

METHODS TO ASSESS THE USE, VALUE, COST AND ROI OF ALL ACADEMIC LIBRARY SERVICES

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1. BACKGROUND

The University of Tennessee, School of Information Sciences obtained a three year grant from the Institute of Museum and Library Services (IMLS) to assess the value and Return on Investment (ROI) of academic library services. This study, referred to as Lib-Value, involves a number of specific projects performed at several universities and with the Association of Research Libraries (ARL). The Lib-Value project is led by a research team at the University of Tennessee (UT), the University of Illinois at Urbana-Champaign (UIUC), Syracuse University, and the Association of Research Libraries (ARL). Dr. Carol Tenopir (UT) and Paula Kaufman (UIUC) are co-principal investigators for the Lib-Value project.

These projects include:

- Scholarly reading (University of Tennessee): This project measures the value of reading by scholars and students of articles, books and other documents through surveys.
- Syracuse University: This project studies the comprehensive value of academic library journal collections including the economic, environmental and social value to faculty and students based on surveys. However, the project does not include costs.

- Teaching and learning (University of Tennessee): This project involves an experimental design to assess the impact of library instruction on student learning and success.
- New York universities: Two New York universities replicate the Syracuse University study and the teaching and learning survey. These studies are designed and carried out by Syracuse University.
- Digital special collections (University of Tennessee): This project examines the role that special collections play in donations, recruiting of faculty and students, and in generating goodwill and prestige for the university. Google analytics and weblogs are employed methods.
- E-books study (University of Illinois): This project is a follow-up of an earlier study examining how faculty and graduate students value e-books and how these e-books are used. Methods include logbook analysis and surveys.
- ARL: ARL provides tools and guidelines made available and supports publications and presentations.

This report describes a comprehensive assessment of the use, value, and ROI of all 77 services provided by libraries at Bryant and Drexel Universities. The following results are the combined data from the two universities in order to provide a sufficient observation and survey sample size. The results include an in-depth analysis of the cost of each service and surveys of faculty, staff and student use, value, and ROI of each service.

Bryant University is a small, private Rhode Island school, founded in 1863 and which emphasized small business until recent years. This university is comprised of the Colleges of Business and of Arts and Sciences. Business students are required to obtain a minor in Arts and

Sciences, and, likewise, Arts and Sciences students must obtain a minor in Business. Bryant has developed a strong academic reputation with an exceptionally high retention rate; furthermore, over 96% of graduates consistently gain employment or proceed to graduate school within six months of graduation. Bryant has 3,472 students including 256 in the Master's program. There are 164 full-time faculty and 64 part-time lecturers and adjunct faculty. The university also includes 465 staff, ranging from the President to facilities staff. The library staff, itself, consists of 17 persons, mostly professionals.

Drexel University is located in Philadelphia. The academic disciplines available range from Arts and Sciences to Business and Media Arts and Design. The university also includes a strong School of Medicine. Drexel's population includes 4,614 faculty, 12,645 undergraduate students, and 4,709 graduate students. The university's main library is W.W. Hagerty Library, while Hanneman Hospital, which is affiliated with the School of Medicine, is located near the campus. Since the Drexel survey included both faculty and staff, the two Bryant survey results are combined in this report.

Some basic concepts and terms used in this report are:

- **There are 77 library services categorized as:**
 - Access to library publications such as journals, books and other publications (24 services)
 - Access to other materials such as audiovisual and equipment (5 services)
 - Interlibrary borrowing from other libraries (8 services)
 - Interlibrary lending to other libraries (4 services)
 - Librarian support such as reference and research (7 services)
 - Library instruction such as classes and orientations (5 services)

- Publicity services such as library television and newsletters (12 services)
- Access to library space such as workrooms and program center (5 services)
- Available workstations (2 services)
- Duplication and delivery services (3 services)
- Access open to non-university users (2 services)
- **In-depth library cost** (i.e., **library investment**) of each service and other operational activities including the cost of library staff, space, shelving, furniture and purchases (e.g., journal subscriptions) and university overhead.
- **There are 96 activities performed by library staff including:**
 - All of the 77 services above (37 related activities)
 - Collection development and management (11 activities)
 - Acquisitions (11 activities)
 - Cataloging (9 activities)
 - Physical processing (9 activities)
 - Mail processing (1 activity)
 - Re-shelving (4 activities)
 - Management and administration (1 activity)
 - Non-processing staff activities such as attending meetings and OSHA breaks (3 activities)
 - Systems-related activities (4 activities)
 - Scanning (3 activities)
 - Photography (3 activities)

- **Use of services** includes the annual number of times a service is used (e.g., number of times library-provided articles are read or number of reference searches performed) by faculty, staff and students, annual hours a service is used (e.g., number of hours spent using library workstations).
- **Values of services** are the **return** component of ROI determined by the value gained from using services:
 - **Purchase value** is what users pay for using services in their time and/or money.
 - **Use value** is the favorable consequence resulting from using services.
 - **Contingent value** is the cost that would be required by users to obtain the information or results if the service was not provided, less the library cost/investment of the service (found only for faculty).
- **The university investment** is the library investment plus the user cost in their time and money which are covered by the university.
- **Library monetary Return on Investment** is the contingent value divided by the library investment/cost to provide a service.

Examples of use, value and ROI are given later for some of the 77 services.

2. LIBRARY COST METHODS

The objective of cost analysis for the libraries is used to determine the total cost of each principal service provided by academic libraries. These costs will be added to those incurred by faculty, staff and students in using the services in order to yield the total costs to the university and to establish the investment component of the Return on Investment for the library. The in-

depth cost analysis was performed only at Bryant due to time constraints and the availability of Drexel library costs. Average costs of services and activities are projected onto Drexel data.

Detailed costs can be used to assess:

- The cost per use of each service.
- The cost of processing and providing access to each type of publication (i.e., books, journals, etc.) and other materials.
- The relative cost of different formats (i.e., print vs. electronic).
- The productivity or cost per output of each activity.
- The effect of changes in number of faculty or students on library cost.

These metrics can be used for many aspects of library decision-making and/or planning.

The basic steps in the library cost analysis are as follows:

- Identify the principal services provided by the library.
- Establish the resources such as staff, space, shelving, furniture, supplies, etc. that are used to provide services.
- Determine basic data that are used in the cost analysis, such as related activities involved, overhead rates, etc.
- Estimate the cost of the five resources necessary to provide each service.
- Sum the five resource costs to provide the total cost of each service.
- An Excel Spreadsheet is used for the cost analysis.

These cost analysis methods are described in detail in Section 9, the last section. A summary of library costs are given below.

SUMMARY OF THE UNIVERSITY INVESTMENT IN ALL SERVICES

Access to articles by:	Library investment
Faculty/Staff	\$1,442,341
Students	<u>\$3,748,350</u>
Total	\$5,190,691
Access to books by:	
Faculty/Staff	\$141,964
Students	<u>\$890,021</u>
Total	\$1,031,985
Access to other publications by:	
Faculty/Staff	\$210,918
Students	<u>\$517,019</u>
Total	\$727,937
Reference services provided to:	
Faculty/Staff	\$185,386
Students	<u>\$142,730</u>
Total	\$328,116
Assist on research projects with:	
Faculty/Staff	\$132,388
Public service desk assistance to:	
Faculty/Staff	\$325,319
Students	<u>\$3,165,203</u>
Total	\$3,490,522
Telephone reference, etc. assistance to:	
Faculty/Staff	\$523,059
Students	<u>\$1,051,437</u>
Total	\$1,574,496
Formal instruction used by:	
Faculty/Staff	\$4,195
Students	<u>\$88,000</u>
Total	\$92,195

Informal instruction used by:

Faculty/Staff	\$38,361
Students	<u>\$27,136</u>
Total	\$65,497

Equipment provision to:

Faculty/Staff	\$9,539
Students	<u>\$1,797,537</u>
Total	\$1,807,076

Provision of audiovisual materials to:

Faculty/Staff	\$516,465
Students	<u>\$2,296,577</u>
Total	\$2,813,042

Provision of other materials to:

Faculty/Staff	\$18,291
Students	<u>\$26,634</u>
Total	\$44,925

Library tours used by:

Faculty/Staff	\$3,120
Students	<u>\$44,430</u>
Total	\$47,550

Exhibits and displays observed by:

Faculty/Staff	\$10,093
Students	<u>\$68,468</u>
Total	\$78,561

Newsletter read by:

Faculty/Staff	\$13,151
Students	<u>\$43,527</u>
Total	\$56,678

Library blog, etc. used by:

Faculty/Staff	\$5,408
Students	<u>\$41,977</u>
Total	\$47,977

Open House participation by:

Faculty/Staff	\$4,270
Students	<u>\$19,748</u>
Total	\$24,018

Library workstations used by:

Faculty/Staff	\$743
Students	<u>\$57,121</u>
Total	\$57,864

Duplication services used by:

Faculty/Staff	\$1,321
Students	<u>\$160,370</u>
Total	\$161,691

Leisure/workspace used by:

Faculty/Staff	\$31,846
Students	<u>\$4,003,960</u>
Total	\$4,035,806

Library Workrooms used by:

Faculty/Staff	\$16,182
Students	<u>\$64,164</u>
Total	\$80,346

Total

Faculty/Staff	\$3,634,380
Students	<u>\$18,254,409</u>
Total	\$21,888,769

3. METHODS AND ESTIMATES OF USE AND VALUE

This section provides a description of methods and estimates of two types of services provided by the library: (1) access to scholarly articles and (2) reference searches conducted by library staff. The survey methods include survey response rates and a description of the critical

incident method used. The question used in the survey is presented prior to each estimate. Sections are given which summarizes the use, contingent value, library and university investment and library monetary ROI of all 77 services.

The objectives of surveys are to measure faculty/staff and student use of services, time spent using the services, and outcomes from use such as:

- Purposes of using services.
- Importance of the services in achieving the purposes.
- Ways in which services affect the purposes.
- Other outcomes specific to the type of user.

These results can be used by libraries in their decision-making and university management. There is merit in making results available to users who can compare their practices to that of others.

The initial combined Bryant and Drexel populations are as follows:

Faculty/staff	5,337
Students	24,296
Total	29,633

The combined survey responses are given below:

Survey	Bryant	Drexel	Both
Faculty/staff reading survey	106	44	150
Faculty/staff use of services	115	36	151
Student reading survey	91	23	114
Student use of services	143	23	114
Total	91	23	114

Students are notorious non-responders. To help with this issue, two surveys were given to students at Bryant including one that dealt with students obtaining and reading articles, books and other publications from the library and one survey about all other library services. Student surveys were conducted by a combination of web-based and hand-outs in the library.

Since part of the university's investment in library services involves the cost to faculty, staff, and students (in addition to library costs), it is necessary to put a value on their time. Faculty compensation includes salaries and valued fringe benefits such as retirement, insurance, etc. Since faculty often work more hours than a normal work week, the total compensation is divided by 2,200 hours (an amount observed elsewhere) to establish an hourly rate. The average faculty cost is \$66.30 per hour and staff cost is \$36.00 per hour.

Student hourly rate is based on student tuition and corresponding time spent by them on university activities. The rationale for using tuition is that the university is responsible for and invests in resources necessary to provide classes and other events in return for the amount that students pay in tuition and fees. We asked students to indicate "Approximately how many hours do you spend in a typical week: in class, studying in the library, studying elsewhere, and in other university activities (attending a scheduled event, recreational activities, athletic events, volunteer services, etc.)." Tuition is divided by the number of weeks covered and then divided by the reported number of hours given by each student. Both web-based and in-library respondents answered this question with little difference resulting in an average cost of \$34.60 per hour.

The surveys of library users rely heavily on the critical incident method where the critical incident is the last visit, last use of a service (for example, circulation, reference, access to

materials, workstations, workspace, and so on) or last reading of a publication (i.e., article, book, or other publication). From this point forward, reference to a “use” is only to a visit or use of a specified service. Survey questions include the number of visits made by the user within a specific time period, such as the previous month (30 days). This number represents a “cluster” of visits while subsequent questions deal specifically with the last visit made during that month - - such as how much time was spent during that visit and which services were used. When focusing on the critical incident, in a sense, the survey population shifts from people to total annual number of visits or other use-related activities. Total visits are estimated by multiplying the average number of visits per survey respondent made in a month multiplied by the surveyed population total and then projected to a year total (for example, multiplied by 7.4). Thus, estimates of total visits are based on the population of visitors (and non-visitors). However, when estimates concern the critical incident of the last visit, the survey population observed becomes all visits made by the population surveyed.

The critical incident method is a powerful tool because one can develop observations from multiple cross-classifications -- i.e., from the last reading of an article. Questions about the last reading observed may include how the article was identified, where it was obtained, its format, the purpose for the reading, and outcomes resulting from reading. The critical incident method can produce combinations of observations such as the age of the articles identified through an online search, obtained from a library, and used for research; or one could compare articles read from library sources vs. other sources (such as personal subscription or from a colleague), in print vs. electronic, the respective time spent reading, and outcomes of the reading by source (King and Tenopir 2013; King et al. 2009; Griffiths and King 1991; Radford 2006).

It is useful to verify estimates by checking the "units" used in the estimates (e.g., visits, users, time spent using, cost of using, etc.). Examples include:

- Average visits per month per visitor: $1,000 \text{ "visits" in the past month} / 100 \text{ sampled "visitor"} = 10 \text{ "visits" per month per "visitor" (visits per month / visitor)}$.
- Average annual visits per visitor: $10 \text{ visits per month per visitor} \times 12 \text{ "months"} = 120 \text{ "annual visits" per "visitor" (visits per month} \times \text{number of months in a year)}$.
- Total population annual visits: $120 \text{ "annual visits" per "visitor"} \times 1,000 \text{ "visitors" in the population} = 120,000 \text{ total visits (annual visits per year} \times \text{total visitors)}$.
- Hourly wage rate of a worker: $\text{Annual "wage"} / \text{annual "hours" worked} = \text{wage per hour of a worker (wage / hours)}$.
- Average hourly wage rates per wage earners: $\text{total hourly wage rates} / \text{number of wage earners} = \text{hourly wage rates per earner (total wage rates} / \text{number of wage earners)}$.
- Average hours worked per worker: $\text{total hours worked} / \text{number of workers (hours worked} / \text{workers)}$.

METHODS: STEPS TAKEN

Background

The objective of cost analysis is to establish the total cost of each principal service provided by this library. These costs are added to costs incurred by faculty/staff and students in using the services to yield the total costs to the university in order to establish the investment component of Return on Investment of the library. The latter costs are estimated from a survey of faculty/staff and students in the fall of 2011. The detailed costs are made at a hypothetical university.

The detailed costs can be used to assess:

- The cost per use of each service.
- The cost of processing and providing access to each type of publication (i.e., book, journals, etc.) and other materials.
- The relative cost of different formats (i.e., print vs. electronic).

- The productivity or cost per output of each activity.
- The effect on library cost on of changes in number of faculty or students.

These metrics can be used for many aspects of library decision-making and/or planning.

Basic Steps in Library Cost Analysis

The basic steps in the library cost analysis are as follows:

1. Identify the principal services provided by the library.
2. Establish the resources that are used to provide services, such as staff, space, shelving, furniture, supplies, etc.
3. Establish basic data that are used in the cost analysis.
4. Design an Excel Spreadsheet that is used for the cost analysis.
5. Estimate staff costs of services for each service.
6. Estimate space costs of services.
7. Determine furniture costs of services.
8. Assess shelving costs of services.
9. Estimate purchasing costs of services (e.g., cost of collections).
10. Sum the resource cost to provide the total cost of each service.

These steps are described in detail below.

Identify principal services provided by the library

The services identified for the library are sub-divided by those provided to faculty and staff and those to students. Some services are also provided to alumni and others. They are categorized by access to library materials (i.e., periodicals, journals, books, monographs, other publications, AV materials, institutional repository/digital commons, equipment and other materials), interlibrary borrowing and lending, reference and research, library instruction, other services such as

duplication, publicity services, access to workstations, and access to library space. There are 77 services. A complete list is given in Appendix A.

These services are categorized as:

- Access to library publications such as journals, books and other publications (24 services)
- Access to other materials such as audiovisual and equipment (5 services)
- Interlibrary borrowing from other libraries (8 services)
- Interlibrary lending to other libraries (4 services)
- Librarian support such as reference and research (7 services)
- Library instruction such as classes and orientations (5 services)
- Publicity services such as library television and newsletters (12 services)
- Access to library space such as workrooms and program center (5 services)
- Access to workstations (2 services)
- Duplication and delivery services (3 services)
- Access open to non-university users (2 services)

The list of services in Appendix A gives numbers of activities involved in each service. A list of 96 activities is given in Appendix B.

Establish resources used to provide services

The principal resources used to provide services are:

- **Staff** including all library staff members and student assistants. The cost for each staff member is allocated to work activities and then to services later.
- **Space** is allocated to services.
- **Furniture** is allocated to services.

- **Shelving** is allocated to relevant services.
- **Purchases** of overhead/administration items, publications and other materials are allocated to services.

The summary of costs of each service is given in the last sub-section.

Establish basic data needed for the staff cost analysis

Basic data include university-wide and library staff specific data for the calendar or fiscal year. The university data include the overhead or administration rates applied to staff such as fringe benefits and rates that cover personnel processing, human resources, etc. The other kind of overhead/administration rates cover the cost of general administration, processing invoices and purchases, finance, etc. For the Bryant analyses, the fringe benefit rates are treated separately and the appropriate rate applied to each staff member separately. A common overhead/administration cost is applied to the total compensation of each staff member and to all current purchases.

Basic staff data applied to each staff member includes:

- **Work status** including permanent or temporary and full-time or part-time.
The status has a bearing on type of fringe-benefits allowed.
- **Number of weekly hours.** Some full-time staff work 40 hours a week and others 35 hours. Part-time staff can range up to 35 hours. The number of annual hours worked in a year is used to calculate the hourly rate of each staff member.
- **Annual salaries or wages.** This is determined for each staff member. If a staff member only worked part of the year, this is taken into account.

