public announcements and public presentations of the study results. For more information on the research team, please refer to Appendix I.

Research Design and Methodology

This study built on the work of 40 national studies of public libraries' return on investment. These previous studies have primarily used one of the following two major methods for determining the value of libraries: a market value approach where the economic value of services and materials is calculated; and a contingent valuation approach where customers are surveyed to assess the value they place on library services. What this research study did was different – it used both methods to gather data and conduct a return on investment analysis in order to capture both objectively measured economic value and subjectively perceived social value of library services. The research design developed for this study served the needs of Johnson County and provided the most academically rigorous, innovative, and conservative estimate possible.

The analysis for this project began with an assessment of existing library resources and use of those resources and services. As the following graphic shows, the Johnson County library system offers extensive services and materials.



It circulates millions of books, DVDs, and CDs and offers a wide variety of digital services, such as e-books, e-magazines, online databases, online educational programs, and download services for video and music. In addition, the system's various locations provide meeting space, computer and internet access, reference services for research, educational programs for all ages, and reading/early literacy programs for children.

The initial return on investment calculation was based on the value of these services to residents. Calculations were based on what local residents would have had to pay for these services in the private market place. To quantify the economic value of these direct benefits for residents, we analyzed the market value of similar services and materials. Appendix II provides the specific details of how the private market prices were determined.

In addition to physical assets and services, library activities generate additional direct and indirect economic benefits, including the direct impact on the local economy from the library payroll, the usage of local vendors and suppliers, and the multiplier economic impacts on the local economy caused by

employee consumption and business activities. Appendix III lists the methodologies that were used to analyze these economic impacts.

This study also identified the social benefits provided by Johnson County Library to the broader community. Previous studies of library services have identified many community benefits of library services. One example is its contribution to the educational success of students. Through its onsite reading program for toddlers and summer reading programs for youth and teens, public libraries help promote early childhood literacy, which is shown by research to be an important contributing factor to children's literacy and educational success.¹ Public libraries also provide a free, safe, and uninterrupted environment for students of any socio-economic background do school work, conduct research, and learn after school.

The benefits of public libraries are not just limited to children and youth, but also extend to residents of all ages. For example, the public library is a major information depository and source of information for local residents, businesses, and community organizations.² It is also regarded as an informal meeting place for residents and community organizations, an important source of activities for families with children, and a central place for life-long learning for all ages. All these services result in a more favorable environment as evaluated by potential residents and business investors and help retain residents. Finally, public libraries partner with community organizations to help organize social events and community programs. Without library support, many nonprofits may have to increase their administrative costs significantly to provide the same level of services.

To measure the economic value of the social benefits provided by Johnson County Library, the research team organized focus groups with local nonprofit leaders, business representatives, and library patrons to understand how library services have helped their daily activities and how they benefit from these services. This information informed the development of a library patron survey, which was conducted online in June 2015. An online survey seemed to be a reasonable and cost-effective way to reach out to library users in Johnson County for two reasons. First, according to a recent study by the Pew Research Center, about 85 percent of U.S. adults have access to the Internet.³ Since internet usage is correlated with income and education, and Johnson County is an affluent county, with the median household income at about \$75,000 and 52 percent of the county population holding at least a bachelor degree (American Community Survey, 2009-2013),⁴ it is reasonable to expect that most Johnson County residents have access to the Internet and have the ability to answer an online survey. Indeed, this expectation was somewhat confirmed by a 2015 county resident survey by ETC, which showed that about 70 percent of Johnson County residents had visited the Johnson County website, indicating that a significant majority of local residents have internet access. Second, communication via the internet is even preferred by the majority of Johnson County Library users. In April, 2015, the Library had a library patron database of about 228,000 individuals and about two-thirds of those library users preferred the library to use email to correspond with them. An analysis of the age profile of library patrons who

¹ Please refer to Celano, D. and Neuman, S. (2001), *The Role of Public Libraries in Children's Literacy Development: An Evaluation Report*, Pennsylvania Library Association, 2001.