- **Number of days/hours taken for time not at work.** This kind of fringe benefit includes vacation, sick leave, holidays, jury duty, military leave, maternity leave, etc. This total time is subtracted from the traditional annual work hours (2080 or 1820) or part-time worked.
- Number of other days/hours taken off without pay. This is also subtracted from total hours.
- Overtime paid and hours involved.
- Bonuses paid.
- **Number of hours worked above a normal work week.** Some library staff work more hours in a year, but are not compensated for that time. This time is taken into account when establishing the hourly rate of each staff member and is used to establish productivity of activities.
- **Total compensation for each staff member** includes salaries or wages, fringe benefits that are a form of compensation such as insurance, pension, etc., overtime and bonuses.
- **Total annual work hours for each staff member** includes traditional annual work hours (2080 or 1820) or part-time worked, plus overtime hours and hours above a normal work week, less hours not at work and other hours taken off without pay.

The total compensation divided by total annual work hours gives an average hourly rate for each staff member that is multiplied by the annual hours spent on each activity described below.

Design of an Excel Spreadsheet

There are two separate spreadsheets. The first spreadsheet gives a matrix in which the columns are the basic data and calculations involving the 96 activities involved. There are several replications of the 96 activities representing different calculations. There are 34 rows where rows 1 through 22 involve the direct costs associated with 17 library staff members and student assistants and adjustments to take into account rounding errors. Rows 23 through 26 deal with university and library overhead/administration costs. Rows 27 through 30 are allocations of non-processing activities. Rows 31 through 34 are to provide a basis for allocating staff space and staff furniture to work activities.

The second spreadsheet is a matrix with columns representing service costs of the five resources and rows representing the 77 library services plus totals for columns and rows. Column A is a list of service categories; B is a brief description of services; C a service number (1-77 and total); D is staff costs; E through G space costs; H through L furniture costs; M through O shelving costs; P purchases; and Q total service costs. Rows 1 through 77 are services and 78 total service costs.

Estimate the staff costs for each service

Below are detailed steps that are taken to estimate staff costs for activities and then allocating activities to each service.

Identify library staff: Library staff is identified by a code 1 through 17 plus those for student assistants. This is entered in 17 rows and 3 columns (staff code Column A, last name Column B and first name Column C). These results are given in Appendix C.

Establish relevant activities performed by staff: There are 96 such activities categorized by:

- Circulation and internal lending (Activities 1 through 7)
- Interlibrary lending (Activities 8 through 15)
- Reference & research/public services (Activities 16 through 22)
- Library instruction (Activities 23 through 27)
- Other services (Activities 28 through 30)
- Operational activities (Activities 31 through 75)
- Library publicity activities (Activities 76 through 82)
- Library management and administration (Activity 83)
- Non-processing activities (Activities 84 through 86)
- Systems activities (Activities 87 through 90)
- Scanning (Activities 91 through 93)
- Photography (Activity 94)
- Open and close library (Activity 95)
- Inventory (Activity 96)

A complete list of activities is given in Appendix B.

Prepare instructions for library staff to provide needed information: A Staff Basic Data Form and Instructions for filling out the activity log are given in Appendix D. These data collection activities require IRB approval.

Survey of library staff (Staff Basic Data Form): The data collected from this form are entered into 19 columns for each staff member (rows 2-18). The first question provides the **name of the library staff member** so that the researcher can follow-up any reports. **Work status**

(permanent/temporary and full-time/part-time) establishes eligibility of fringe benefits (Column D). Some part-time staff are on a limited months assignment and others weekly hour basis (Columns E and F give months and weekly hours of part-time staff). This helps establish the annual number of hours worked by each staff member. Any **overtime payment** (Column G) is added to salaries or wages and number of days or hours involved (Column H and I) are added to annual hours worked. Amount of any **bonuses** (Column J) is added to salaries or wages (along with overtime to establish total compensation). Sometimes library staff work **hours more than in a normal work week**. This amount of hours (Column K) is added to time at work to establish how much time is worked. Staff takes **paid time off** for vacation, sick leave, holidays, jury duty, military duty, paternity leave, etc. (Columns L through R). This time (Column S in days) is subtracted from total work days in a year (260) to establish the annual time actually at work. Sometimes **time off is not compensated**. Such days are subtracted from total work days. Finally, some staff may have been hired during the year. The **number of months** (Column T) establishes amount of annual time worked for each staff.

Obtain relevant information from records: This information is recorded in rows 2 through 18 (for each staff member, 19 and 20 for adjusted costs, and 21 for students). The relevant information are the salaries or wages of each staff member, the total compensation with bonuses and overtime added to salaries or wages, and the fringe benefits rate given as a multiplier. The fringe benefit multiplier for full-time staff is 1.3753 (including social security and FICA taxes, retirement, medical and dental insurance; life insurance, long-term insurance, vacation accrued, and tuition of employee family members). The part-time employee fringe benefit multiplier includes only social security and FICA (1.0765) and annual hours assigned to

each staff member such as 2080, 1820 or part-time. Total compensation (including fringe benefits) is total compensation times fringe benefit multiplier.

Staff member indicates proportion of time they spend (%) on each activity: Staff are given in rows 2 through 18. The 96 activities are noted as columns W through DN and the proportions (%) recorded in 17 rows. Note the percentages ranged from even percentages (1-100) to hundredths of a percent. One column (DO) is the sum of the columns to add to one hundred as a check and adjusted if necessary.

Percentages are converted to true proportions: The percentages are converted to true proportions by dividing by 100 and recorded for each staff member in the next columns (DP through HG). One column (HH) is the total proportions adjusted to come close to 1.000.

Determine number of hours worked in a year for each staff member and each activity: Number of hours worked in a year is calculated for each staff member. This step is as follows:

- Determine number of hours in a day for full-time staff (Column HM). There are 8 hours per day for those who work 2,080 hours annual and 7 hours for those who work 1,820 hours annually (Column HL). Part-time staff work 4 hours per day. One column gives hour worked per day. Full-time staff are paid 260 days in a year. Number of work days part-time are paid is annual hours worked divided by 4.
- The next column, number of annual hours worked, (Column HM) is calculated by annual hours (HL) plus number of hours involved in overtime pay (Column I), plus number hours worked above a normal work week (Column K), minus number of hours off without pay (Column S, days times hours a day) minus paid hours off (paid days off times hours a day).

- The true proportions of each staff member and each activity are multiplied times total hours worked in 2010 to estimate total time spent by each staff member working on each activity.

Estimate total direct compensation of staff: Total direct compensation (Column HK) equals salaries and wages (including fringe benefits), overtime pay and bonuses for each staff member. Student compensation is \$39,407.94. These values are recoded in rows 2-18 and 21 for students.

Hourly rate is total compensation including fringe benefits (Column HO) divided by annual hours worked (Column HP). The **hourly rate** is multiplied times the proportion of time spent by staff for various activities to yield direct staff costs. These values are recorded in respective columns. Student time is said to be 5,148.25 hours costing \$39,407.94. This comes to \$7.65 adjusted to \$8.24 for fringe benefits. The direct staff cost for each activity (Row 22) is found by summing rows 20 and 21. The salaries and wages given were 2% higher which is adjusted by 0.98 for overstatement of salaries and wages given.

Estimate direct staff costs for each activity: The direct staff cost of each activity (Column 19) is found by summing rows 2-18 for each activity. One column sums the columns which serve as a check on the total amount. Row 20 is the sum of each column and summed to a column as a check. If the totals do not add to the known amount in row 19, row 20 is used as an adjustment by the ratio of known totals. Rows 20 and 21 are summed to provide an estimate of total direct staff costs of each activity.

Estimate university overhead administration cost for each activity: Multiply each direct staff cost by an adjustment factor. These values are given as a row (23).

Estimate the Library overhead/administration factor: The library overhead/administration cost factor is estimated as follows: total staff cost including university overhead divided by (total staff costs minus library staff overhead activities - 83, 87, 88, 90, 93, 95, 96) = 1.2274. Each activity cost is multiplied by this factor, and given in row 25.

Estimate total staff cost for each activity: Total direct staff cost including, university and library overhead administration costs, are recorded for each activity and for each staff member. These values are recorded in row 26.

Allocate non-processing activities: Non-processing activities (84, 85, 86) are allocated to each relevant activity by the following factor: total staff costs divided by (total staff costs minus total non-processing costs) = 1.2242. These costs are recorded in row 27.

Determine indirect activities and allocate to direct activities: Most services are used by faculty and staff, as well as students. Since the library staff cannot make this distinction, the two types of services are determined by the user survey. Below the relevant activities are allocated to each service. Also, use of collections (e.g., print and electronic books) involves direct, as well as, indirect activities. That is, circulation of books monographs is a direct activity (2) and their collection and development (33), acquisitions (44), cataloging (55), and physical processing (65), and re-shelving books (74) are indirect activities. These activities are partitioned between circulation and other access by estimates of number of books shelved after circulation, those read in the library, and those loaned to other libraries. The direct activities are summed and recorded in rows.

The staff costs of each service: The activities assigned to each service are given in the list of services in Appendix A. Each listed service has assigned activities given in parenthesis. For example, activities assigned to access to current periodicals in the library by faculty/staff are

collection development and management of print journals (31), acquisitions of print journals (42), cataloging of print journals (53), physical processing of print journals in current periodicals room (62), and re-shelving of current periodicals (72). These costs are recorded in the second spreadsheet mentioned above.

Resource costs by type of service: There are columns (A through Q) that represent service categories (A), specific type of service (B), service number (C), staff costs (D), space costs (E-G), furniture costs (H-L), shelving costs (M-O), purchases (P) and total service costs (Q). There are 78 spreadsheet rows representing all 77 services and a total for each column. The total staff costs come to \$1,079,417. Other resource costs are described below.

Total staff costs for each service is determined following the allocated costs of activities that are assigned to each service. These costs are given as column D in the spreadsheet.

Estimate the library space costs for each service.

The steps involved include:

- Determine the total amount of space.
- Estimate the initial and present value space costs.
- Allocate space to library operations.
- Allocate space to library services.
- Allocate staff space to services.
- Allocate other space costs to library services.

These steps are given in greater detail below.

Determine the total amount of space: A floor plan of the library building is attached (Appendix D). There are 72,000 square feet of space in the building. Using a scale of 30 feet for

one inch, the two floors are estimated to be 40,774 square feet on the first floor and 31,128 on the second floor or 71,902 square feet total. Thus, 72,000 square feet is assumed and the 30 square feet per one inch is used.

Estimate the initial and present value space costs: Assume that the library was built in 2002 at a cost of about \$25 million. The present value of these costs (CPI) is about 1.212 times the 2002 costs. These 2002 costs are depreciated and sub-divided as follow:

- Structure, architecture, engineering, soft costs (moving, legal, consultants) depreciated over 40 years.

$$\$21,667,391 \times 1.212 \div 40 = \$656,522$$

Or

$$\$9.12 \text{ per sq. ft.}$$

- Equipment depreciated over 5 years

$$\$135,518 \times 1.212 \div 5 = \$32,050 \text{ (including photocopying, etc.)}$$

Or

$$\$0.46 \text{ per sq. ft.}$$

- Technology depreciated over 10 years

$$\$840,468 \times 1.212 \div 10 = \$101,865$$

Or

$$\$1.41 \text{ per sq. ft.}$$

- AV & Data Dist. Depreciated over 10 years

$$\$1,316,386 \times 1.212 \div 10 = \$159,534$$

Or

$$\$2.22 \text{ per sq. ft.}$$

- Utilities & Maintenance

\$8.50 per sq. ft.

TOTAL - \$21.71 per sq. ft.

Allocate space costs to library operations: First, it is necessary to allocate non-used/occupied space such as hallways, restrooms, janitorial storage, staircases, etc. The used/occupied-space is 55,024 square feet. Therefore the adjustment factor is $72,000 \div 55,024 = 1.309$ and all utilized space is multiplied by this number times \$21.71 per square foot is \$28.42 per square foot. The resultant space costs are as follows with allocation to services as stated above.

Allocate space to library services: The library space is estimated to occupy 42,559 square feet as follows:

- Administration staff: 432 square feet
- Reference and technical services: 3,850 square feet

This space is allocated to services by the cost of staff time spent on services (see Column D on the second spreadsheet).

Access to materials is allocated as follows:

- Current periodicals: 2,530 square feet
- Journal backfile: 1,392 square feet
- Print books: 10,687 square feet
- Other materials: 2,133 square feet
- AV materials: 464 square feet

This space is allocated to services by faculty and student access to the publications and other materials.

- Library instruction: 4,105 square feet

This space is allocated by all its uses determined in surveys.

- Print booth: 253 square feet
- Paid photocopiers: 144 square feet
- Exhibits & displays: 232 square feet
- Axis TV: 36 square feet
- Workstations: 5,248 square feet
- Leisure/workspace: 8,622 square feet
- Workrooms: 2,431 square feet

This space is allocated to services by faculty/staff and student access.

Allocate library staff space to services: On the first spreadsheet, row 32 gives the cost of staff time spent on each service.

- Administration staff: \$12,277 (i.e., 432 x \$28.42)
- Reference and technical services: \$109,417

These costs are allocated to services by the proportion of cost of staff time.

Allocate other space costs: At this point, use of publications and other space combines faculty and student use and specific services involving library materials. Service numbers are given in parenthesis.

- Current periodicals: \$71,903 (1, 15, 73)
- Journal backfile: \$39,561 (2, 16, 73)
- Print books: \$279,623 (6, 20, 74)

- Read from shelf copies: \$24,101 (5, 19)
- Circulation of other publications: \$14,199 (9, 23, 75)
- Other publications read from shelves: \$47,221 (8, 22, 75)
- Duplication: \$7,190 (51, 52)
- Paid photocopiers: \$4,092
- Axis TV: \$1,023 (56, 62)
- Workstations: \$144,093 (66, 67)
- Leisure workspace: \$246,599 (68, 69)
- Workrooms for teaching: \$29,710 (70,71)
- Workrooms for programs: \$52,145 (72)

The other space costs are allocated by what the survey results show in terms of use.

Determine furniture costs of services

The steps taken to estimate **furniture costs** are as follows:

- Determine the cost of today's furniture
- Allocate the furniture cost to services
- Allocate university administration/overhead costs to costs
- Allocate the cost of furniture

Details follow below:

The current cost of non-shelving furniture is depreciated between 5 and 20 years as shown below.

The cost of today's furniture involves the following steps:

- Identify types of furniture and today's unit cost from catalogs so the type of furniture and unit cost are given below:

- Staff desks: \$1,000
- Roll chairs: \$390
- Other chairs: \$204
- Filing cabinets: \$300
- Small tables: \$700
- Large tables: \$2,500
- Reference desk: \$42,000
- Catalog cabinets: \$310
- Cabinets: \$434
- Leisure/workspace sofas: \$1,380
- Leisure/workspace chairs: \$930
- Display/exhibit cabinets: \$1,600
- Carpeting is estimated to be \$20 per square yard installed

The total number of each type of furniture is observed and added to establish total costs. The university administration/overhead cost allocated to purchase of furniture and carpeting comes to \$76,881.

The costs below include university administration/overhead and following depreciation.

- Staff furniture cost allocated to services:
 - Public service desk: \$42,000 depreciated 20 years = \$2,520 allocated to Reference & Research services
 - Staff furniture: \$113,280 depreciated 10 years = \$13,594 allocated by staff time in the same way.

- Carpeting: 6,800 square yards at (\$136,000 not included in furniture) depreciated 15 years = \$10,880 allocated same as space
- Other furniture cost allocated to services.
- Library instruction are: \$86,800 depreciated 10 years: \$10,416
- Paid photocopiers: \$1,000 depreciated 10 years = \$120
- Exhibits and displays: \$8,000 depreciated 20 years: \$2,880
- Axis TV (booth only): \$1,600 depreciated 20 years: \$90
- Workstations (tables and chairs): \$66,749 depreciated 20 years = \$9,009
- Leisure/workspace (including tables): \$181,460 depreciated 10 years = \$21,775
- Workrooms: \$43,320 depreciated 10 years = \$5,198
- Catalog cabinets: \$3,100 depreciated 10 years = \$310

Allocate furniture costs to services: Staff, furniture and carpeting are allocated by the proportion of staff costs. (See row 28 in spreadsheet number one).

Other allocations are based on the same proportions as “other” space costs. These costs are as follows with service numbers in parenthesis.

- Public service desk: \$2,520 (40, 41)
- Library instruction: \$10,416 (46 through 50)
- Exhibits and displays: \$2,880 (61)
- Axis TV (in lobby): \$96 (62)
- Workstations: \$9,009 (66, 67)
- Leisure/workspace: \$21,775 (68, 69)
- Workrooms: \$5,198 (70, 71)

- Other: \$120 (50, 51)

The service costs are determined from the surveys.

Assess shelving cost of services

Present value of shelving is currently \$38,755 depreciated 20 years. This is based on a cost of \$19.58 per linear feet for low shelves and \$7.90 for compact shelving.

The service cost of shelving is as follows:

- Staff shelving: \$570 allocated by proportion of staff time.
- Current periodicals: \$754 (1, 15)
- Journal backfiles: \$4,139 (2, 16)
- Circulation of print books: \$29,256 (6, 20)
- Books read from shelves: \$2,522 (5, 19)
- Circulation of other publications: \$350 (9, 23)
- Other publications read from shelves: \$1,164 (8, 22)
- TOTAL: \$38,755

The service costs are determined from the surveys.

Estimate purchasing costs of services

The steps taken to estimate purchasing cost of services are as follows:

- Identify which purchases are indirect overhead/administration cost and direct service costs.
- Determine university and library overhead/administration factor and apply to purchase costs.

- Allocate cost of purchases to services.

Details follow below:

Direct and indirect costs of purchasing are identified as follows:

- Indirect purchases costs include such as office supplies and equipment, telephone and postage, dues, meeting and seminar fees, etc. These purchases come to \$40,618.
- Direct service purchases are those directly related to such services involving publications and other materials, interlibrary borrowing and database involving consortia or vendors, etc. These purchases come to \$444,359

Total purchases are \$484,977.

The combined overhead/administration factor is 1.3097 which applied to purchase costs.

Cost of purchases are allocated as follows. In the absence of surveys giving service use, The purchase of library books (\$43,083) is allocated in proportion to staff costs.

- OCLC costs (\$12,592) are allocated in proportion to staff cataloging time involving publications and other materials.
- Ques (\$38,791) are allocated to interlibrary/borrowing and lending, reference searches, and access to e-journal data bases in proportion to staff costs.
- Library database purchases (\$336,683) are allocated in proportion to staff costs to access to e-journals and reference searches.
- The purchase of visual aids is allocated to AV materials

These service costs are reported in the second spreadsheet in column K.

Sum the resource cost to provide the total cost of each service

The total cost of each service is given in a spreadsheet below. The spreadsheet of costs is subdivided in order to fit in this report as show below by service and resources.

Access to Journal Articles								
	Current Publications	Backfiles	E-Journals On Reserve	E-Journals Database	ILB	Total	ILL	Non-University Use
Staff	\$67,216	\$7,421	\$5,499	\$94,098	\$14,478	\$188,712	\$8,927	\$17,806
Staff space	\$7,578	\$837	\$620	\$10,609	\$1,632	\$21,276	\$1,006	\$2,007
Other space	\$80,977	\$44,553	-	-	-	\$125,530	\$10,136	-
Staff furniture	\$847	\$93	\$69	\$1,185	\$182	\$2,376	\$112	\$224
Carpet	\$678	\$75	\$55	\$948	\$146	\$1,902	\$90	\$179
Staff shelving	\$35	\$4	\$3	\$49	\$8	\$99	\$5	\$9
Other shelving	\$754	\$4,139	-	-	-	\$4,893	-	-
Purchases	\$46,492	\$5,133	\$8,403	\$143,791	\$2,026	\$205,845	-	-
Total	\$204,577	\$62,255	\$14,649	\$250,680	\$18,472	\$550,633	\$20,276	\$20,225

Access to Books						
	Print	Circulation	E Books	ILB	Total	ILL
Staff	\$10,846	\$125,775	\$17,973	\$17,368	\$171,962	\$17,758
Staff Space	\$1,223	\$14,180	\$2,026	\$1,892	\$19,321	\$2,002
Other Space	\$27,142	\$314,909	-	-	\$342,051	\$18,019
Staff Furniture	\$136	\$1,584	\$226	\$219	\$2,165	\$224
Carpet	\$109	\$1,268	\$181	\$175	\$1,733	\$179
Staff Shelving	\$6	\$66	\$10	\$9	\$91	\$9
Other Shelving	\$2,522	\$29,256	-	-	\$31,778	-
Purchases	\$4,659	\$54,033	-	\$2,389	\$61,081	-
Total	\$46,643	\$541,071	\$20,416	\$22,052	\$630,182	\$38,191

Access to Other Publications						
	Print	Circulation	Other E- Publications	ILB	Total	ILL
Staff	\$14,668	\$3,173	\$217	\$101	\$18,159	\$101
Staff space	\$1,654	\$470	\$24	\$11	\$2,159	\$11
Other space	\$53,180	\$15,991	-	-	\$69,171	\$113
Staff furniture	\$185	\$53	\$3	\$1	\$242	\$1
Carpet	\$148	\$42	\$3	\$1	\$194	\$1
Staff shelving	\$8	\$16	-	-	\$24	-
Other shelving	\$1,164	\$350	-	-	\$1,514	-
Purchases	\$2,347	\$847	\$34	\$14	\$3,242	-
Total	\$73,354	\$20,942	\$281	\$128	\$94,705	\$227

AV Materials					
	AV	ILB	Total	ILL	Other Materials
Staff	\$33,882	\$5,156	\$39,038	\$4,408	\$31,212
Staff space	\$3,820	\$581	\$4,401	\$497	\$3,520
Other space	-	-	-	\$3,379	-
Staff furniture	\$427	\$64	\$491	\$56	\$393
Carpet	\$341	\$6	\$347	\$44	\$314
Staff shelving	\$18	\$2	\$20	\$2	\$17
Other shelving	-	-	-	-	-
Purchases	\$18,365	\$722	\$19,087	-	\$23,737
Total	\$56,853	\$6,531	\$63,384	\$8,386	\$59,193

Reference Services		Research Assistance	
Staff	\$45,460	Staff	\$9,382
Staff space	\$5,125	Staff space	\$1,058
Other space	-	Other space	-
Staff furniture	\$573	Staff furniture	\$118
Carpet	\$458	Carpet	\$95
Staff shelving	\$24	Staff shelving	\$5
Purchases	\$110,064	Purchases	-
Total	\$161,704	Total	\$10,658

Public Service Desk		Telephone Assistance	
Staff	\$176,366	Staff	\$88,811
Staff space	\$19,883	Staff space	\$10,012
Other space	-	Other space	-
Staff furniture	\$4,742	Staff furniture	\$1,119
Carpet	\$1,776	Carpet	\$896
Staff shelving	\$94	Staff shelving	\$47
Purchases	-	Purchases	-
Total	\$202,861	Total	\$100,885

Formal Instruction		Informal Instruction	
Staff	\$27,944	Staff	\$32,604
Staff space	\$3,150	Staff space	\$3,676

Other space		Other space	
Staff furniture	\$352	Staff furniture	\$411
Carpet	\$282	Carpet	\$329
Staff shelving	\$15	Staff shelving	\$17
Purchases	-	Purchases	-
Total	\$31,743	Total	\$37,037

Provision of Equipment	
Staff	\$46,137
Staff space	\$5,201
Other space	
Staff furniture	\$581
Carpet	\$466
Staff shelving	\$24
Purchases	-
Total	\$52,409

Library Informs Users						
	Library Tours	Exhibits	TV	Newsletter	Blog	Open House
Staff	\$5,910	\$6,256	\$3,746	\$7,490	\$13,652	\$2,778
Staff space	\$666	\$706	\$422	\$845	\$1,539	\$313
Other space	-	\$1,152	-	-	-	-
Staff furniture	\$74	\$79	\$47	\$94	\$172	\$35
Carpet	\$60	\$63	\$38	\$75	\$138	\$28
Staff shelving	\$3	\$3	\$3	\$4	\$7	\$1
Purchases	-	-	-	-	-	-
Total	\$6,713	\$8,259	\$4,256	\$8,508	\$15,508	\$3,155

Workstations		Duplication Services	
Staff	-	Staff	\$7,056
Staff space	-	Staff space	\$796
Other space	\$162,276	Other space	-
Staff furniture	\$31,860	Staff furniture	\$411
Carpet	-	Carpet	\$71
Staff shelving	-	Staff shelving	\$3
Purchases	-	Purchases	\$860
Total	\$194,136	Total	\$8,875

Workspace		Workrooms	
Staff	-	Staff	-
Staff space	-	Staff space	-
Other space	\$277,706	Other space	\$78,299
Staff furniture	\$14,552	Staff furniture	\$3,475
Carpet	-	Carpet	-
Staff shelving	-	Staff shelving	-
Purchases	-	Purchases	-
Total	\$292,258	Total	\$81,774

4. THE USE, VALUE, COST & ROI OF SCHOLARLY JOURNAL SERVICES

This section covers total amount of article and "purchase" costs by faculty, staff, and students, and the reading of articles provided by the library. Each observation is preceded by the survey question asked. The section also covers "use" costs of reading and how articles are identified and provided. It also discusses the age of articles read, the purpose of reading, the importance of information content, and the ways it is important. For faculty and staff, it determines if the reader cited or plans to cite the read article.

Amount of reading

Amount of reading is determined by a survey of faculty, staff, and students. The total number of Drexel and Bryant faculty and staff is 5,337, of which 749 were contacted through a web-based survey and 179 responded. The total number of students is 24,296 (mostly undergraduates). Of these students, 118 were surveyed by a combination of a web-based survey and an exit survey performed in the library. Note that there is a bias when surveys are conducted in libraries because the surveys ignore non-library students and those who are likely to use the

library less frequently than those observed in the library. This bias is ignored for the observations discussed here.

The survey instrument had two parts: one part was designed to estimate total reading, and the second to determine reading from library services based on the critical incident method involving the most recent reading discussed below (1).

The respondents were asked:

In the past month (30 days), approximately how many scholarly articles have you read? Articles can include those found in journal issues, websites, or separate copies such as preprints, reprints, or other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the article.

Response:

Number of articles read (including skimmed) in the past month: If zero, please enter “0”. _____

The total number of readings is estimated from the question above. Note that when a person reads an article it is referred to as a “reading” rather than an article read since one can read an article many times.

The 179 faculty and staff who answered the question reported a total of 2,846 readings so that the average reading is 15.9 readings per person per month (2,846 readings / 179 persons) or 190.8 annual readings (12 months x 15.9 readings per month) assuming a level amount of reading over a year (i.e., there is the same amount of reading each month). [If the assumption is unreasonable, an adjustment can be made from library circulation data by dividing annual circulation by circulation in the survey month and multiplying it by the average reading per person per month.] The total annual reading for faculty and staff is 1,018,300 annual readings (190.8 annual readings per person per month x 5,337 persons).

The 118 surveyed students averaged 9.0 readings per student per month based on 1,062 observed readings (1,062 readings / 118 students). This comes to 108 average annual readings per student with the same assumptions as above (9.0 readings per student per month x 12 months). The total annual reading by students is 2,623,968 readings (108 annual readings per student x 24,296 students).

The total reading by faculty, staff, and students is 3,642,268 readings (2,623,968 readings by students + 1,018,300 readings by faculty and staff).

Number of Library Provided Readings by Faculty or Staff Members and by Students

The number of article readings provided by the library is found using critical incident method involving the most recent reading. The critical incident method is a powerful tool because one can develop observations from multiple cross-classifications, -- i.e., from the last reading of an article. Questions about the last reading observed may include how the article was identified, where it was obtained, its format, the purpose for the reading, and outcomes resulting from reading. The critical incident method can produce combinations of observations such as the age of the articles identified through an online search, obtained from a library, and used for research; or one could compare articles read from library sources versus other sources (such as personal subscription or from a colleague), in print versus electronic, the respective time spent reading, and outcomes of the reading by source (1).

There are two ways of estimating the total time spent reading, for example. One way is to multiply the number of readings in a respondent cluster (such as 10 readings in a month by a respondent) by the time spent reading (for example, 30 minutes per reading) to obtain a total time for that respondent (e.g., 30 minutes of reading x 10 readings = 300 minutes). This estimate

of total time can be averaged across all respondents and multiplied by the total number of persons in the population to estimate the total time (e.g., 300 minutes per respondent x 1,000 respondents = 300,000 minutes or 5,000 hours). The problem is that this method assumes that the time of the last reading (i.e., 30 minutes) is the same for all 10 readings made by a respondent in the past month. Thirty minutes is treated as an “average” of the respondent cluster of times which will sometimes be low and sometimes be high for nine of the actual readings made.

Another way of estimating total time spent reading is to calculate the average time per reading across all respondents (i.e., 30 minutes per reading per respondent). This number is multiplied by the population total (i.e., 10 readings per respondent x 1,000 respondents = 10,000 readings). Thus, the total time is 30 minutes per reading x 10,000 readings = 300,000 minutes or 5,000 hours. This approach is subject to bias because a respondent reading time might be correlated with the number of readings of respondents. That is, those who read frequently might tend to spend less time per reading. This bias can be minimized by stratifying by number of visits.

The latter approach is the method used in this assessment. It is noted that the 5,000 hours spent reading is an indication of the “value” placed by users on the contents read.

Below is the demonstration of faculty/staff and student surveys analyzed by use, value, and Return on Investment (ROI). The survey questions are quoted in the text below, followed by survey responses. These questions are preceded by the following instructions:

The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had previously read this article. Note that this last reading may not be typical, but will help establish the range of reading patterns.

The following question helps the respondent focus on a particular reading.

What is the approximate title of the journal or topic from which this last article was read or, if not a journal, what is the topic of the article?

Response:

Journal title or topic: _____

The proportion and total article readings from library services are found by asking a critical incident question about the source of the last article read. To address faculty and staff readings, this question is:

From where did you obtain this article you last read? (n=133)		
Personal subscription	17.3%	Skip to Q
Free web journal	3.8%	Skip to Q
Preprint copy of the article	1.5%	Skip to Q
Copy of the article from a colleague, author, etc.	9.0%	Skip to Q
An author's website	0.7%	Skip to Q
Other website	5.3%	Skip to Q
School department, etc.	1.5%	
Current periodicals	33.0%	
Other collection	6.0%	
Electronic reserves	8.3%	
Digital commons	0.8%	
Another library via interlibrary loan	6.8%	
Other: (please specify) reported	6.0%	
Total	100%	

The proportion of readings from library services is 54.9 percent (33.0%, 6.0%, 8.3%, 0.8%, and 6.8%). Note that sometimes school, department, etc. collections come from or are funded by the library. This means that there are 559,047 article readings from library services by faculty and staff ($0.549 \times 1,018,300$) or an average of 104.7 readings from library services per faculty or staff member ($559,047 / 5,337$).

The method used to obtain this information for student reading is slightly different. The first question is:

From where did you obtain this article you last read? (n=107)

Personal subscription	5.4%	Skip to Q
A non-university website	11.6%	Skip to Q
Someone other than your instructor/teacher	-	Skip to Q
From the university library or other university source	82.2%	
Other Source	0.5%	

From what university source did you obtain it?(n=107)

Current periodical room	53.4%	
Electronic reserves	16.2%	Skip to Q
Other library collection	10.8%	
Interlibrary loan	0.4%	
Instructor/teacher	0.8%	
School, department, etc. subscription	1.1%	
Other: (please specify)	-	

The proportion of readings from library services is 80.8 percent (53.4%, 16.2%, 10.8%, 0.4%).

Therefore, there are 2,120,166 such readings by students ($0.808 \times 2,623,968$ readings) or an average of 87.3 readings per student (2,120,166 annual readings / 24,296 students). Altogether there are 2,679,213 readings from library sources (559,047 annual readings by faculty and staff + 2,120,166 annual readings by students).

At this point, analysis deals only with readings from library services. The proportion of readings by faculty and staff (n=98) and students (n=58) from library services is typical of U.S. academic libraries and those found in other countries (Tenopir et al. 2010; King et al. 2009; Tenopir and King 2008).

The format of the article read has a bearing on user and library cost. The proportion of readings by faculty and staff in each format is found by:

This source was (n=98)

Print	13.7%
Electronic	86.3%
No Answer	0%

The proportion of readings by students from article print format is 28.3 percent (15 / 53) and electronic format 71.7 percent (38 / 53). With sufficient sample responses from each of the formats it is sometimes illuminating to cross-classify with other questions (King and Tenopir 2013).

Another issue affecting library use and cost is the age of articles read. Studies have shown that readings of articles from library services tend to be much older than those from other sources (King et al. 2009; Tenopir et al. 2010; Tenopir and King 2008; King et al. 2003). The age of articles obtained from library services by faculty and staff is found by asking the following question:

What year was the last article you read published/posted? (n=68)

Response:

Year	Age	N	Proportion
2012	0-1	23	33.8%
2011	1-2	18	26.5%
2008-2010	3-5	6	8.8%
2003-2007	6-10	5	7.4%
1998-2002	11-15	7	10.3%
1993-1997	16-20	2	2.9%
1992, 1989, 1976, 1964, 1935, 1931 (n=7, 10.3%)			

The pattern resembles a nuclear decay curve with age of readings dragging out over many years (a maximum of 82 years old here). The date above reflects observations that were made late in a year, so 2012 reflects a reading of slightly less than one year.

Age of articles read by students is somewhat older (n=49).

Year	Age	N	Proportion
2012	0-1	4	8.2%
2011	1-2	8	16.3%
2008-2010	3-5	18	36.7%
2003-2007	6-10	8	16.3%
1998-2002	11-15	6	12.25%
1993-1997	16-20	2	4.1%
1990, 1984, 1961 (n=3, 6.1%)			

Later it is shown that a smaller proportion of readings is found by browsing by students than faculty and staff (15.5% versus 21.6%). Browsing tends to result in reading recently published articles. Below, when comments are in italics, it refers to things that were not done but could be done.

When observations are made in mid-year one can extrapolate by plotting accumulating proportions of readings over time on log-normal paper or distribution equation and interpolating to 12, 24, etc., months.

Value of Library-Provided Readings by Faculty, Staff Members and Students

There are two types of value of articles read from library services (Machlup 1979; King and Tenopir 2001):

Use value or favorable consequences of reading these articles.

Purchase value or what readings pay for the information read in their time and/or money to obtain, process, and read the articles.

Use value is found through a series of questions given below for faculty or staff.

For what purposes did you use, or do you plan to use, the information obtained from this last article you read? (Choose all that apply.) (n=70)

Purpose	All (%)	Principal %
Research	82.9	52.9
Teaching	58.6	21.4
Administration	1.3	-
Current awareness/keeping up	44.3	10.0
Writing proposals, reports, articles, etc.	21.4	7.1
Consulting, advising others	8.6	-
Internal or external presentations	20.0	2.9
Other: (please specify) reported	15.7	5.7

**Which purpose is the principal purpose (from above)?
How important is the information contained in this article to achieving your principal purpose? (n=72)**

Response:

1 Not at all important	1.4%
2 Somewhat important	15.3%
3 Important	27.8%
4 Very Important	38.9%
5 Absolutely essential	16.6%
Total	100.0%

Note that the numbers to the left (1 to 5) could be ratings in which an average rating is found by multiplying the rating times the proportion observed. The average rating of importance is 3.54 (1 x 0.014 + 2 x 0.153 + 3 x 0.278 + 4 x 0.389 + 5 x 0.166). This average is typical for faculty and staff (4).

In what ways did the reading of the article affect the principal purpose? (Choose all that apply.) (n=72)

Response:

It improved the result	50.0%
It narrowed/broadened/changed the focus	30.6%
It inspired new thinking/ideas	48.6%
It resulted in collaboration/joint research	5.6%
It resulted in faster completion	13.9%
It resolved technical problems	3.9%
It add to my general knowledge	58.1%
It saved time or other resources	22.2%
Other: (please specify) reported	1.4%

Did you cite this article or do you plan to cite it in another publication (e.g., article, report, book, published proceeding)? (n=72)

Response:

No	27.8%
Maybe	34.7%
Already did	25.0%
Will in the future	12.5%
Total	100.0%

It might be better to ask the question by article and by the other publications.

The questions involving students are somewhat different, as follows:

For what purpose was this article read? (Choose only the best answer) (n=52)

Response:

This article was required reading in a course	23.0%
I read this article to help complete a course assignment or course paper (but it was not specifically required)	30.0%
This article was for a class project	1.3%
I read this article to keep up with the literature	21.9%
This article was just of personal interest	16.3%
Other: (please specify)	7.5%

How useful was this article to this purpose? (n=53)

Response:

1 Not at all useful	Skips to Q
2 Somewhat useful	8.4%
3 Useful	25.4%
4 Very useful	49.9%
5 Absolutely essential	16.3%

Average rating of importance is 3.74 ($2 \times 0.084 + 3 \times 0.254 + 4 \times 0.499 + 5 \times 0.163$).