² See Becker, S., et al. (2010), *Opportunity for All: How the American Public Benefits from Internet Access at U.S. Libraries*, Institute of Museum and Library Services, Washington, D.C.

³ Please refer to Pew Research Center (2015), *Coverage Error in Internet Surveys*, <http://www.pewresearch.org/2015/09/22/coverage-error-in-internet-surveys/>.

⁴ Relative to the rest of the country, Johnson County is significantly more affluent. The national average of the median household income in 2013 was only \$53,000 and only 29 percent of the U.S. population held a bachelor degree or above in 2013.

provided an email address to the Library and those who did not shows no significant difference. Given the socio-economic and education profile and their preferences for library contacts of the majority of Johnson County residents, the research team believed that an online survey was a reasonable and cost-effective way to reach out to the majority residents in Johnson County. However, to ensure that the results of online surveys are not significantly biased, 1000 print surveys and follow-up phone calls were also conducted at the end of June and July, 2015 to reach out to a sample of library patrons who did not have an email address noted in the library database.

The online survey was sent to 77,000 library patrons through 10 equivalent panels of 7,700 stratified random samples drawn from the library patron database based on age and branch library location. The sample size of 7,700 for each panel was calculated based on the age distribution of Johnson County, a confidence level of 95-percent to get a representative sample by age groups, and an assumed response rate of 15 percent. A total of 9,869 responded to the surveys (about 13 percent), but not all of the surveys were complete. If the incomplete surveys are discounted, a total of 6,974 usable responses were received (about 9 percent response rate). Despite the lower-than-expected response rate, the total number of responses was still significantly larger than 1,160, which was the necessary sample size to have a representative sample of library patrons given the County's age distribution. From the mail surveys with phone follow-ups, there were about 70 usable responses.

After compiling the data from these survey results, the research team used the contingent valuation method to estimate the economic value of these benefits. This method has been commonly used in past library studies as well as in many social science studies to estimate the value of public goods that are not easily measurable by the private market mechanism. Through the specially designed survey, the method estimates the utility that individuals attach to various social benefits and their willingness to pay for those benefits given their income, educational background, and other socio-economic characteristics. In this study, survey respondents were given some information about the output and outcomes of library services first, such as the number of patrons served in 2014, the volume of books, DVDs, CDs, and digital materials circulated, the hours of free computer and internet access, and the number of programs and attendees. Then they were asked how frequently they used various services and how much they were willing to pay per person per month for their household usage of library services. Finally, they were asked how much extra they were willing to pay in addition to paying for their own usage of services, so that "other residents of Johnson County, regardless of their income and socio-economic background, can use the library services for free without an entrance fee or a service charge." Respondents were given the option to pay nothing and an open-ended question to specify their own price to pay. The answers to these questions were used to estimate the value of community benefits.

Results of the Return on Investment Study

By aggregating all direct and indirect benefits of Johnson County Library, this study used the following approach to calculate the total benefits of the Library:

- +Direct benefits of services for users estimated through market value approximation
 - +Direct and indirect economic benefits of library activities
 - +Diffused social benefits valued by the community
-
- = Total benefits for Johnson County

Then by comparing the amount of total benefits received by Johnson County residents and the amount of local tax investment by Johnson County, which comes mostly from local property tax, the return on investment in Johnson County Library was calculated as follows:

$$ROI = \frac{(\text{Total benefits} - \text{Local public investment excluding federal grants and donations})}{\text{Local public investment excluding federal grants and donations}}$$

Based on library user activities in 2014, the value of direct benefits of resources and services was estimated to be \$74.6 million (Table 1).