In what ways did it help in learning? (Choose all that apply.) (n=52)

Response:

It broadened my perspective on the topic	12.1%
It inspired new thinking/ideas	48.5%
It helped better understand the topic	68.1%
Other: (please specify)	-

Another type of value is “contingent value” which is an economic method used to assess the benefits of non-priced goods and services (e.g., academic libraries and their services) by examining the implications of not having the products or services. This value is described later.

Purchase value is what readers pay in their time and money to become aware, access, and read articles. To estimate the cost of time to a university it is necessary to establish the total compensation of readers including salaries (or wages), the cost of fringe benefits, and administrative costs. One can ask survey respondents their salary (or salary range), but that is considered by many to be intrusive. Otherwise average salaries can suffice. The cost of fringe benefits may vary by years of employment but includes Social Security and FICA taxes, insurance, pension, overtime and bonuses, etc. and can average about 35-40% of salaries. That amount can be determined from the Human Resources Department. Administration costs are often about 45% above total compensation. One place to examine those costs is with the grants office.

Most purchase value calculations require an average cost per hour so that it is necessary to determine number of hours worked in a year. This calculation varies by geographic area where a typical workday is from seven to eight hours per day. Previous studies have shown that professionals average about 2,200 hour actually working even though they have taken time off for vacation, sick leave, jury duty, coffee breaks, etc. This number can be used. For this project an average of \$66.30 per hour is used below.

As reported earlier, student hourly rate is based on student tuition and corresponding time spent on university activities. The rationale for using tuition is that the university is responsible and invests its resources necessary to provide classes and other events for the amount that students pay. We asked students to indicate “Approximately how many hours do you spend in a typical week: In class, studying in the library, studying elsewhere, and in other university activities (attending a scheduled event, recreational activities, athletic events, volunteer services, etc.)” There are 35 weeks covered by tuition so the tuition is divided by that amount and then divided by the reported number of hours given by each student. Both web-based and in-library respondents answered this question with little difference resulting in an average cost of \$34.60 per hour.

The Dollar Cost of Reading Articles Provided by the Library to Faculty and Staff

Of the 1,018,306 total article readings by faculty and staff, 559,047 are articles provided by the library. Faculty and staff spend time reading articles, browsing and searching for them, and processing them. The amount of time and cost to them is determined below.

The time and cost of reading articles is found by the following question:

About how much time did you spend reading this article most recently? (n=74)
In minutes: _____ (27.4 minutes per reading)

Faculty and staff spend an average of 27.4 minutes per article reading from the library which means they spent a total of 255,298 hours reading (559,047 readings x 27.4 minutes / 60 minutes per hour). This means they average spending \$30.28 of their time per reading (27.4 minutes per reading / 60 minutes per hour x \$66.30 per hour), which is what they pay in their time for the information obtained. Totally their reading costs the university \$16,928,943 to read articles provided by the library (\$30.28 per reading x 559,047 readings). The library investment in

faculty or staff readings is \$1,442,341 so the readers spend over 11.7 times the cost of the library (\$16,928,943 / \$1,442,341). That is, the purchase value of these article readings is over eleven times the library cost. The library investment is \$2.58 per reading (\$1,442,341 / 559,047 readings). To this amount is added the cost to readers of identifying articles to read, obtaining them and processing the articles. These costs are discussed below.

This survey does not include information about reading from articles obtained from non-library sources such as personal subscriptions. Studies that included these other sources (Tenopir et al. 2012; Tenopir et al. 2010; King et al. 2009) found that readers spend less time reading from these sources and they are less beneficial (i.e., they are of less value to readers than articles provided by libraries).

The Cost of Identifying Articles Provided by the Library to Faculty and Staff

Readers were asked:

How did you become aware of the last article you read? (n=72)

Response:

Found while I (or someone on my behalf) was searching by subject, authority name, etc., from a web search engine, online print index, online journal collection, etc	21.6%	120,754 readings (0.216 x 559,047 readings)
Found while I (or someone on my behalf) was searching by subject, authority name, etc., from a web search engine, online print index, online journal collection, etc.	46.0%	257,162 readings (0.460 x 559,047 readings)
Found through citation in another publication.	Skips to Q (18.9%)	-
Another person (e.g., a colleague) told me about it.	Skips to Q (4.1%)	-
Found in an online alert.	Skips to Q (6.2%)	-
Other: (please specify)	Skips to Q (3.3%)	-

The last four responses skip to the same question, involving time spent obtaining the last article read.

This browsing response is followed up by the following question (QX).

Approximately how much time did you spend browsing? In minutes: _____
(n=14)

The average time spent browsing is 21.0 minutes per browsing session. Each browsing session can produce several articles that are read so the average number of articles read per browsing session is based on this question:

How many articles did you read or plan to read? _____ (n=14)

The average number of articles read per browsing session is 7.2 articles per session. Therefore, the average browsing cost of an article read from browsing is 2.9 minutes per article read from browsing (21.0 minutes per browsing session / 7.2 articles read per session). This comes to 5,836 hours spent reading articles from browsing sessions (2.9 minutes per article read x 120,754 articles read / 60 minutes per hour) or \$3.20 per article read (2.9 minutes per article read x \$66.30 / 60 minutes per hour) or total cost of \$386,413 (\$3.20 per article read x 120,754 article readings).

A similar calculation is done to determine the time and cost of searching. First, respondents are asked:

Approximately how much time did you (or someone on your behalf) spend searching? In minutes: _____ (n=33)

The average time spent per search is 19.9 minutes or \$21.99 (19.9 minutes per search x \$66.30 per hour / 60 minutes per hour). As with browsing, each search can produce several articles that are read, determined by:

As a result, how many articles did you read or plan to read? _____ (n=75)

An average of 3.0 articles are read per search so that the average cost per reading per search is 6.6 minutes per article read (19.9 minutes per search / 3.0 articles read per search) or \$7.29 per article read (6.6 minutes / 60 minutes per hour x \$66.30 per hour). The total time spent searching is 28,276 hours. A total cost of \$1,874,699 (\$66.30 per hour x 28,276 hours).

Obtaining and processing costs are obtained from the following question:

After you identified the article, approximately how much time (in minutes) did you spend in each of the following activities (If no time spent, please enter “0”)?
n=75)

Obtain, request, receive, or download and display the article. _____
Photocopy, scan, or print out the article. _____
Other (please specify). _____ (None was reported.)

The average time spent obtaining, etc. the article is 3.5 minutes per reading (including zeroes) or 0.06 hours per reading (3.5 minutes per reading / 60 minutes per hour) or \$3.98 per reading (0.06 hours per reading x \$66.30 per hour). The total time spent browsing is 33,543 hours (0.06 hours per reading x 559,047 readings). Total cost of these activities to faculty and staff is \$2,225,007 (\$3.98 per reading x 559,047 readings).

The average time spent photocopying, etc. is 1.8 minutes per reading or 0.03 hours per reading (1.8 minutes per reading / 60 minutes per hour) or \$1.99 per reading (0.03 hours per reading x \$66.30 per hour). The total hours spent searching is 16,771 hours (0.03 hours per reading x 559,047 readings). The total cost of these activities is \$1,112,504 (\$1.99 per reading x 559,047 readings).

The total “purchase cost” to faculty and staff comes to:

<u>Activity</u>	<u>Average/Reading Time (Min)</u>	<u>Cost</u>	<u>Total Time Reading (Hour)</u>	<u>Cost</u>
Reading	27.40	\$30.28	255,298	\$16,926,257
Browsing*	0.01	\$0.01	5,836	\$386,927
Searching*	0.05	\$0.06	28,276	\$1,874,699
Obtaining, etc.	3.50	\$3.87	33,543	\$2,223,901
Photocopying, etc.	1.80	\$1.99	16,771	\$1,111,917
Other	-	-	-	-
Total	32.93	\$40.28	339,724	\$22,523,701

***Note that average time and cost per reading is based on all readings, not just that these per browsing session or search.**

The average amount of time and cost is 63.7 annual hours per person (339,724 hours / 5,337 persons) and \$4,220 per person (\$22,523,701 / 5,337 persons).

The University Investment in Library-Provided Journals to Faculty and Staff

Faculty and staff spend 339,724 hours annually to read, identify, and process 559,047 article readings provided by the library. This amounts to \$22,523,701 that the university “invests” in their time (\$66.30 per hour x 339,724 hours). The library allocates \$1,442,341 to providing these services so the total university investment is \$23,966,042 for the journal services and use (\$22,523,701 + \$1,442,341). The faculty and staff purchase value is 15.6 times the investment in (cost to) the library, which is a sound comparison. The university investment is \$42.87 per reading (\$23,966,042 / 559,047 readings), the library investment is \$2.58 per reading (\$1,442,341 / 559,047 readings), and the reader investment is \$40.29 per reading (\$22,523,701 / 559,047 readings).

Library Return on Investment in Journals Provided to Faculty and Staff.

All of the value measures addressed above are the return components of ROI. However, the only dollar Return on Investment is the net benefit of articles provided to faculty and staff, found from the contingent value. The **contingent value** of the library journal collection is found by the following questions involving the last article read:

If this article had not been available from the library or other university source, from where would you have obtained the article/information? (n=72)

Response:

I would not bother getting the information	Skip to Q	32.0%
I would obtain the information from another source (e.g., colleague, purchase)		68.0%

Again in order to get the respondent to focus on a source, ask:

Please specify the source here: _____

The total number of readings in which readers would go to another source is 380,152 readings (0.680 x 559,047 readings).

To determine the cost of obtaining information from another source the following question is asked:

In order to obtain the same article/information, if the library source was not available, I would expect to spend: (If no time or money, please enter "0"). (n=49)

Response:

In minutes: 21.1 minutes per reading (1,012 minutes / 48 readings) or 0.352 hours per reading.
In dollars: \$5.31 per reading (\$260 / 49 readings)

Note that one person reported 900 minutes (15 hours), which was treated as an outlier and, therefore, not included in the calculation of average minutes.

The totals are:

133,814 hours (380,152 readings x 0.352 hours per reading) at a cost of \$8,871,868
(133,814 hours x \$66.30 per hour)
\$2,018,607 total cost (380,152 readings x \$5.31 per reading)

The total cost to use an alternative source is \$10,890,475 (\$8,871,868 + \$2,018,607)

A dollar cost of \$66.30 per hour is applied below to 133,687 hours of faculty/staff time.

The cost to them to identify and process articles is 84,426 hours or \$5,597,444 (84,426 hours x \$66.30 per hour) so that the net value or benefit is \$5,293,031 ((\$10,890,475 - \$5,597,444). The ratio of dollar return on the library investment is of \$1,442,341 is 3.7 to 1 (\$5,293,031 / \$1,442,341) which is typical among academic libraries.

The Dollar Cost of Reading Articles Provided by the Library to Students

Students were asked:

How much time did you spend reading this article recently? (n=47)
In minutes: _____ (29.2 minutes per reading)

Students average 29.2 minutes per reading of articles provided by the library for a total of 1,276,998 hours reading these articles (29.2 minutes per reading / 60 minutes per hour x 2,623,968 annual readings). The total cost to students is \$44,184,096 (\$34.60 x 1,276,998 hours). Thus, the average cost to students is \$16.84 per reading (\$35,694,882 / 2,119,817 readings). The library investment is \$3,748,350 or \$1.43 per reading (\$3,748,350 / 2,623,968 readings).

Students were asked:

How did you become aware of this article you read? (n=66)

Response:

Found while browsing without a specific objective in mind (e.g., starting with a journal name, journal issue, or table of contents, or website	Skips to Q (15.5%)	328,572 readings (0.155 x 2,119,817 readings)
Found while I was searching (by subject or author's name, etc.) from a search engine, online or print index, online collection, etc.	Skips to Q (45.2%)	328,572 readings (0.155 x 2,119,817 readings)
Found through citation in another publication	Skips to Qx (16.0%)	-
An instructor told me about it	Skips to Qx (14.6%)	-
It was in the course outline/reading list	Skips to Qx (8.0%)	-
Do not know/Do not remember	Skips to Qx (0.5%)	-
Other: (please specify)	Skips to Qx (0.2%)	-

The last four responses skip to the same question.

The browsing response is followed up by the following question (Qx):

Approximately how much time did you spend browsing? (n=10)

In minutes: _____

The average time spent browsing is 32.8 minutes per browsing session or \$18.91 per session

(32.8 minutes per session / 60 minutes per hour x \$34.60 per hour). The number of articles read is determined by:

As a result of browsing, how many articles did you read or plan to read? If none, skip to Qx AFTER completing the answer.

The average number of articles read per browsing session is 3.78 articles read per session which means that the average time per reading is 8.7 minutes per reading (32.8 minutes per session / 3.78 readings per session) or 0.145 hours per reading (8.7 minutes per reading / 60 minutes per hour). The cost per reading is \$5.02 per reading (8.7 minutes per reading / 60 minutes per hour x \$34.60 per hour). The total time spent browsing is 47,643 hours (0.145 hours per reading x 328,572 readings). The total cost of browsing is \$1,648,448 (\$34.60 per hour x 47,643 hours).

The searching answer to how students became aware of the last article they read is followed up by:

Approximately how much time did you spend searching? (In minutes). _____
(n=30)

Students averaged 21.1 minutes per search at a cost of \$12.17 per search (21.1 minutes per search / 60 minutes per hour x \$34.60 per hour). The number of articles read per search is:

As a result of searching, how many articles did you read or plan to read? If zero, skip to Qx AFTER completing the answer.

The average articles read per search is 16.06 readings per search, which comes to 1.31 minutes per reading or 0.022 hours (1.31 minutes / 60 minutes per hour) (21.1 minutes per search / 16.06 readings per search). The cost is \$0.76 per reading (1.31 minutes per reading / 60 minutes per hour x \$34.60 per hour). The total hours spent searching is 21,079 hours (0.022 hours per reading x 958,157 readings). The total cost is \$729,333 (21,079 hours x \$34.60 per hour). The costs to students to obtain and process articles in order to read them are found from the following questions:

After you identified the articles, about how much time did you spend in each of the following activities? (In minutes.) (n=33)

Response:

Actually obtaining the article (e.g. going to the library	n=33
Scanning or photocopying from the article	n=29
Displaying, downloading, printing from an electronic source	n=30
Other: (please specify)	n=33

The average time spent actually obtaining the article is 10.55 minutes per reading, so this cost per reading is \$6.08 (10.55 minutes per reading / 60 minutes per hour x \$34.60 per hour). The

total cost to students is 372,734 hours (10.55 minutes per reading / 60 minutes per hour x 2,119,817 readings) or \$12,896,596 (\$34.60 per hour x 372,734 hours).

The average time spent scanning or photocopying from the article is 0.94 minutes per reading or \$0.54 (0.94 minutes per reading / 60 minutes per hour x \$34.60 per hour). The total cost is 33,210 hours (0.94 minutes per reading / 60 minutes per hour x 2,119,817 readings) or \$1,149,066 (33,210 hours x \$34.60 per hour).

The average time to display, download, print from an electronic source is 7.30 minutes per reading or \$4.21 (7.30 minutes per reading / 60 minutes per hour x \$34.60 per hour). The total cost is 257,910 hours (7.30 minutes per reading / 60 minutes per hour x 2,119,817 readings) or \$8,923,686 (257,910 hours x \$34.60 per hour).

The “other” average time is 8.65 minutes per reading or \$4.99 per reading (8.65 minutes per reading / 60 minutes per hour x \$34.60 per hour). The total cost is 305,607 hours (8.65 minutes per reading / 60 minutes per hour x 2,119,817 readings) or \$10,574,002 (305,607 hours x \$34.60).

The average and total “purchase” value for students is as follows:

<u>Activity</u>	<u>Average/Reading Time (Min)</u>	<u>Cost(\$)</u>	<u>Total Time Reading (Hour)</u>	<u>Cost (Mil. \$)</u>
Reading	29.20	\$16.84	1,031,644	\$35,694,882
Browsing	1.35	\$0.78	47,643	\$1,648,448
Searching	0.60	\$0.35	21,079	\$729,333
Actually Obtaining	10.55	\$6.08	372,734	\$12,896,596
Scanning/Copying	0.94	\$0.54	33,210	\$1,149,066
Displaying, etc.	7.30	\$4.21	257,910	\$8,923,686
Other	8.65	\$4.99	305,607	\$10,574,002
Total	58.59	\$33.79	2,069,827	\$71,616,013

Note that average values for browsing and searching are below those given in the above table because the denominator is for all readings (2,119,817 readings) and not those only for browsing or searching. The average time spent by students obtaining, photocopying, etc. is substantially greater than faculty and staff (27.44 minutes per reading vs. 5.30 minutes per reading). This may be due to the difference in student and faculty/staff survey questions or response error.

The average annual amount of time and cost per student is 85.2 hours per student (2,069,827 hours / 24,296) which is more than faculty and staff (63.7 hours per faculty/staff) and the average cost is \$2,948 per student (85.2 hours per student x \$34.60 per hour).

The University Investment in Library Journals Provided to Students

The University invests \$3,748,350 allocated to the student use of the journal collection. Therefore, the average investment/cost per student reading from library collection services is \$1.77 per reading ($\$3,748,350 / 2,119,817$ student readings). The total student “purchase” value is \$35,921,137 ($\34.60 per hour x 1,038,183 total hours). Therefore, students spend 9.6 times the amount (in their time) than the library invests ($\$35,921,131 / \$3,748,350$).

Comparison of Reading and Library Investment Among Types of Collections

The faculty/staff survey asked:

From where did you obtain this article you last read?

The student survey asked:

From where did you obtain it? (Previous response was “From the university library or other university source.)

Responses included:

Current periodicals room
Other library collection
Electronic reserves
Interlibrary loan

In retrospect, it would have been better to specify “backfile” and “other collection”.

The proportion of reading of the collections is summarized below for faculty/staff and students:

Type of Collection	Faculty/Staff	Students	Total
Current periodicals	59.35%	66.08%	64.22%
Other collection	13.49%	13.37%	13.4%
Electronic reserves	14.93%	20.05%	18.63%
Interlibrary loan	12.23%	0.50%	3.76%
Total	100.0%	100.0%	100.0%

The proportions are used to calculate the total readings by type of reader (faculty/staff and students) and type of collection below (note rounding errors). These totals are given below:

Type of Collection	Readings		Totals	Readings per Person	
	Faculty/Staff	Students		Faculty/Staff (5,337)	Students (24,296)
Current periodicals room	331,794	1,400,775	1,732,569	62.2	57.7
Other library collection	75,416	283,420	358,836	14.1	11.7
Electronic Reserves	83,466	425,023	508,489	15.6	17.5
Interlibrary loan	68,371	10,599	78,970	12.8	0.4
Total	559,047	2,119,817	2,678,864	104.7	87.3

Readings per person are calculated by dividing the total readings by number of persons. For example, the average faculty/staff readings is 104.7 reading per faculty/staff member (559,047 total faculty/staff readings / 5,337 faculty/staff).

The total library investment (cost) is shown below by type of reader and type of collection:

Library Investment/Cost (\$)				
Type of Collection	Faculty/Staff	Students	Total	Cost per Reading
Current periodicals room	\$856,029	\$2,476,910	\$3,332,939	\$1.92
Other library collection	\$194,572	\$501,154	\$695,726	\$1.94
Electronic Reserves	\$215,342	\$751,544	\$966,886	\$1.90
Interlibrary loan	\$176,398	\$18,742	\$195,140	\$2.47
Total	\$1,442,341	\$3,748,350	\$5,190,691	

The collection type investment is positioned between faculty/staff and students by their respective amount of reading, which assumes that the library cost per reading is the same for each type of reader. For example, the total cost of the current periodicals room collection is \$3,332,939 (\$856,029 + \$2,476,910) where the current periodical room collection allocated to faculty/staff reading is \$856,029 ($0.5935 \times \$1,442,341$). The library cost per reading by faculty/staff is \$2.58 per person ($\$856,029 / 331,794$ readings by faculty/staff) and the cost per reading by students is \$1.77 per student ($\$2,470,910 / 1,400,775$ readings by students). The library cost per faculty/staff member is \$160.40 per faculty/staff member ($\$856,029 / 5,337$ faculty/staff members). The library cost is \$154.28 per student ($\$3,748,350 / 24,296$ students).

While not given here, the “purchase” value can also be determined by observing the hours spent on each type of collection.

5. THE USE, VALUE, COST & ROI OF BOOK LIBRARY SERVICES

Amount of Book Reading by Faculty and Staff

The first question begins with the statement:

In the past month (30 days) approximately from how many books or parts of books did you read FOR WORK? Include reading from a portion of the book such as a skimming or reading from a chapter. Include classroom texts, scholarly or review books, etc. read in print or electronic format.

Number of books from which you read in the past month (30 days): _____ (n=159)

The average number of books read per faculty/staff is 2.811 books per month per faculty/staff (447 books / 159 faculty/staff). The annual average is 33.73 books read per faculty/staff (2.811 books read per faculty/staff per month x 12 months) and the total number of books read is 180,017 books (33.73 books read per faculty/staff x 5,337). This only represents the number of books read and does not take into account one book being read multiple times. The number of readings of books is found after the instruction below:

The following questions in this section refer to the BOOK FROM WHICH YOU READ MOST RECENTLY. Note that this last reading may not be typical, but will help us establish the range of reading patterns.

The next question is needed to obtain the number of readings:

About how many occasions did you read from this book in the past month (30 days)? (n=16; no Dresel responses)

The average occasions are 7.12 faculty/staff occasions per month (114 occasions / 16 faculty/staff) The annual average occasions is 85.44 faculty/staff occasions per book (12 months x 7.12 faculty/staff occasions per book per month). The total occasions per book are 455,993 occasions per book (85.44 occasions per book per faculty/staff x 5,337 faculty/staff). Over the 30 days, the total readings per faculty/staff are 20.01 readings (2.811 books read per faculty/staff x 7.12 occasions read per book per faculty/staff). This is approximately one reading per work day per faculty/staff. The annual readings are 240 readings per faculty/staff (20.01 readings per faculty/staff per month (30 days) x 12 months). The total readings are 1,280,880 readings (240 readings per faculty/staff x 5337 faculty/staff).

In order to have faculty/staff focus on the last book read, faculty/staff were asked:

What is the approximate title or topic of the book from which you last read?

Book Title _____
OR
General Topic of Book _____

Faculty/staff were then asked:

From where did you obtain this book you last read? (n=118)

I bought it for myself	36	30.5%
A colleague, author or other person gave it to me	16	13.6%
A free or advanced copy from the publisher	34	28.8%
The library collection (circulated/borrowed)	12	10.2%
The library collection (read in the library)	1	0.8%
Interlibrary loan	9	7.6%
Other	10	8.5%
Total	118	100.0%

The proportion of books read from library sources is 27.1% (10.2% + 0.8% + 7.6% + 8.5%: assumed to be from library). The number of books read from library services is 48,785 (180,017 books read x 0.271).

The format of the book last read is determined from:

This source was: (n=25)

Print	96.0%
Electronic	4.0%
Total	100.0%

Therefore, 46,834 of the books obtained from the library services were obtained in print (0.96 x 48,785).

The books obtained from library services were identified as follows:

How did you become aware of this book from which you last read? (n=25)

Found while browsing the library catalog or subject guide without a specific objective in mind or through the book collection	16.0%
Found while I (or someone on my behalf was searching by subject, author's name, etc. through a catalog, Amazon.com, indexing/abstracting service, web search engine, etc.	32.0%
Found through citation in another publication	16.0%
Another person (e.g., a colleague told me about it	8.0%
Promotional email or web advertisement	12.%
Other or don't remember	16.0%
Total	100.0%

Therefore, 7,806 books read were from browsing and 15,611 found by searching.

Amount of Book Reading by Students

These questions begin as follows:

The following questions in this section refer to the BOOK FROM WHICH YOU READ MOST RECENTLY. Note that this last reading may not be typical, but will help us establish the range of reading patterns.

The first question begins with the statement:

In the past week (7 days) approximately from how many books or parts of books did you read FOR SCHOOL? Include reading from a portion of the book such as a skimming or reading from a chapter. Include classroom texts, scholarly or review books, etc. read in print or electronic format.

Number of books from which you read in the past week (7 days): _____ (n=64)

The average number of books read per students is 4.19 books read per week per student (268 books / 64 students). The annual average is 28.49 books read per student (4.19 books read per student per month x 6.8 months). It is assumed that most students attend school 29.6 weeks annually. The total number of books read is 692,193 books (28.49 books read per student x 24,296 students). This represents the number of books read including some books being read multiple times.

In order to have students focus on the last book read, they were asked:

What is the approximate title or topic of the book from which you last read?

Book Title _____

OR

General Topic of Book _____

Students were then asked:

From where did you obtain this book you last read? (n=59)

I bought it		
(If you check this answer skip to Question X)	33	55.9%
Someone gave me a copy		
(If you check this answer skip to Question X)	0	0
I checked it out from the library	8	13.6%
I read it in the library	4	6.8%
I obtained it through the library reserves	6	10.2%
Instructor/Teacher	6	10.2%
Other	2	3.4%
Total	50	100.0%

The proportion of books read from library sources is 44.2% (13.6% + 6.8% + 10.2% + 10.2% + 3.4%). The number of books read from library services is 305,949 (692,193 books read x 0.442).

The format of the book last read is determined from:

This source was: (n=25)

Print	75.0%
Electronic	25.0%
Total	100.0%

Therefore, 229,462 of the read books obtained from the library services were read from print (0.75 x 305,949).

The books obtained from library services were identified as follows:

How did you become aware of this book from which you last read? (n=16)		
It was required reading for a course		
(If you checked this answer skip to Question X)	6	37.5%
A librarian recommended it		
(If you checked this answer skip to Question X)	1	6.3%
Found while browsing the library catalog or subject guide without a specific objective in mind, or through the book collection of the library		
(If you checked this answer skip to Question X)	2	12.5%
Found while I was searching by subject, author's name, etc. through a catalog, Amazon.com, indexing/abstracting service, web search engine, etc.	3	18.7%
Found through citation in another publication	0	0%
Someone else told me about it	2	12.5%
Other or don't remember	2	12.5%
Total	16	100.0%

Therefore, 38,244 (0.125 x 305,949 books were read from browsing and 57,212 found by searching.

The Purchase Value of Books Provided by the Library for Faculty and Staff

The amount of time and cost of browsing is estimated from:

Approximately how much time did you spend browsing when this book was found?
(n=4)

In minutes: _____

The average time spend browsing is 33.25 minutes per book or 0.554 hours per book read (33.25 minutes per book / 60 minutes per hour). The total hours spent browsing is 4,325 hours (0.554 hours per book read x 7,806 books read) and the total cost involved is \$286,748 (4,325 hours x \$66.30 per hour).

The average amount of time of searching per book is found by:

Approximately how much time did you (or someone on your behalf) spend searching? (n=8)

In minutes: _____

The average spent searching is 20.78 minutes per book or 0.346 hours (20.78 minutes per book / 60 minutes per hour). The total hours spent searching is 5,401 hours (0.346 hours per book x 15,611 books) or \$358,086 total cost (5,401 hours x \$66.30 per hour).

Other activities performed by faculty/staff include the following time and cost:

After you identified this book, about how much time in minutes did you spend in each of the following activities? (n=25)

Actually obtaining the book (e.g., going to the library)

Photocopying or scanning the book

Displaying, downloading, printing from an electronic book

Other (please specify) _____

The average time spent obtaining the book is 7.6 minutes per book or 0.127 hours per book (7.6 minutes per book / 60 minutes per hour). This calculation comes to a total of 6,196 hours (0.127 hours per book x 48,785 books read) or \$410,795 total cost. The average time spent photocopying, etc. is 0.40 minutes or 0.007 hours (0.40 minutes / 60 minutes per hour). This comes to 342 total hours (0.007 hours per book x 48,875 books) or \$22,675 total cost (342 hours x \$66.30 per hour). Finally, the average time spent displaying, etc. is 0.20 minutes per book or 0.003 hours per book (0.20 minutes per book / 60 minutes per hour). The total time spent is 146 hours (0.003 hours per book x 48,785 books) or \$9,680 total cost to faculty/staff (146 hours x \$66.30).

The average time spent reading a book is found from the following question:

About how much time did you spend reading this last book you read in the past month (30 days)? (n=25)

In minutes _____

In hours _____

The average time spent reading per book is 2.82 hours per book, which means that a total of 137,574 hours are spent reading library-provided books (2.82 hours per book x 48,785 books).

The total cost of reading is \$9,121,156 (137,574 hours x \$66.30 per hour).

The “use value” to faculty/staff of library-provided books is summarized below:

Activity	Average/Book Read		Total Books Read	
	Time(Min)	Cost(\$)	Time(Hrs)	Cost(\$)
Reading	169.2	\$186.97	137,574	\$9,121,156
Browsing	33.3	\$36.73	4,325	\$286,748
Searching	20.8	\$22.94	5,401	\$358,086
Obtaining, etc.	7.6	\$8.42	6,196	\$410,795
Photocopying, etc.	0.4	\$0.46	342	\$22,675
Displaying, etc.	0.2	\$0.23	146	\$9,680
Other	-	-	-	-
Total	231.5	\$256.12	153,984	\$10,209,140

The Purchase Value of Books Provided by the Library for Students

The amount of time and cost of browsing is estimated from:

Approximately how much time did you spend browsing when this book was found?

(n=12)

In minutes: _____

The average time spend browsing is 0.833 minutes per book (10 minutes / 12 books read) or 0.014 hours per book read (0.833 minutes per book / 60 minutes per hour). The total hours spent browsing is 4,283 hours (0.014 hours per book read x 305,949 books read) and the total cost involved is \$148,192 (4,283 hours x \$34.60 per hour).

The average amount of time of searching per book is found by:

Approximately how much time did you (or someone on your behalf) spend searching? (n=12)

In minutes: _____

The average spent searching is 0.25 minutes per book (3 minutes / 12 books) or 0.05 hours (3 minutes per book / 60 minutes per hour). The total hours spent searching is 15,297 hours (0.05 hours per book x 305,949 books) or \$529,276 total cost (15,297 hours x \$34.60 per hour).

Other activities performed by students include the following time and cost:

After you identified this book, about how much time in minutes did you spend in each of the following activities? (n=12)

Actually obtaining the book (e.g., going to the library)

Photocopying or scanning the book

Displaying, downloading, printing from an electronic book

Other (please specify) _____

The average time spent obtaining the book is 5.83 minutes per book (70 minutes / 12 books read) or 0.097 hours per book (5.83 minutes per book / 60 minutes per hour). This comes to a total of 29,677 hours (0.097 hours per book x 305,949 books read) or \$1,026,924 total cost (\$34.60 per hour x 29,677 hours). The average time spent photocopying, etc. is 1.25 minutes (15 minutes / 12 books read) or 0.021 hours (1.25 minutes / 60 minutes per hour). This comes to 6,425 total hours (0.021 hours per book x 305,949 books) or \$222,305 total cost (6,425 hours x \$34.60 per hour).

Finally, the average time spent displaying, etc. is 2.83 minutes per book (46 minutes / 12 books read) or 0.047 hours per book (2.83 minutes per book / 60 minutes per hour). The total time spent is 14,380 hours (0.047 hours per book x 305,949 books) or \$497,548 total cost to students (14,380 hours x \$34.60).

The average time spent reading a book is found from the following question:

About how much time did you spend reading this last book you read in the past month (30 days)? (n=13)

In minutes _____

In hours _____

The average time spent reading per book is 92 minutes (1,200 minutes / 13 books read) or 1.533 hours per book, which means that a total of 469,020 hours are spent reading library-provided books (1.533 hours per book x 305,949 books). The total cost of reading is \$16,228,092 (469,020 hours x \$34.60 per hour).

The “use value” to students of library-provided books is summarized below:

Activity	Average/Book Read		Total Books Read	
	Time(Min)	Cost(\$)	Time(Hrs)	Cost(\$)
Reading	1.533	\$53.04	469,020	\$16,228,092
Browsing	0.014	\$0.48	4,283	\$148,192
Searching	0.050	\$1.73	15,297	\$529,276
Obtaining, etc.	0.097	\$3.36	29,677	\$1,026,824
Photocopying, etc.	0.021	\$0.73	6,425	\$222,305
Displaying, etc.	0.047	\$1.63	14,380	\$497,548
Other	-	-	-	-
Total	27.81	\$60.97	539,082	\$18,652,236

The University Investment in Library-Provided Books to Faculty and Staff

The faculty and staff spend \$10,209,140 in their time reading, identifying and processing 48,785 books provided by the library. This is a university investment in their time. The library invests \$141,964 annually in funds allocated to providing the books to faculty/staff, including staff, space, shelving, furniture, supplies, etc. (See the section on Cost Methods). Thus, the total university investment is \$10,351,104 (\$10,209,140 + \$141,964). The faculty and staff purchase value is 72 times the library investment cost (\$10,209,140 / \$141,964). The total cost per book read is \$20.93 (\$10,351,104 / 48,785).

The University Investment in Library-Provided Books to Students

The students spend \$18,652,236 in their time reading, identifying and processing 305,949 books provided by the library. This is a university investment in their time. The library invests \$890,021 annually in funds allocated to providing the books, including staff, space, shelving, furniture, supplies, etc. (See the section on Cost Methods). Thus, the total university investment is \$19,542,258 (\$18,652,236 + \$890,021). The student purchase value is 21 times the library investment (cost). The total university investment is \$63.87 per book read (which could involve many readings).

The Use Value of Books Provided by the Library

The use value of library-provided books involves the purposes of reading books, importance of information contained in the books, ways reading affected the purpose and whether reading the book resulted in citing it as discussed below.

For what purposes did you use or plan to use the information obtained from the last book you read? (Choose all that apply) (n=25)

and

Which purpose is the principal purpose? (n=19)

	All (%)	Principal (%)
Research	60.0	21.0
Teaching	60.0	43.0
Administration	-	-
Current awareness/keeping up	36.0	15.8
Writing proposals, reports, articles, etc. (e.g. funding/grant proposals)	20.0	5.3
Consulting, advising others	16.0	-
Internal or external presentations (e.g., lecture or conference paper)	12.0	5.3
Continuing education for self	16.0	5.3
Other: (please specify)	4.0	5.3
Total	4.0	100.0

The faculty and staff were then asked:

How important is the information contained in this book to achieving your principal purpose? (n=25)		
1	Not at all important	-
2	Somewhat important	20.0%
3	Important	32.0%
4	Very important	20.0%
5	Absolutely essential	28.0%
Total		100.0%

The numbers to the left are ratings in which the average rating is 3.26 (2 x 0.20 + 3 x 0.32 + 4 x 0.20 + 5 x 0.28). This is typical for faculty and staff.

The next question is:

In what ways did reading the book affect the principal purpose? (Choose all that apply) (n=25)	
It improved the result	64.0%
It narrowed/broadened/changed the focus	20.0%
It inspired new thinking/ideas	36.0%
It resulted in collaborative/joint research	-
It resulted in faster completion	8.0%
It resolved technical problems	-
It added to my general knowledge	44.0%
It saved time or other resources	16.0%
Other: (please specify)	-

Finally, faculty and staff were asked:

Did you cite this book or plan to cite it in another publication (e.g., article, report, book, published proceeding, etc.)?	
No	52.0%
Maybe	20.0%
Already did	8.0%
Will in the future	20.0%
Total	100.0%

The Use Value of Books Provided by the Library to Students

The use value of library-provided books involves the purpose of book readings, importance of information contained in the books, the ways in which the reading affected the purpose, and whether reading the book resulted in citing it. This value is discussed below.

For what purposes did you use or plan to use the information obtained from the last book you read? (Choose only the best answer) (n=14)

This book was required reading for a course	42.9%
I read this book to help complete a course assignment or course paper (but it was not required)	35.7%
I read this book to keep up with the literature	21.4%
Total	100.0%

The students were then asked:

How useful was this book to this purpose? (n=15)

1. Not at all useful	-
2. Somewhat useful	6.6%
3. Useful	40.0%
4. Very useful	26.7%
5. Absolutely essential	26.7%
Total	100.0%

The numbers to the left are ratings in which the average rating is 3.74 ($2 \times 0.066 + 3 \times 0.400 + 4 \times 0.267 + 5 \times 0.267$). This is typical for students.

The next question is:

In what ways did reading the book affect the principal purpose? (Choose all that apply) (n=15)

It broadened my perspective on the topic	26.7%
It inspired new thinking/ideas	33.3%
It helped better understand the topic	13.3%
It added to my general knowledge	66.7%
Other: (please specify)	6.7%

Contingent Value of Books Provided by the Library to Faculty and Staff

Contingent value is found by:

If this book were not available from the library or other university source, from where would you obtain the book information? (n=25)

I would not bother getting the information	8.0%
I would obtain the information from another source	92.0%

Please specify source here: _____

The total books obtained from another source are 44,882 books read by faculty/staff (0.920 x 48,785 books).