Table 1. The market value of direct benefits

Market value estimates of these services:	
Circulated materials (books, CDs, DVDs, e-books)	\$ 65,055,562.67
Print newspapers and magazines, journals, e-journals, and database usage	\$ 3,425,061.53
Reference desk services	\$ 299,736.00
Volunteers	\$ 612,339.74
Computer and WIFI usage	\$ 255,910.86
Meeting room usage	\$ 2,240,135.55
Programs for children, youth, and adults	\$ 2,674,489.07
Direct value / benefits for users	\$ 74,563,235.41

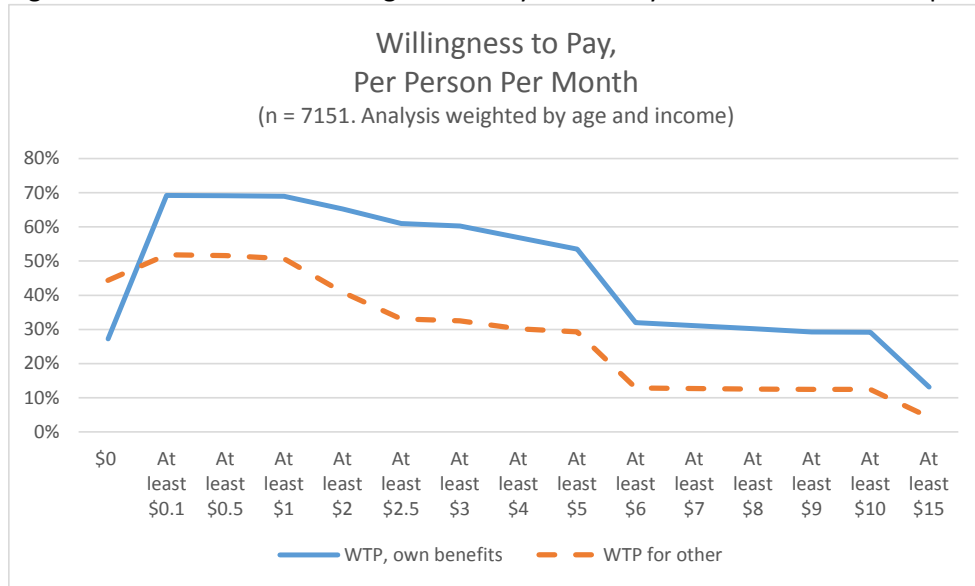
Direct and indirect economic benefits of the library payroll and contractual activities was estimated to be \$14.8 million (Table 2).

Table 2. The value of direct and indirect economic impacts of library activities

Economic impact from JCL salaries	\$8,316,631
Economic impact from JCL usage of local suppliers	\$6,531,907
Total	\$14,848,538

The value of social benefits estimated through patron online surveys was \$6.8 million. This was based on the survey findings that about 53.9 percent of the 228,000 Johnson County Library patrons were willing to pay something for others, and among these patrons, the median amount of payment was about \$55.17 per person annually, which was about the 2014 level of property tax payment per person in a year. Figure 1 shows the distribution of the patrons’ willingness to pay for their own usage and others’ usage of library service. It should be noted that these results only included the responses of local county taxpayers and were weighted by age and income to ensure the representativeness of the results.⁵

Figure 1. Distributions of Willingness to Pay for Library Services and Social Impacts



These results were confirmed by the mail surveys. The median value of voluntary payment for one’s own benefits and for others was \$72 per person annually (compared by \$55.17 from the online survey). This figure is double the 2014 level of library spending.

By aggregating the value of direct use benefits, the community-wide economic benefits, and the social benefits perceived by library users, the aggregate of these three measures for return on investment indicates that every dollar invested in Johnson County Library gave residents direct and indirect benefits of about \$4.13, which is a 313% return.

⁵ An analysis of the demographic profile of the online survey respondents showed that the survey respondents were under-represented among the groups that were between 18 to 34 years old. According to the Census, about 39 percent of residents in the Johnson County Library service area were in this age range, while only 12.9 percent of the survey respondents were in this age group. The responses also over-represented residents who were 65 or older -- 16.7 percent in the community compared with 26.3 percent among the survey respondents. Households with an annual income of less than \$35,000 and those with an annual household income of \$150,000 or more were also under-represented. Only 7.6 percent of the 6,865 respondents had a household income of less than \$35,000, but the Census indicates that about 20.4 percent of the JCL service area were in this income range, and only 9.5 percent of the survey respondents had a household income of \$150,000 or more, but there should be 17.4 percent according to the Census. To adjust for these discrepancies and to ensure the representativeness of the results, sample weights based on age and income were used below to analyze the survey results.

Besides the data gained from the survey, library users provided comments along with their answers to questions. Strong support for the library as a free public resource was reflected in these comments. A sample of the comments are provided below.

“A free library is something that has been available since the period of Benjamin Franklin—and should remain free.”

“I love our libraries! I would support anything to keep them going. Johnson County can’t afford to not keep them going.”

“You guys do significantly more than several of the libraries I’ve been to as I’ve moved cities (the sheer circulation volume). JoCo library is bar none, the best library I frequent. PLEASE DON’T CHANGE!!! I’ll pay the extra in taxes.”

Overall there was a strong recognition of the value of libraries to the community as a whole. For those who were less supportive of paying for others, alternative ways to generate funds, such as higher fines, charging when businesses used services, charging a small user fee, or charging user fees for out-of-county patrons, were suggested.

Results on User Satisfaction

The survey also asked library patrons about their satisfaction with library resource and services. In general, user satisfaction of library services was very high. For example, on a three-point scale of satisfaction (dissatisfied, somewhat satisfied, and very satisfied), the following services received remarkable ratings:

- Physical materials – 93% were very satisfied
- Digital materials – 73% were very satisfied
- Print papers and magazines – 84% were very satisfied
- Reference desk help – 87% were very satisfied
- Computer and internet use – 83% were very satisfied
- Use of library rooms – 87% were very satisfied

These results were confirmed by the mail surveys. Among those patrons who had used the following services and could comment on them in the mail surveys, 89 percent were very satisfied with physical materials, 87 percent were very satisfied with digital materials, 79 percent were very satisfied with the computer or WiFi service, 95 percent were very satisfied with print papers and magazines and with reference desk help, and 100 percent were very satisfied with the use of library rooms.

These ratings were also consistent with the results of our focus group discussion, which showed that local residents and community and business leaders were generally very positive about Johnson County Library and viewed it as a core community asset and a key contributor to the quality of life, educational needs, children and youth development, and life-long learning of the County. Also, it provides essential access to information and research for the community and space for meetings and learning. Figure 2 below summarizes some of the key words used to describe the roles of Johnson County Library in the community.

Figure 3.
Library facilities (without expansion)