In order to obtain the same information, if the library was not available, I expect to spend: (If not time or money spent, please enter "0")

In minutes: _____

In dollars: _____

The time in minutes is 11.5 minutes or 0.192 hours per book (11.5 minutes / 60 minutes per hour). The total time is 8,617 hours (0.192 hours per book x 44,882 books) or \$571,307 (8,617 hours x \$66.30 per hour). The average dollar amount is \$12.95 per book or \$581,222 (\$12.95 per book x 44,882 books). The total cost of alternative sources is \$1,152,529 (\$571,307 + \$581,222). The net value is \$1,010,565 (\$1,152,529 - \$141,964 processing the books). The library ROI is 7.1 to 1 (\$1,010,565 / \$141,964)

6. THE USE, VALUE, COST & ROI OF OTHER PUBLICATIONS

Amount of Reading of Other Publications by Faculty and Staff

This set of questions begins with:

In the past month (30 days), approximately how many times have you read other publications for your work? Include conference proceedings, government documents, technical reports, magazines, trade journals, etc. (n=152)

The average readings per faculty and staff are 8.63 readings per person per month or about 104 readings per faculty/staff in a year (8.63 readings per person per month x 12 months). This number comes to a total of 555,048 total readings (104 readings per faculty/staff x 5,337 faculty/staff).

A breakdown by type of publication is determined by:

The following questions in this section refer to the PUBLICATION YOU MOST RECENTLY READ. Note that this last reading may not be typical, but will help up establish the range of reading patterns.

What type of publication did you most recently read? (n=118)

Conference proceeding	11.9%
Government document or other technical report	18.6%
Magazine/trace journal	55.1%
Other: (please specify)	14.4%
Total	100.0%

Examining “other” responses can allow them to be re-classified above. The estimated amount of reading by type of publication is:

Conference proceeding	66,051	(0.119 x 555,048)
Government document, etc.	103,239	(0.186 x 555,048)
Magazine/trade journal	305,831	(0.551 x 555,048)
Other	79,927	(0.144 x 555,048)
Total	555,048	

These estimates can also be made by asking each type the amount of reading in the past month (30 days) and projecting to a year and the number of faculty and staff.

For this discussion of methods, the total of 555,048 readings is used, but could be made for each type of publication with sufficient number of responses.

The amount of reading from the library services is found by:

From where did you obtain this last publication? (n=117)

I bought it for myself	27.0%
A colleague, author, or other person gave it to me	10.3%
Online from a non-library source	34.2%
The library collection (circulated/borrowed)	5.1%
The library collection (read in the library)	3.4%
School or department collection	5.1%
Interlibrary loan	0.9%
Library book delivery service	-
Other: (please specify)	5.1%
Other source	8.6%
Total	100.0%

The total proportion of other publications obtained from library services is 14.5 percent (0.51 + 0.34 + 0.09 + 0.51). The total annual readings from the library are 80,482 readings (555,048 readings x 0.145). This total represents 15 annual readings per faculty/staff. However, there are not enough observations to estimate by type of publication.

The format was:

Was this source: (n=18)

Print	44.4%
Electronic	55.6%

Time spent by faculty and staff included:

Approximately how much time (in minutes) did you spend becoming aware of this publication you most recently read (for example, browsing, searching, etc.)? (If no time, please answer “0”) (n=20)

The average time is 9.1 minutes (182 minutes / 20 readings) or 0.15 faculty/staff hours per reading (9.1 faculty/staff minutes per reading / 60 minutes per hour). This is \$9.95 per reading by faculty/staff (0.15 faculty/staff hours per reading x \$66.30 per hour). The average annual time spent per reading is 15.6 hours per faculty/staff (0.15 faculty/staff hours per reading x 104 annual readings per faculty/staff). The total annual hours is 83,257 (15.6 hours per faculty/staff x 5,337

faculty/staff). The 83,257 can also be calculated by 0.15 faculty/staff hours per reading x 555,048 readings. The total cost is \$5,519,939 (83,257 hours x 66.30 per hour).

The time spent obtaining the other publication is:

After you identified this publication, about how much time (in minutes) did you spend actually obtaining it, photocopying, scanning, downloading or printing it? (If no time, please answer “0”) (n=20)

The average time is 3.95 minutes (79 minutes / 20 readings) or 0.066 faculty/staff hours per reading (3.95 minutes / 60 minutes per hour), which is \$4.38 per reading by faculty/staff (0.066 hours per reading x \$66.30 per hour). The total time spent obtaining the other publication is 36,633 hours (0.066 hours per reading x 555,048 readings) or \$2,428,768 (36,633 hours x \$66.30).

The time spent reading is found by:

About how much time (in minutes) did you spend reading this publication you most recently read? (n=20)

The faculty/staff averaged 33.00 minutes per reading (660 minutes/ 20 readings) or 0.55 hours per reading (33.00 minutes per reading / 60 minutes) which comes to \$36.47 per reading (0.55 hours per reading x \$66.30 per hour). The total faculty/staff time is 305,276 hours (0.55 hours per reading x 555,048 readings) at a total cost of \$20,239,798 (305,276 hours x \$66.30 per hour).

The faculty/staff “purchasing” time and cost is:

Activity	<u>Average Other Pub Read</u>		<u>Total Other Pub Read</u>	
	<u>Time (Min)</u>	<u>Cost(\$)</u>	<u>Time(Hrs)</u>	<u>Cost(\$)</u>
Reading	33.00	\$36.47	305,276	\$20,239,798
Becoming Aware	9.10	\$10.06	83,257	\$5,519,939
Actually obtaining	3.95	\$4.36	36,633	\$2,432,083
Total	46.05	\$50.80	425,216	\$28,191,820

The University Investment in University-Provided Other Publications to Faculty and Staff

The faculty and staff spend about \$28,191,820 reading, identifying, and obtaining the other publications provided by their library and the library investment is \$210,918. The total university investment is \$28,402,737 (\$28,191,820 + \$210,918). The purchase value is over 130 times the library investment (\$28,191,820/210,918). The library investment is \$39.52 per faculty/staff member (\$28,191,820/5,337 faculty/staff) and \$0.38 per reading (\$210,918 / 555.048 readings).

Amount of Reading of Other Publications by Students

The following questions in this section refer to the OTHER PUBLICATION YOU MOST RECENTLY READ. Note this last reading may not be typical, but will help us establish the range of reading patterns.

This set of questions begins with:

In the past month (30 days), approximately how many times have you read other publications for school? Include conference proceedings, government documents, technical reports, magazines, trade journals, etc. (n=78)

The average readings per students are 7.56 readings per person per month (589.4 readings / 78 students) or about 56 readings per student in a year (7.56 readings per person per month x 7.4 months). This comes to a total of 1,360,576 (56 readings per student x 24,296 students).

A breakdown by type of publication is determined by:

The following questions in this section refer to the PUBLICATION YOU MOST RECENTLY READ. Note that this last reading may not be typical, but will help up establish the range of reading patterns.

What type of publication did you most recently read? (n=47)	
Conference proceeding	4.3%
Government document or other technical report	29.7%
Magazine/trade journal	61.7%
Other: (please specify)	4.3%
Total	100.0%

Examining “other” responses can allow them to be re-classified above.

The estimated amount of reading by type of publication is:

Conference proceeding	58,505	(0.043 x 1,360,576)
Government document, etc.	404,091	(0.297 x 1,360,576)
Magazine/trade journal	839,475	(0.667 x 1,360,576)
Other	58,505	(0.043 x 1,360,576)
Total	1,360,576	

These estimates can also be made by asking each type the amount of reading in the past month (30 days) and projecting to a year and the number of students.

For this discussion of methods, the total of 1,360,576 readings is used, but could be made for each type of publication with sufficient number of responses.

The amount of reading from the library services is found by:

From where did you obtain this last publication? (n=35)	
I bought it for myself (If you checked this answer, skip to Question X)	11.4%
Someone other than your instructor/teacher (If you checked this answer, skip to Question X)	2.9%
Online from a non-library source (If you checked this answer, skip to Question X)	20.0%
I checked it out from the library	0.0%
I read it in the library	11.4%
I obtained it through the library reserves	34.3%
School or department collection	0.0%
Interlibrary loan	2.9%
Instructor or teacher	14.3%
Other: (please specify)	2.9%
Total	100.1%

The total proportion of other publications obtained from library services is 48.6% (0.114 + 0.029 + 0.343). The total annual readings from the library are 661,240 readings (1,360,576 readings x 0.486). This is 27.2 annual readings per student (661,240 / 24,296). However, there were not enough observations to estimate by type of publication.

The format was:

Was this source: (n=27)

Print	37.0%
Electronic	63.0%

Time spent by students included:

Approximately how much time (in minutes) did you spend becoming aware of this publication you most recently read (for example, browsing, searching, etc.)? (If no time, please answer “0”) (n=27)

The average time is 11.56 minutes per reading (312 minutes / 26 readings) or 0.193 student hours per reading (11.56 student minutes per reading / 60 minutes per hour). This is \$6.68 per reading by students (0.193 student hours per reading x \$34.60 per hour). The average annual time spent per reading is 5.25 hours per student (0.193 student hours per reading x 27.2 annual readings per student). The total annual hours are 127,554 (5.25 hours per student x 24,296 students). The 127,554 can also be calculated by 0.193 student hours per reading x 661,240 readings (with rounding errors). The total cost is \$4,413,368 (\$34.60 per hour x 127,554 hours).

The time spent obtaining the other publication is:

After you identified this publication, about how much time did you spend in each of the following activities? (In minutes) (n=22)

The average time spent actually obtaining the publication is 7.64 minutes (168 minutes / 22 readings) or 0.127 student hours per reading (7.64 minutes / 60 minutes per hour), which is \$4.39 per reading by students (0.127 hours per reading x \$34.60 per hour). The total time spent obtaining the other publication is 83,977 hours (0.127 hours per reading x 661,240 readings) or \$2,905,604 (83,977 hours x \$34.60).

The time spent reading is found by:

About how much time did you spend reading this publication you most recently read? (In minutes) (n=24)

The students averaged 27.63 minutes per reading (663 minutes / 24 readings) or 0.46 hours per reading (27.63 minutes per reading / 60 minutes) which comes to \$15.92 per reading (0.46 hours per reading x \$34.60 per hour). The total student time is 304,170 hours (0.46 hours per reading x 661,240 library provided readings) at a total cost of \$10,524,282 (304,170 hours x \$34.60 per hour).

The average time spent scanning or photocopying per reading from the publications is 1.00 minutes per reading (22 minutes / 22 readings) or 0.017 hours (1.00 minutes / 60 minutes per hour), which is \$0.59 per reading by students (0.017 hours per reading x \$34.60 per hour). The total time spent in this activity is 11,243 hours (0.017 hours per reading x 661,240 readings) or \$388,939 (11,241 hours per reading x \$34.60 per hour).

The average time spent displaying, downloading, printing from an electronic source is 3.00 minutes (66 minutes / 22 readings) or 0.050 hours per reading (3.00 minutes per reading / 60 minutes per hour), which is \$1.73 per reading by students (0.050 hours per reading x \$34.60 per hour). The total time spent in this activity is 33,062 hours (.050 hours per reading x 661,240 readings) or \$1,143,945 (33,062 hours x \$34.60 per hour).

The average time spent in other activities is 0.91 minutes (2 minutes / 22 readings) or 0.015 hours per reading (0.91 minutes / 60 minutes per hour), which is \$0.52 per reading (0.015 hours per reading x \$34.60 per hour). The total time spent in other activities is 9,919 hours (0.015 hours per reading x 661,240 readings) or \$343,197 (9,919 hours x \$34.60 per hour).

The student “purchasing” time and cost is:

Activity	Average/Book Read		Total Books Read	
	Time(Min)	Cost(\$)	Time(Hrs)	Cost(\$)
Reading	27.63	\$15.92	304,170	\$10,524,282
Becoming aware	11.56	\$6.68	127,554	\$4,413,368
Actually obtaining	7.64	\$4.39	83,977	\$2,905,604
Scanning, etc.	1.00	\$0.59	11,241	\$388,939
Displaying, etc.	3.00	\$1.73	33,062	\$1,143,945
Other	0.91	\$0.52	9,919	\$343,197
Total	51.74	\$29.83	569,923	\$19,719,335

The Use Value of Other Publications Provided by the Library to Faculty/Staff

The use value of other publications includes the purposes of reading other publications, the importance of information contained in these publications, the ways in which the reading affected the purpose, and whether reading the publications resulted in citing them. *Ideally this use value would be found for each type of other publication.*

The purpose of reading is determined from the following question:

From what principal purposes did you use, or do you plan to use, the information obtained from the publication you last read? (Choose all that apply) (n=21)

Research	61.9%
Teaching	38.1%
Administration	-
Current awareness/keeping up	52.4%
Writing proposals, reports, articles, etc. (e.g., funding/grant proposals)	4.8%
Consulting, advising others	4.8%
Internal or external presentations (e.g., lecture or conference paper)	14.3%
Continuing education for self	23.8%
Other: (please specify)	4.8%

Importance established from:

How important is the information contained in this publication to achieving your principal purpose? (n=17)

1. Not at all important	-
2. Somewhat important	6.6%
3. Important	40.0%
4. Very important	26.7%
5. Absolutely essential	26.7%
Total	100.0%

The average rating is 3.35 (2 x 0.235 + 3 x 0.294 + 4 x 0.353 + 5 x 0.118).

Also,

In what ways did reading the book affect the principal purpose? (Choose all that apply) (n=15)

It improved the result	42.1%
It narrowed/broadened/changed the focus	21.1%
It inspired new thinking/ideas	42.1%
It resulted in collaboration/joint research	15.8%
It resulted in faster completion	5.2%
It resolved technical problems	-
It added to my general knowledge	47.4%
It saved time or other resources	15.8%
Other: (please specify)	-

Finally,

Did you cite this book or plan to cite it in another publication (e.g., article, report, book, published proceeding, etc.)? (n=18)

No	50.0%
Maybe	33.3%
Already did	5.6%
Will in the future	11.1%
Total	100.0%

The Use Value of Other Publications Provided by the Library

The use value of other publications includes the purposes of reading other publications, importance of information contained in these publications, and ways in which the reading affected the purpose. Ideally these use values would be found for each type of other publication.

The purpose of reading is determined from the following question:

For what purposes was this publication read? (Choose only the best answer) (n=29)

This publication was required reading for a course	24.1%
I read this publication to help complete a course assignment or course paper (but it was not required)	24.1%
This publication was for a report	20.7%
I read this publication to keep up with the literature	6.9%
This publication was just of personal interest	20.7%
Other: (please specify)	35.0%
Total	100.0%

Usefulness from:

How useful is the information contained in this publication to achieving your principle purpose? (n=27)

1. Not at all useful	-
2. Somewhat useful	18.5%
3. Useful	40.8%
4. Very useful	33.3%
5. Absolutely essential	7.4%
Total	100.0%

The average rating is 3.30 (2 x 0.185 + 3 x 0.408 + 4 x 0.333 + 5 x 0.074).

Also,

In what ways did it help learning? (Choose all that apply) (n=26)

It broadened my perspective on the topic	57.7%
It inspired new thinking /ideas	30.8%
It helped better understand the topic	80.8%
Other: (please specify)	-

Summary of Reading Results

Total Readings and Cost

	<u>All</u>	<u>From Library</u>	<u>Reader (\$)</u>	<u>Library (\$)</u>	<u>Total (\$)</u>
Article Readings	3,642,268	2,679,213	\$61,110,387	\$5,190,691	\$66,301,078
Books Read	872,210	328,247	\$25,349,248	\$1,031,985	\$26,381,233
Other Publication Readings	-	-	\$30,764,080	\$727,937	\$31,492,017
Total	1,915,624	741,722	\$117,223,715	\$6,950,613	\$124,174,328

The University Investment in University-Provided Other Publications to Students

Students spend about \$19,719,335 reading, identifying, and obtaining the other publications provided by their library, although the library investment is \$517,019 for a total of \$20,236,354. Therefore, student purchase cost is about 38 times the library investment.

Contingent Value of Other Publications Provided by the Library

This value starts with:

If this publication were not available from the library, from where would you obtain the information? (n=16)

I would not bother getting the information	31.3%
I would obtain the information from another source	68.7%

Please specify the source here: _____

In order to obtain the same information, if the library was not available, I would expect to spend: (If no time or money, please enter "0") (n=13)

In minutes _____

In dollars _____

The total alternative sources used are 381,318 faculty/staff readings (0.687 x 555,048 readings).

The alternative time in minutes is 20.23 minutes (163 minutes / 13 readings) or 0.337 hours per reading (20.23 minutes / 60 minutes per hour). The total faculty/staff time is 128,504 hours

(0.337 hours per reading x 381,318 readings) or \$8,519,815 (128,504 hours x \$66.30 per hour).

The average faculty/staff dollar cost to use an alternative source is \$6.54 (\$85 / 13 readings) which is \$2,493,754 (\$6.54 per reading x 381,318 readings).

The total faculty/staff cost to use an alternative source is \$11,013,569 (\$8,519,815 + \$2,493,754). The net value is \$3,061,747 (\$11,013,569 - \$7,851,822 cost to becoming aware and actually obtaining the publication). The library ROI of this service is 14.5 to 1 (\$3,061,747 / \$210,918).

Summary of Reading Results

Type of Publication	Readings Per Person			Total From Library		
	<u>All</u>	<u>From Library</u>	<u>Time (Min)</u>	<u>Cost (\$)</u>	<u>Time (Hrs)</u>	<u>Cost (\$)</u>
Faculty/Staff						
Article Readings	191	105	27.4	\$30.28	255,298	\$16,972,004
Books Read	34	9	169.2	\$186.97	137,574	\$9,121,156
Other Publications Readings	104	15	33.0	\$36.47	305,276	\$20,239,798
Students						
Article Readings	108	87	27.6	\$16.84	1,276,998	\$44,184,130
Books Read	28	13	92	\$53.08	169,020	\$16,228,092
Other Publication Readings	56	27	27.2	\$15.92	304,170	\$10,524,282

7. USE, VALUE, COST & ROI OF OTHER LIBRARY SERVICES

This section deals with other library services by asking how many times you use, time spent using, and consequences of use.