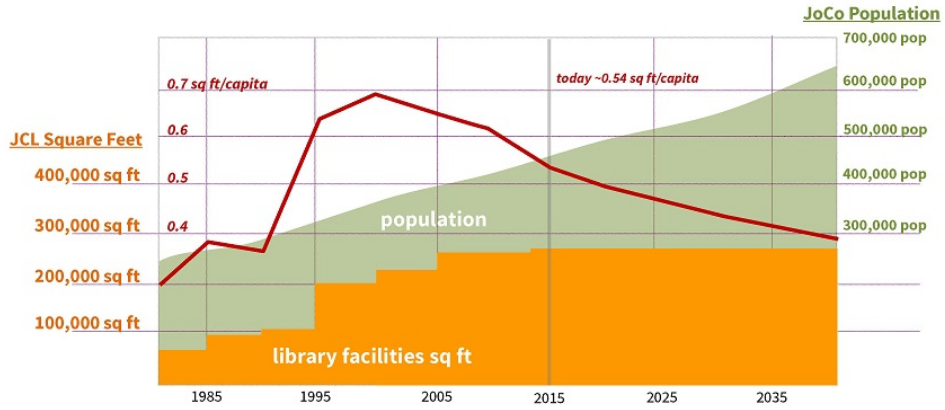
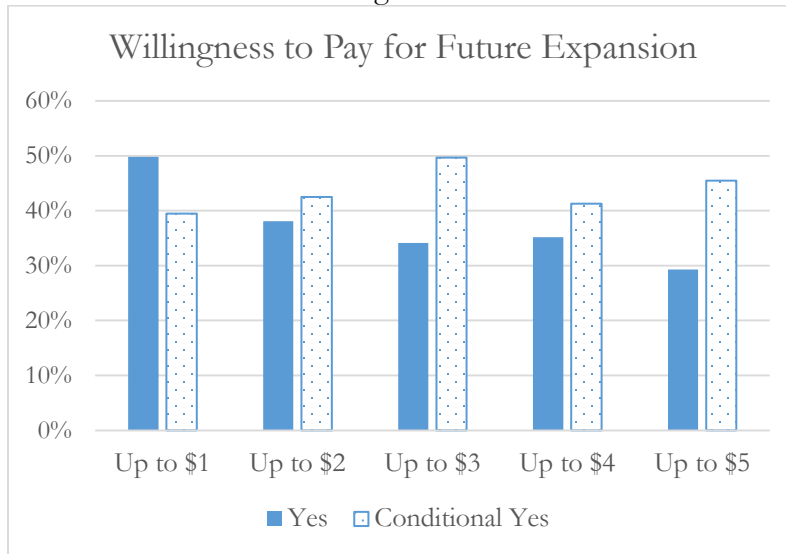


Figure 4.



Besides working on its facility needs to meet the population growth demand and maintenance needs, the online survey results show that a significant majority of residents expect Johnson County Library to continue to focus on its mission to support early children literacy and K-12 education, keep up with technological changes and demonstrate integrity, accountability, and cost-effectiveness in management and policymaking (see Table 3).

Table 3. The Importance of Different Public Values and the Achievement of these Values by Johnson County Library

	How important are the following values to the mission of Johnson County Library?			How well has Johnson County Library achieved these values?			
	1	2	3	1	2	3	DK
Provide free access to information and materials for all	0.3%	3.9%	95.9%	0.3%	5.2%	84.5%	10.1%
Keep up with technological changes	0.4%	17.4%	82.1%	1.2%	23.3%	59.0%	16.6%
Support early children literacy and K-12 education	1.2%	8.6%	90.2%	0.5%	9.6%	56.0%	33.9%
Provide popular items without a long wait	2.7%	41.3%	56.0%	3.9%	42.8%	37.8%	15.6%
Act as a neutral and welcoming place for community gatherings and dialogue	4.5%	30.4%	65.1%	0.6%	12.9%	52.9%	33.6%
Provide research support for local businesses	9.9%	42.6%	47.6%	0.7%	9.8%	21.7%	67.7%
Partner with other organizations to enhance residents' quality of life and the image of Johnson County	6.2%	36.5%	57.3%	1.4%	13.9%	32.1%	52.7%
Demonstrate integrity, accountability, and cost-effectiveness in policymaking and management	1.3%	15.9%	82.8%	1.0%	10.1%	41.9%	47.1%
Have operations that are environmentally sustainable and efficient in resource consumption	3.7%	27.4%	68.9%	1.5%	14.1%	32.1%	52.4%

Note: Importance ratings: 1 = not important, 2 = somewhat important, 3 = very important

Achievement ratings: 1 = very little, 2 = somewhat, 3 = a lot, DK = don't know/not sure

Expanding the Library's digital offerings, making digital materials more conveniently accessible, and helping residents in different parts of the County know more about these services seem to be especially important given the demographic profile of Johnson County residents, their expectations of modern library services, and the geographical spread of the County. Even though many Johnson County residents have access to the internet at home and have used many online private vendors such as Amazon or Netflix, many survey respondents did not view these private venues as competing alternatives and still want Johnson County Library to provide convenient and free access to books, entertainment materials, e-learning opportunities, and reference services. Hence, more public information and effective delivery of the Library's digital services are needed, especially when a considerable portion of library patrons do not feel that they know much about them. This view was also verified through an analysis of the survey comments. Over 11 percent of the comments indicated a desire to know more about or use more digital services. A few respondents even saw digital materials as more important than the physical facilities.