The first such service is:

Use of a Librarian to Conduct Reference Services by Faculty and Staff:

In the past year (12 months), approximately how many times did you use a librarian to conduct reference for you (catalog, databases, getting access, etc.)? (If no times, enter "0"). (n=151)

The average number of times per faculty/staff is 1.67 times per faculty/staff (252 searches / 151 faculty/staff). The total therefore is 8,913 searches (1.67 searches per faculty/staff x 5,337 faculty/staff).

Time spent by faculty/staff:

About how much total time did you spend working with a librarian on these searches? (If no time, please enter “0”) (n=77)

In minutes _____

In hours _____

The average time spent per faculty/staff is 0.96 hours per faculty/staff (74.3 hours per faculty/staff / 77), which amounts to \$63.65 per faculty/staff (0.96 hours per faculty/staff x \$66.30 per faculty/staff). The total “purchase value” is 5,124 hours (0.96 hours per faculty/staff x 5,337 faculty/staff) or \$339,721 (5,124 hours x \$66.30/hour). The purchase value is 1.8 times the library investment (\$339,721 / \$185,386).

Contingent value is calculated as follows:

If there were no library, where would you go to conduct the LAST search done by a librarian? (n=121)

I would not bother	10	8.3%
I would conduct the search myself	53	43.8%
I would go to another source	54	44.6%
Other: (please specify)	4	3.3%
Total	121	100.0%

If there were no library, I would expect to spend: (If no time or money, please enter “0”) (n=64)

In minutes _____

OR In hours _____

In dollars _____

The number of times faculty/staff would search themselves or go to another source is 7,879 searches [8,913 searches x (0.438 + 0.446)]. The faculty/staff average time spent per

search is 1.05 faculty/staff hours per search or 8,273 total faculty/staff hours (1.05 hours per search x 7,879 searches). This total comes to \$548,500 (8,273 hours x \$66.30 per hour). The average dollar cost per search is \$29.51 per search so the total other cost is \$232,509 (\$29.51 per search x 7,879 searches). The total cost to use alternative sources is \$781,009 (\$548,500 + \$232,509). The net value is \$441,288 (\$781,009 cost - \$339,721 faculty/staff cost). The library Return on Investment is 2.4 to 1 (\$441,288 / \$185,286 library investment).

Use of a Librarian to Conduct Reference Services by Students:

In the past month (30 days), how many times did a librarian conduct reference for/with you (catalog, database, getting access, etc.)? (If no times, enter “0” and go to Q). (n=137)

The average number of times per students is 0.835 times per student (114.4 times / 137 students). The total therefore is 20,287 searches (0.835 searches per student x 24,296 students). There were 9,937 student users (24,296 students x 0.409).

Time spent by students:

About how much total time was involved? (If no time, please enter “0”) (n=56)

In minutes _____

The average time spent per student user is 23.80 minutes (1,333 minutes / 56 users) or 0.397 hours (23.80 minutes / 60 minutes per hour) per student user, which amounts to \$13.74 per student user (0.397 hours per student user x \$34.60 per students). The total “purchase value” is 3,945 hours (0.397 hours per student user x 9,937 student users) or \$136,497 (3,945 hours x \$34.60 per hour).

For the LAST TIME a librarian helped you with a reference search how much time do you think the librarian saved you (in minutes)? (n=53)

The average time saved is 54.81 minutes per student (2,905 minutes / 53 searches) or 0.914 hours per search (54.81 minutes / 60 minutes per hour) or \$31.62 per search (0.914 hours per search x \$34.60 per hour). The total savings is 18,542 hours (0.914 hours per search x 20,287 searches) or \$641,555 (\$34.60 per hour x 18,542 hours). The library investment is \$142,730 or \$7.04 per search (\$142,730 / 20,287 searches), and the savings of \$641,555 provides a ROI of 4.5 to 1 (\$641,555 / \$142,730).

How helpful was the librarian to you? (n=57)

1. Not particularly helpful	-
2. Somewhat helpful	-
3. Helpful	10.5%
4. Very helpful	68.4%
5. Absolutely essential to me	21.1%
Total	100.0%

Average helpfulness is 4.11 (3 x 0.105 + 4 x 0.684 + 5 x 0.211).

Librarian Assigned to Assist on Research Projects

Faculty/staff were asked:

The library sometimes assigns a librarian to work with faculty on a research project. In the past year (12 months), did you work with a librarian on such a research project? (n=128)

Yes	20.3%
No	79.7%

If yes, on how many projects? _____ (n=26)

1,083 faculty/staff used librarians to work on research projects (0.203 x 5,337 faculty/staff). Faculty/staff averaged about 1.15 such projects a year per faculty/staff (30 projects / 26 faculty/staff). This yields a total of 1,245 such projects (1.15 projects per faculty/staff x 1,083 faculty/staff).

Time spent by faculty/staff and savings as a result is found:

About how much time did you spend working with the librarian on the most recent research project? (If no time, please enter “0”). (n=25)

In minutes _____
OR hours _____
OR days _____

The faculty/staff average amount of time is 4.56 hours per project (114 hours / 25 faculty/staff) or 5,677 total hours. Therefore, the total time spent is 5,677 hours (4.56 hours per project x 1,245 projects) or \$376,385 total faculty/staff cost (5,677 faculty/staff hours x \$66.30 per hour). The purchase value is 2.8 times the library investment (\$376,385 / \$132,388).

Savings are found by:

How much time or money did the librarian save you on the most recent project? (If no time or money, please enter “0”) (n=23)

In minutes _____
OR hours _____
OR days _____
In dollars _____

The average faculty/staff time saved is 8.74 hours per project or \$579,462 per project. The total time saved is 10,881 hours (8.74 hours per project x 1,245 projects) or a total of \$721,410 saved (10,881 hours x \$66.30 per hour). Note that the savings is considered the “net value.” The library Return on Investment is 5.4 to 1 (\$721,410 / \$132,388 library investment).

The “use value” is calculated below:

How important was working with a librarian to this project? (n=25)	
1. Not at all important	-
2. Somewhat important	8.0%
3. Important	32.0%
4. Very important	40.0%
5. Absolutely essential	20.0%
Total	100.0%

The average rating is 3.72 (2 x 0.08 + 3 x 0.32 + 4 x 0.40 + 5 x 0.20).

In what ways was working with a librarian important (Choose all that apply) (n=25)

It improved the results	72.0%
It narrowed/broadened/changed the focus	40.0%
It inspired new thinking/ideas	28.0%
It resulted in a collaboration/joint research	12.0%
It resulted in faster completion	76.0%
It resolved technical problems	16.0%
It saved time or other resources	64.0%
Other: (please specify)	4.0%

Assistance from the Library Public Service Desk by Faculty and Staff

Faculty/staff use, time spent, and savings:

In the past month (30 days), how many times did you seek assistance from the library public services desk to answer questions about library services, circulation assistance, looking up something, trouble shooting, etc.? (If none, please enter “0”)

_____ (n=168)

The average times faculty/staff sought assistance is 1.02 times in the past 30 days (172 times / 168 faculty/staff) or 12.24 times annually per faculty/staff (1.02 faculty/staff times per month x 12 months). The total time is 65,325 times (12.24 times per faculty/staff x 5,337 faculty/staff).

In the past month (30 days), how many times did you ask for assistance by telephone reference, text or instant messaging, etc.? (If none, please enter “0”) (n=146)

The average time faculty/staff used this service is 0.62 times in the past month (90.5 times / 146 users) or 7.44 times annually per faculty/staff (0.62 times per faculty/staff x 12 months). The total times are 39,707 times (7.49 times per faculty/staff x 5,337 faculty/staff). The total time the two services is used is 105,032 times (65,325 times from the public service desk + 39,707 times for telephone assistance, etc.).

Time spent and savings are found below:

How much of your total time was involved? (If no time, please enter “0”) (n=125)

In minutes _____

OR hours _____

The average time spent per faculty/staff is 18.6 minutes or 0.31 hours per faculty/staff (18.6 minutes per faculty/staff / 60 minutes per hour). The average cost is \$20.55 per faculty/staff (0.31 hours x \$66.30 per hour). The total faculty/staff cost is \$109,675 per month (\$20.55 per faculty/staff x \$66.30 per hour). The total purchase value is \$1,316,100 or 1.6 times the library investment (\$1,316,100 / \$848,378).

The average time are 19.7 times per faculty/staff (12.24 times from the public service desk + 7.94 times for telephone assistance, etc.). Therefore the total faculty/staff time spent per time is slightly less than one minute per time used per faculty/staff (18.6 minutes / 19.7 times). Possibly, the time spent by faculty/staff is ambiguous, because some respondents might have thought the time period meant one month.

How much time or money did all this assistance save you? (If no time or money, please enter “0”) (n=133)

In minutes _____

OR hours _____

In dollars _____

The average time saved per incidence is 0.80 hours per incident per faculty/staff which costs them \$53.04 per incident per faculty/staff (0.80 hours x \$66.30 per hour). The total faculty/staff saving is \$5,570,897 in faculty/staff time (\$53.04 per incident per faculty/staff x 105,032 incidents). The average other costs is \$4.50 per incident per faculty/staff of \$472,644 (\$4.50 per faculty/staff x 105,032). The total savings is \$6,043,541 (\$5,570,897 in faculty/staff time + \$472,644 in other costs). The library Return on Investment is 7.1 to 1 (\$6,043,541 / \$848,378).

Assistance from the Library Public Service Desk by Students

Student use of the public service desk, time spent, and savings:

In the past month (30 days), how many times did you seek assistance from the library public services desk to answer questions about library services, circulation assistance, looking up something, trouble shooting, etc.? (If none, please enter “0” and skip to Q) _____ (n=157)

The average times students sought assistance is 2.18 times (342.5 times / 157 students) in the past 30 days or 26.16 times annually per student (2.18 student times per month x 12 months).

The total times are 635,583 times (26.16 times per student x 24,296 students).

About how much of your total time was involved (in minutes)? (n=85)

The average time involved is 17.52 minutes per student (1,611 minutes / 14,237 students) who used the service (0.586 x 24,296 students). This amounted to an average of 0.292 hours per use (17.52 minutes / 60 minutes per hour) per user or \$10.10 per user (0.292 hours per user x \$34.60 per hour). The total user time is 4,157 hours (0.292 hours per user x 14,237 users) at a total cost of \$143,832 (\$34.60 per hour x 4,157).

For the LAST TIME you sought assistance, about how much time do you think the assistance saved you (In minutes)? (n=82)

The student users indicated they saved an average of 18.39 minutes per student (1,508 minutes / 82 minutes / 82 assistance) or 0.307 hours per assistance (18.39 minutes / 60 minutes per hour) or \$10.62 (0.307 hours per assistance x \$34.60 per hour). The total savings is 195,124 hours (0.307 hours per student assistance x 635,533 times) or \$6,751,290 (\$34.60 per hour x 195,124 hours).

Note that savings are in addition to user costs.

Contingent value is the savings of \$6,751,290 (i.e., net benefits). The library investment is \$3,165,203 or \$4.38 per use ($\$3,165,203 / 635,583$). The ROI is 2.1 to 1 ($\$6,751,290 / \$3,165,203$).

In the past month (30 days), how many times did you ask for assistance by telephone reference, text or instant messaging, etc.? (If none, please enter "0" and skip to Q)
(n=174)

The average time students used this service is 0.724 times in the past month per student (126 times / 174 students) or 8.69 times per month annually per student (0.724 times per student x 12 months). The total times used are 211,132 times (8.69 times per student x 24,296 students). There are 5,176 student users (0.213 x 24,296 students). Therefore, the time used per user is 40.8 times per user (271,180 / 5,176 users).

Time spent and savings are found below:

About how much of your total time was involved? (If no time, please enter "0")
(n=37)

In minutes _____
OR hours _____

The average time spent per student is 5.49 minutes per student (203 minutes / 37 students) or 0.092 hours (5.49 minutes per student user x 60 minutes per hour). The average cost is \$3.18 per student user (0.092 hours x \$34.60 per hour). The total student cost is 476 hours (0.092 hours per student user x 5,175 users) or \$16,470 (\$34.60 per hour x 476 hours).

For the LAST TIME you sought assistance, about how much time do you think the assistance saved you (In minutes)? (n=15)

In minutes _____

The average time saved per user is 34.33 minutes or 0.572 hours per student user (34.33 minutes / 60 minutes per hour). This average comes to \$19.79 per student user (0.572 hours x \$34.60 per hour). The total student saving is 2,958 hours (0.572 hours per user x 5,175 users) or \$102,348 (2,958 hours x \$34.60 per hour).

Library Instruction Used by Faculty and Staff

The use, value and cost of library instruction:

In the past year (12 months) did you attend a formal class or an instructional course of an instructional course at the library taught by a member of the library staff? (n=144)

Yes	15.3%
No	84.7%
Total	100.0%

About how much time did such instruction involve, including both in class and studying? (n=25)

In minutes _____

OR hours _____

Library instruction involved 817 faculty/staff (0.153 x 5,337 faculty/staff) and an average of 5.24 hours per faculty/staff attendee. The cost to the attendees averaged \$347.41 (5.24 hours per attendee x \$66.30 per hour). The total time and cost is 4,281 hours (5.24 hours per attendee x 817 attendees) and \$283,834 (\$347.41 per attendee x 817 attendees). The library investment is \$4,195; therefore, the purchase value is over 65 times the library investment (\$283,834 / \$4,195).

How important was the instruction you received to your work (n=29)

1. Not at all important	-
2. Somewhat important	29.2%
3. Important	41.7%
4. Very important	16.6%
5. Absolutely essential	12.5%
Total	100.0%

The average rating is 3.36 (2 x 0.292 + 3 x 0.417 + 4 x 0.166 + 5 x 0.125).

In the past month (30 days) did you receive any specific informal instruction by library staff (e.g., in use of workstations, searching, databases) (n=144)

Yes	19.4%
No	80.6%
Total	100.0%

The number of faculty/staff who received informal instruction is 1,035 faculty/staff (0.19 x 5,337 faculty/staff).

About how much time did you spend with library staff members? (n=31)

In minutes _____

The average time spent in the past month is 26.1 minutes per faculty/staff attendee. This comes to an average of 0.435 faculty/staff hours per month (26.1 faculty/staff minutes / 60 minutes). The average annual faculty/staff time is 5.22 hours (0.435 faculty/staff hours per month x 12 months) per attendee at a cost of \$1,807 per attendee. The total faculty/staff time and dollar cost is 5,403 hours (5.22 hours per attendee x 1,035 attendees) and \$358,219 (5,483 hours x \$66.30 per hour). The library investment is \$38,361; therefore the purchase value is 9.3 times the library investment (\$358,219 / \$38,361).

Next, how important was the informal instruction?

How important was the instruction you received to your work? (n=29)

1. Not at all important	3.5%
2. Somewhat important	24.1%
3. Important	20.7%
4. Very important	34.5%
5. Absolutely essential	10.2%
Total	100.0%

The average rating is 3.38 (1 x 0.035 + 2 x 0.241 + 3 x 0.207 + 4 x 0.345 + 5 x 0.102).

Library Instruction Used by Students

The use, value, cost, and ROI of library instruction are given below:

In the past year (12 months) did you attend a formal class or an instructional course at the library taught by a member of the library staff? (n=169)

Yes	33.1%
No	66.9%
Total	100.0%

About how much of your time did you spend, including both in class and studying (In hours)? (n=52)

In hours _____

Library instruction involved 8,042 students (0.331 x 24,296 students) and an average of 12.0 hours per student attendee (624 hours / 52 students). The cost to the attendees averaged \$415.20 (12.0 hours per attendee x \$34.60 per hour). The total time and cost is 96,504 student hours (12.0 hours per attendee x 8,042 attendees) and \$3,339,038 (96,504 student hours x \$34.60 per hour).

How useful was the course? (n=4)

1. Not at all useful	-
2. Somewhat useful	50.0%
3. Useful	25.0%
4. Very useful	-
5. Absolutely essential	25.0%
Total	100.0%

The average rating is 3.00 (2 x 0.500 + 3 x 0.250 + 5 x 0.250).

The library investment is \$88,000 or \$10.94 per attendee.

In the past month (30 days) did you receive any specific informal instruction by library staff (e.g., in use of workstations, searching, databases)? (n=168)

Yes	32.1%
No	67.9%
Total	100.0%

The number of students who received informal instruction is 7,799 students (0.321 x 24,296 students).

About how much time did you spend with library staff members? (n=52)

In minutes _____

The average time spent in the past month is 29.38 minutes per student (1,498 minutes / 52 students). This comes to an average of 0.490 student hours per month (29.38 student minutes / 60 minutes). The average annual student time is 5.88 hours (0.490 student hours per month x 12 months) per student at a cost of \$203.45 per student. The total student time and dollar cost is 45,858 hours (5.88 hours per student x 7,799 student) and \$1,586,687 (45,858 hours x \$34.60 per hour).

How useful was the informal instruction? (n=55)

1. Not at all useful	-
2. Somewhat useful	1.8%
3. Useful	29.1%
4. Very useful	58.2%
5. Absolutely essential	10.9%
Total	99.9%

The average rating is 3.78 (2 x 0.018 + 3 x 0.291 + 4 x 0.582 + 5 x 0.109).

The library investment is \$27,136 or \$3.48 per student user (\$27,136 / 7,799 student users).

Library Provision of Equipment to Faculty and Staff

Faculty and staff were informed that:

The library provides access to several types of equipment, iPads, laptops, MP3 players, DVD players, and accessories such as battery chargers internet cables, etc.

In the past year (12 months), have you borrowed such equipment? (n=141)

Yes	19.1%
No	80.9%
Total	100.0%

A total of 1,019 faculty/staff are estimated to borrow such equipment (0.191 x 5,337 faculty/staff).

About how many times have you borrowed said equipment? (n=27)

The faculty/staff who borrow average 2.925 times annually or a total of 2,981 faculty/staff times borrowed (2.925 per borrowing faculty/staff x 1,019 borrowing faculty/staff).

If the library did not lend this equipment, would you have gotten it from elsewhere? (n=27)

Yes	19.1%
No	80.9%
Total	100.0%

The number of borrowing faculty/staff who would have gone elsewhere is 113 the total borrowing faculty/staff (0.111 x 1,019 borrowing faculty/staff).

About how much would it cost you in time and/or money? (If no time or money, please enter "0") (n=3)

In hours _____
In dollars _____

Faculty/staff say it would cost them an average of about 0.65 hours per faculty/staff or \$43.10 (0.65 hours per borrowing faculty/staff x \$66.30 per hour). The total cost in time to borrowing

faculty/staff is 73.45 hours or \$4,870 (73.45 hours x \$66.30 per hour). The library investment is \$9,539.