At the same time, traditional services, such as circulation of books, newspapers and magazine services, and reference services, are still important to most users. The analysis of the survey results shows that many users of digital materials are also users of physical books, and the two are not competing alternatives. Also, reducing the wait time for popular items and meeting the patrons' expectation of print newspapers and magazine services are significantly associated with patrons' willingness to pay for the Library's services. Hence, as Johnson County Library seeks to expand its digital presence, traditional services and on-site programs should not be ignored.

To meet these growing expectations, partnering with other organizations, such as local schools and universities, arts and cultural organizations, and local businesses seems to be critical. According to the patron surveys, Johnson County users appreciate this type of partnership, which is positively and significantly associated with their willingness to pay for various library services. From this perspective, the public library today is no longer viewed by the public just as a depository of books and information. It is also a key contributor to a community's quality of life, a source of positive, fun, and educational activities, and a hub of social dialogue. By granting free access to these services and programs, which is highly valued by respondents to the survey, Johnson County Library also acts a key platform that guarantees equal opportunity and upward mobility for all social groups regardless of their income and ethnic background.

Finally, while providing research support to the local business community is not the most important agenda for those who answered the survey, it is still a somewhat important goal despite the fact that more than two-third of library patrons did not know what the library had done in this area and whether it had succeeded in accomplishing this goal. Hence, defining services to the local business community more clearly and ensuring that library supporters understand the contribution of the Library in promoting local business development appear to be another area of focus.

Conclusion

This study is built on the past findings and methodologies of 40 national studies of public libraries' return on investment. However, this study has gone beyond what have been done in previous studies by using both the market value approach where the economic value of services and materials is calculated and the contingent valuation approach in which customers are surveyed to assess the value they place on library services. The study has found that the value of direct benefits of resources and services is estimated to be \$74.6 million and that the direct and indirect economic benefits of the library payroll and contractual activities are estimated to be \$14.8 million. The value of social benefits estimated through patron online surveys is estimated to be \$6.8 million. This is based on the survey findings that about 53.9 percent of the 228,000 Johnson County Library patrons are willing to pay something for others, and among these patrons, the median amount of payment is about \$55.17 per person annually. The aggregate of these three measures indicates that for every dollar invested in Johnson County Library, residents receive direct and indirect benefits of about \$4.13, which is a 313% return on the local tax investment in the Library.

Our survey results indicate high satisfaction with various library services and strong support for the Library as a free public resource. At least 84 percent were very satisfied (on the three point scale of dissatisfied, somewhat satisfied very satisfied) with all services, except for digital materials, which were

rated as “very satisfied” by 73 percent of the survey respondents. This high level of satisfaction was consistent with the results of a focus group discussion, which showed that local residents and community and business leaders are generally very positive about Johnson County Library and view it as a core community asset and a key contributor to the quality of life, educational needs, children and youth development, and life-long learning of the County.

According to the survey results, library users are generally willing to support the future expansion of the library. About 50 percent of survey respondents were willing to pay up to an extra \$1 per person per month to support library expansion, and another 40 percent were also willing to pay the same amount depending on the details of the expansion plan. About 38 percent of survey respondents were willing to pay up to an extra \$2 per person per month, and another 42.5 percent gave a conditional “yes” to that requested amount. Given the fact that the 2014 spending of Johnson County Library was at about \$4.50 per person per month, these numbers show a strong willingness of library users to invest in the Library and significant community support for the Library.

Besides working on its facility needs to meet the population growth demand and maintenance needs, the online survey results show that a significant majority of residents expect Johnson County Library to continue to focus on its mission to support early children literacy and K-12 education, keep up with technological changes and demonstrate integrity, accountability, and cost-effectiveness in management and policymaking. Expanding the Library’s digital offerings, making digital materials more conveniently accessible, and helping residents in different parts of the County know more about these services are especially important given the demographic profile of Johnson County residents, their expectations of modern library services, and the geographical spread of the County. At the same time, traditional services, such as circulation of books, newspapers and magazine services, and reference services, are still important. To meet these growing expectations, those who answered the survey see partnering with other organizations, such as local schools and universities, arts and cultural organizations, and local businesses as critical.

Overall, the study shows a positive view of the Library by those who participated in the study. Strong support for increasing the financial support of the Library was also found as the Library is interested in strengthening its broad profile of services and investing more to enhance the quality of life of Johnson County residents.

Appendix I

Research Team

Marilu Goodyear

Dr. Goodyear holds the position of Assistant Vice Chancellor for Academic Program Development at the Edwards Campus of the University of Kansas. In this role she guides the development of new academic programs, improvement of existing academic programs, and faculty development. She also works with the University's engaged scholarship program. Dr. Goodyear teaches information policy and technology, organizational analysis and organizational change in the School of Public Affairs and Administration where she holds the rank of Associate Professor. From 1999 to 2005 she served as the Vice Provost for Information Services and the Chief Information Officer for The University of Kansas. In this role, she led all campus-wide software, hardware and networking technology services, printing services and the KU libraries. Previous to that position, she held a number of leadership positions in the academic library field. Dr. Goodyear holds master's degrees in library and information science and public administration from the University of Missouri, as well as a doctorate in public administration from the University of Colorado. Dr. Goodyear is an elected Fellow of the National Academy of Public Administration and serves on a number of Kansas City regional groups including the Kansas City Council's Metropolitan Data Team.

Alfred T. Ho

Dr. Alfred Ho is an associate professor of the School of Public Affairs and Administration, University of Kansas. He received his Ph.D. from Indiana University (Bloomington), with majors in public finance and policy analysis, and minors in economics and regional economic development. His research focuses primarily on public budgeting, public program evaluation, and public performance management. For the past few years, he has worked with various local governments, including Indianapolis, Tulsa, and Kansas City, Missouri, to evaluate the performance and impacts of various public programs and help local officials develop strategic policy actions and engagement activities to improve citizen satisfaction with governmental services. He has been on the editorial boards of a number of key public administration journals, such as *Public Administration Review* and *Journal of Public Administration Research and Theory*, and is an elected member of the National Council of the American Society of Public Administration.

Diana Marrs

Dr. Marrs is Director of Academic Program Development at the University of Kansas Edwards Campus. In this role, she provides leadership in the development of new academic programs to be delivered at the Edwards Campus, supports current programs and coordinates efforts and resources between the three campuses. Previously, she served as the Associate Director of instructional development, providing distance learning consultation and faculty training in educational technology. She received her Ph.D. from the University of Kansas in Curriculum & Instruction with research in foreign language instruction and K-12 curriculum standards and holds a masters in managing information systems.

Wonhyuk Cho

Dr. Cho is a post-doctoral research fellow of the School of Public Affairs and Administration at the University of Kansas. His research focuses on government performance management, e-government, and program evaluation, and has published widely in many internationally recognized journals in public administration. He received his MPA and Ph.D. from the Graduate School of Public Administration at Seoul National University.

Jennifer Mellenbruch

Jennifer Mellenbruch serves as the academic support associate in the Academic Support Center at KU's Edwards Campus. Her work focuses on supporting students and faculty through the organization of academic resources to enhance learning. Before her position in the Academic Support Center, Jennifer worked 30 years for the University of Kansas Libraries. Jennifer has a B.S. in Business Administration from the University of Kansas.

Appendix II

Table 1. Market Value Estimation of Various Library Services

Library services	Market value estimation	Data source
Book circulation	Obtaining a sample of used book prices that was stratified by the frequency of circulation to reflect the actual use pattern by library patrons, then multiplying the average prices, which include shipping charges, to the circulation volume	Used book prices in Amazon.com.
Multi-media collections (CDs, DVDs, audio books,)	Similar to the above	Similar to the above
E-books	Discounting the average used book prices obtained through the above methodology by 70 percent, which is approximately the average discount of Kindle books in Amazon.com compared with hardcopy books, and then multiplying the discounted prices to the circulation volume	Amazon.com
Music and video downloads	Market download prices	Amazon.com, Naxos, and Indieflix
Magazines and Newspapers (paper)	Obtaining the individual subscription fees of all magazines and newspapers, calculating the average fee of the subscribed titles, and multiplying the fee to the estimated volume of usage, which was obtained by a patron survey to estimate the percentage of library visitors who browsed any newspapers or magazines at the Library at least once a month.	Websites of numerous magazines and newspapers to obtain the individual subscription fees, patron survey to estimate the usage
Magazines and Newspapers (online)	Obtaining the individual online subscription fees of different newspapers and magazines, calculating the average monthly fee, and multiplying the fee to the volume of digital check-outs.	Websites of numerous magazines and newspapers
Reference desk	a) Multiplying the average hourly rate of a reference librarian to the number of hours helping patrons who asked high-level reference questions at the Reference desk; b) Multiplying \$22.50, the average price of academic journal article to be purchased online, to the number of academic journal access through Proquest; c) Multiplying the average online subscription fee to the number of log-on sessions of a reference service (e.g., Gale, Reference USA) [note: One-time log-on charge, which is not used in our calculation, is significantly higher than the average subscription fee.]	Websites of various reference services
Internet and computer usage via desktop	Obtaining the average rental fee of a computer with some standard office software, calculating the average hourly rate by assuming 12 hours of usage per day, 7 days a	Market research of 10 local computer companies

computers	week, and then multiplying the hourly rate to the usage hours of desktop computers in the Library [note: This calculation is highly conservative as it does not use the typical hourly charge of computer rental by FedEx or other private entities, which can make our estimate ten times higher.]	
WiFi	Estimating the hourly cost (\$0.35) and multiplying the cost to the estimated number of hours of WiFi usage.	Market research of local companies
Meeting rooms	Obtaining the market rental rates of hotel meeting rooms of different capacity, calculating the average charge per minute by categories of room size, and multiplying the average charge to the minutes of actual usage of library meeting rooms.	Market research of hotel room rentals
Various programs organized by the library	Obtaining the average fees of equivalent programs organized by nonprofit entities, such as the YMCA and Parks and Recreation, and multiplying the fees to the number of program users.	Market research of various non-sport programs
Volunteer help	Obtaining the total hours of volunteers, and multiplying that with the average hourly pay of a librarian.	Library database

Appendix III

Table 2. Estimation of the Economic Impacts of the Library

Library Activities	Market value estimation	Data sources
Employment of local residents	Obtaining the direct payroll of the Library to calculate the average pay by job categories, then surveying more than 200 library staff anonymously to estimate their likelihood to stay in Johnson County if their jobs would be eliminated and whether they would find another job outside Johnson County, and then using the percentage of staff who would have left the county to calculate the direct and multiplier impacts of the library payroll. [note: The calculation is very conservative and does not include the economic impact of staff who would still stay in Johnson County had they not worked for the Library.]	Library payroll data and staff survey data
Maintenance and other services bought from local vendors and suppliers	Obtaining the operating budget for contractual services and estimating about 80 percent of the spending to stay local and impact the local economy.	Library budget