Library Provision of Equipment to Students

Students were informed that:

The library provides access to several types of equipment (e.g. iPads, laptops, MP3 players, DVD players, and accessories such as battery chargers, internet cables, etc.).

In the past month (30 days), have you borrowed such equipment? (If no, skip to Q) (n=27)

Yes	31.5%
No	68.5%
Total	100.0%

A total of 7,653 students are estimated to borrow such equipment (0.315 x 24,296 students).

About how many times have you borrowed such equipment in the past month? (If none skip to Q) (n=48)

Students who borrow averages 3.77 times in the past month (181 times / 48 students) or a total of 45.24 student times per student annually (3.77 times per month x 12 months). The total times students borrowed is 346,222 times.

If the library did not provide this equipment the LAST TIME, would you have gotten it from elsewhere? (n=27)

Yes	49.1%
No	50.9%
Total	100.0%

The number of times students who would have gone elsewhere is 169,995 times (0.491 x 346,222 times).

If yes, about how much would it cost you in time and/or money for this equipment? (If no time or money, please enter "0") (n=25)

In hours _____
In dollars _____

Students say it would cost them an average of about 1.42 hours per time borrowed (35.5 hours / 25 times). The total hours are 241,393 hours (1.42 hours per time x 169,995 times) or \$8,352,198 and the other cost is \$17.88 per time (\$465 / 26 times) or \$3,039,511. The total alternative cost is \$11,391,709 (\$8,352,198 + \$3,039,511).

The library investment is \$1,797,537 or \$5.19 per time borrowed (\$1,797,537 / 346,222 times).

Library Provision of Audiovisual Materials to Faculty and Staff

The library provides access to Audiovisual Materials:

In the past year (12 months), did you use such audiovisual materials? (n=140)

Yes	25.7%
No	50.9%
Total	100.0%

The number of faculty/staff who used audiovisual materials is 1,372 audiovisual users (0.257 x 5,337 faculty/staff).

About how many times did you use such materials? (n=30)

The users averaged 6.63 uses per user or a total of 9,096 (6.63 uses per user x 1,372 users).

About how much time did you spend using these materials? (n=32)

In minutes _____

OR In hours _____

The users averaged using them 11.02 user hours at a cost of \$730.63 per user. The total user time and cost of 15,119 hours (11.02 hours per user x 1,372 users) and \$1,002,424 (\$730.63 x 1,372). The library investment is \$516,465; therefore, user purchase cost is 1.8 times the library investment (\$1,002,424 / \$516,465).

The library provides access to other materials such as videos, leisure materials (e.g., a novel), Netflix for educational purposes, lesson materials, the institutional repository, etc.

It might have been best to examine these materials separately.

In the past year (12 months), have you used such materials? (n=138)	
Yes	29.7%
No	70.9%
Total	100.0%

The total number of other material users is 1,585 users (0.297 x 5,337 faculty/staff).

How much time did you spend getting access to such materials from the library?
(n=6 only from Drexel).

The average time is 15 minutes per user or 0.25 hours (15 minutes per user / 60 minutes per hour). The average cost per user is \$16.58 per user (0.25 user hours x \$66.30 per hour). The total user time and cost is 396 user hours (0.25 user hours x 1,585 users) and \$26,255 (396 user hours x \$66.30 per hour). The purchase value is 1.4 times the library investment (\$26,255 / \$18,291).

If the library did not provide such materials would you have gotten it from elsewhere? (n=41)	
Yes	70.7%
No	29.3%
Total	100.0%

About 1,121 users would have gotten such material elsewhere (0.707 x 1,585 users).

About how much would it cost you in time and/or money? (If no time or money, please enter "0"). (n=29)

In minutes: _____

In dollars: _____

The average time is 31.2 minutes or 0.52 user hours (31.2 minutes / 60 minutes per hour), which costs \$34.48 (0.52 user hours x \$66.30 per hour). The total cost to use alternatives in user time and dollars is 583 hours (0.52 hours per user x 1,121 users) and \$38,653 (583 hours x \$66.30 per

hour). The average other cost is \$11.38 per user so that the total cost to use an alternative source is \$12,757 (\$11.38 per user x 1,121 users). The total cost to use an alternative source is \$51,410 (\$38,653 user time + \$12,757 other costs). The net value is \$25,155 (\$51,410 cost to use an alternative source - \$26,255 cost to getting the material), and the Return on Investment is 1.4 to 1 (\$25,155 / \$18,291).

Library Provision of Audiovisual Materials

The library provides access to Audiovisual (AV) Materials (e.g., videos, DVDs, audiocassettes, CDs).

In the past month (30 days), did you use such audiovisual materials? (n=163)	
Yes	6.1%
No	93.9%
Total	100.0%

The number of students who used audiovisual materials is 1,482 audiovisual users (0.061 x 24,296 students).

About how many times did you use such materials? (n=29)

The users averaged 2.22 uses per user (20 uses / 9 users) or a total of 3,290 (2.22 uses per user x 1,482 users).

About how much time did you spend using these materials? (n=4)

In hours _____

The users averaged using them 1.25 user hours per month (5 hours / 4 users) or 15.0 hours annually (1.25 hours per month x 12 months) at a cost of \$519.00 per user (15.0 hours x \$34.60 per hour). The total user time and cost of 22,230 hours (15.0 hours per user x 1,482 users) and \$769,158 (22,230 hours x \$34.60 per hour).

The library investment is \$2,296,557 or \$103.31 per hour used ($\$2,296,557 / 22,230$ hours) and \$1,550 per user ($\$1,550$ per user ($\$2,296,557 / 1,482$ users)).

The library also provides access to other materials (e.g., videos, leisure materials/novels, Netflix for educational purposes, lesson materials).

It might have been best to examine these materials separately.

In the past month (30 days), did you use such materials? (n=168)

Yes	9.5%
No	90.5%
Total	100.0%

The total number of other material users is 2,308 users ($0.095 \times 24,296$ students).

About how many times did you obtain such materials in the last month (30 days)?

(n=15).

Users obtained such materials an average of 2.20 times in the last month (33 times used / 15 users) or 26.4 times annually for a total of 60,931 times ($2,308$ users \times 26.4 times per user).

If the library did not lend such material the LAST TIME, would you have gotten it from elsewhere? (n=10)

Yes	50.0%
No	50.0%
Total	100.0%

About 30,466 uses were involved in getting such material elsewhere ($0.500 \times 60,931$ times).

About how much would it cost you in time and/or money for this material? (If no time or money, please enter "0"). (n=6)

In minutes: _____

In dollars: _____

The average time per use is 31.17 minutes (187 minutes / 6 uses) or 0.520 user hours (31.17 minutes / 60 minutes per hour), which costs \$17.99 (0.520 user hours \times \$34.60 per hour). The total cost to use alternatives in user time and dollars is 15,842 hours (0.520 hours per user \times

30,466 uses) and \$548,133 (15,842 hours x \$34.60 per hour). The average other cost is \$14.17 per use (\$85 / 6 uses) so that the total dollar cost to use an alternative source is \$431,703 (\$14.14 per use x 30,466 uses). The total cost to use an alternative source is \$979,836 (\$548,133 user time + \$431,703 other costs).

The library investment is \$26,634 or \$0.44 per use and \$11.54 per user. The cost of an alternative use is 37 times the library investment (\$979,836 / \$26,634).

Ways the Library Informs Users (Faculty and Staff)

The library informs its users about services in many ways.

Which of the following have ever used, participated in, or read? (n=144)		
Library tours	27	18.8%
Exhibits and display	44	30.6%
Newsletter	66	45.8%
Library blog, library updates via Twitter, Facebook	20	13.9%
Open houses	36	25.0%
Axis TV (Bryant)	4	3.7%
Librarian consultation	4	1.1%

Ways the Library Informs Users (Students)

The library informs its users about services in many ways.

	Which of the following ways have you ever used, participated, in, or read? (n=114)	
	Proportion	User Number of users
Library tours	58.8%	14,286
Exhibits and display	45.6%	11,079
Newsletter	33.3%	8,091
Library blog, library updates via Twitter, Facebook	23.7%	5,758
Open House	25.4%	6,171
Axis TV (Bryant) (n=107)	13.1%	-
Librarian consultation (Drexel) (n=9)	11.1%	-

The library investment and cost per student user are given below:

	Library Investment	Cost per User
Library tours	\$44,430	\$3.11 (\$44,430 / 14,286 users)
Exhibits and displays	\$68,468	\$6.18 (68,468 / 11,079 users)
Newsletter	\$43,527	\$5.38 (\$43,527 / 8,091 users)
Library blog, etc.	\$41,977	\$7.29 (\$41,977 / 5,758 users)
Open House	\$19,748	\$3.20 (\$19,748 / 6,171 users)
Total	\$198,402	

The library investment is \$198,402. The average cost per student user of services involving direct librarian time (tours, Open House) is the least (\$3.11 and \$3.20 vs. \$6.18 and \$7.29).

Use of Library Workstations by Faculty and Staff

In the past year (12 months), have you used library workstations in the library? (n=144)

Yes	22.2%
No	77.8%
Total	100.0%

The number of users of workstations is 1,185 faculty/staff users (0.222 x 5,337 faculty/staff).

About how much time have you spent using those workstations in the past year? (n=32)

In minutes _____

OR In hours _____

The average time spent by users is 0.804 user hours per year at a cost to them of \$53.31 per user (0.804 hours per user x \$66.30 per hour). The total cost to users is \$63,172 (\$53.31 per user x 1,185 users).

For what purposes did you use the workstation? (Choose all that apply) (n=39)

Research projects	15.4%
Support teaching	23.1%
Prepare publications	7.7%
Prepare non-class related presentations (e.g., conference paper)	7.7%
To keep up or continue education	7.7%
E-mail, blog, Facebook, etc.	28.2%
Other: (please specify)	10.3%

Use of Library Workstations by Students**In the past month (30 days), how many times did you use library workstations in the library? (n=133)**

Students averaged using workstations 5.11 times per student in the past month (679 uses / 133 students) or 61.32 total times per student annually (5.11 times per month x 12 months). This comes to a total of 1,489,831 times used (61.32 times per student x 24,296 students). The number of users of workstations is 16,546 student users (0.681 x 24,296 students).

About how much time did you spend using those workstations in the past month? (n=47)**In hours _____**

The average time spent by student users is 4.426 user hours per month (208 / 47 users) or 53.1 hours annually (4.426 hours per month x 12 months). The cost to them is \$1,837 per user (53.1 hours per user x \$34.60 per hour). The total cost to users is \$30,395,002 (\$1,837 per user x 16,546 users).

For what purposes did you use the workstations? (Choose all that apply) (n=138)

For a class	53.6%
To look something up for class	29.7%
Personal purposes	16.7%
Other: (please specify)	10.1%

The library investment is \$57,121 or \$0.04 per use (\$57,121 / 1,489 uses) and \$3.45 per user (\$57,121 / 16,546 users).

Use of Library Duplication Services by Faculty and Staff

On how many occasions have you used the library Duplication Service to photocopy, print, or scan a document? (If the answer is none, please enter "0")

The number of faculty/staff who have used duplication services is 811 faculty/staff times (0.152 x 5,337 faculty/staff). The average time used per user is 2.36 user hours. Therefore the total times used is 1,914 times (2.36 times per user x 811 users). The total faculty/staff time is 2.36 hours per user at \$156.47 per user or \$126,897.

The contingent value of duplication services is established as follows:

If the library did not have duplication services, would you go elsewhere?
(n=31)

Yes	87.1%
No	12.9%
Total	100.0%

The number of faculty/staff who would go elsewhere is 4,649 (0.871 x 5,337 faculty/staff).

What other service would you use? (n=27) _____

To print, photocopy, or scan from another source, I would expect to spend: (n=27)

In minutes: _____

In dollars: _____

The average time spent per person going elsewhere is 31.13 minutes per faculty/staff or 0.519 hours per faculty/staff (31.13 minutes / 60 minutes per hour). The cost of time is \$34.41 per faculty/staff. The total cost in time is 2,413 faculty/staff hours (0.519 hours per faculty/staff x 4,649 faculty/staff) or \$159,982 (2,413 hours x \$66.30 per hour). The average other cost is \$56.91 per faculty/staff and the total other cost is \$264,575 (\$56.91 per faculty/staff x 4,649 faculty/staff). The total cost to use alternative duplication services is \$424,557 (\$159,982 faculty/staff costs + \$264,575 other costs). The net value is \$297,710 (\$424,557 cost to use an alternative - \$126,847 cost to use the source).

Use of Library Duplication Services by Students

Approximately how many times in the past month (30 days) have you used the library duplication services? (If zero, skip to Q). (n=165)

There are 8,844 student users in the past month (0.364 x 24,296 students) or 106,128 users (8,844 students x 12 months). *Note that a user may use the service many times over a year.* Students average using the duplication service about 2.26 times per user in the past month (52 uses / 23 students) or 27.12 uses annually (2.19 times per month x 12 months). The total is 2,789,044 uses (27.12 uses per user x 106,128 users).

What type of duplication was involved the LAST TIME you used it? (n=70)	
Photocopying	15.7%
Scanning	4.3%
Printing	74.3%
Other: (Please specify)	5.7%
Total	100.0%

With sufficient sample size, one could analyse the four types of duplication.

About how much of your time was involved (in minutes)? (n=65)

The average time per use in the past month is 17.62 minutes (1,145 minutes / 64 uses) or 0.294 hours per use (17.62 minutes / 60 minutes per hour) or 7.97 annual hours per use (0.294 hours

per use x 27.12 uses). The total is 819,979 hours over a year (0.294 hours per use x 2,789,044 uses). The total cost is \$28,371,273 (819,979 hours x \$34.60 per hour).

If there were no library duplication service, where would you go to get this last duplication? (n=70) _____

About 1,313,640 of the uses would come from an alternative source (0.471 x 2,789,044 uses).

How many minutes of time would you expect this other service to cost? (n=33)

The time would cost 28.67 minutes per use (946 minutes / 33 uses) or 0.478 hours per use (28.67 minutes / 60 minutes per hour) or \$16.54 per use or \$21,727,605 (1,313,640 uses x \$16.54 per use).

How much money would you expect this service to cost (in dollars)? (n=33)

The average cost per use is \$17.27 (\$570 / 33 users) or \$22,686,562, (1,313,640 uses x \$17.27 per use). The total alternative cost is \$44,414,167 (\$21,727,605 in time + \$22,686,562 in cost).

The ROI of duplication services is estimated as follows. The net cost is \$16,042,894 (\$44,414,617 - \$28,371,273). The library investment is \$160,370 so the ROI is 100 to 1 (\$16,042,894 / \$160,370). The library cost per use is \$0.06 (\$160,370 / 2,789,044 uses) and cost per user is \$0.14 (\$0.06 x 2.26 uses per user).

Use of Library Leisure Workspaces by Faculty and Staff

The library has dedicated substantial space to comfortable chairs and tables to use for leisure and work. Faculty and staff are asked:

Have you used the library leisure/workspace in the past year (12 months) for reading or other work? (n=143)

Yes	25.2%
No	74.8%
Total	100.0%

The total number of faculty/staff who have used this space is 1,345 faculty/staff (0.252 x 5,337 faculty/staff).

About how much time have you spent using the leisure/workspace in the past year (12 months)? (n=31)

In minutes: _____
OR In hours: _____
OR In days: _____

The average time spent by users is 10.25 hours per faculty/staff users at a cost of \$679.58 per user (10.25 hours x \$66.30 per hour). The total cost in time and dollars is 13,786 user hours (10.25 hours per user x 1,345 users) and \$914,012 (13,786 hours per user x \$66.30 per hour).

For what reasons did you use this space? (Choose all that apply) (n=36)

Quiet/comfortable place to work	72.2%
To meet with students	3.9%
To meet with others	11.1%
Other: (please specify)	11.1%

Use of Library Workrooms by Faculty and Staff

Have you used any library workrooms (room numbers specified here) in the past year (12 months)? (n=136)

Yes	29.4%
No	70.6%
Total	100.0%

The number of workroom users is 1,569 faculty/staff (0.294 x 5,337 faculty/staff).

For what reasons did you use the rooms? (Choose all that apply) (n=40)

For a class	27.5%
For a meeting	75.0%
For a quiet place to work	7.5%
Other: (please specify)	10.0%

How much time did you spend using these rooms? (n=37)

In minutes: _____

OR In hours: _____

OR In days: _____

The average time spent by users is 19.46 hours per user or \$1,290 per user (19.46 hours x \$66.30 per hour). The total cost is time and dollars is 30,533 hours (19.46 hours per user x 1,569 users) and \$2,024,010 (\$1,290 per user x 1,569 users).

Use of Library Workrooms by Students

Have you used any library workrooms (room numbers specified here) in the past year (12 months) (n=155)

Yes	61.9%
No	38.1%
Total	100.0%

The number of workroom users is 15,039 student users (0.619 x 24,296 students).

For what reasons did you use the rooms? (Choose all that apply) (n=92)

For a class	24.7%
For a meeting with students	73.2%
To study for class	69.1%
To get away	16.5%
Other: (please specify)	15.2%

How much time did you spend using these rooms? (n=92)

In hours: _____

The average time spent by users is 8.05 hours per user (791 hours / 92 users) or \$278.53 per user per year (8.05 hours x \$34.60 per hour). The total cost in time and dollars is 121,064 hours (8.05 hours per user x 15,039 users) and \$4,188,814 (121,064 hours x \$34.60 per hour).

The library investment is \$64,164 or \$0.53 per hour (\$64,164 / 121,064 hours) and \$4.27 per user (\$64,164 / 15,039 users).

Use of Library Leisure/Workspace by Students

The library has dedicated substantial space to comfortable chairs and tables to use for leisure and work. Students are asked:

In the past month (30 days), how many times did you use the leisure/workspace in the library? (n=87)

A total of 14,092 students indicated they used this space in the past month (0.580 x 24,296 students). They averaged 10.25 uses per student in the past month (892 uses / 87 student users) or 123.0 uses per student annually (10.25 uses per student per month x 12 months) for a total of 1,733,316 times (123 times per student user x 14,092 student users).

About how much time did you spend using the leisure/workspace in the library in the past month (30 days)? (n=91)

In hours: _____

The average time spent by users is 2.86 hours per month per student user (260 hours / 91 students) or 34.32 hours annually (2.86 hours per month x 12 months). The total cost in time and dollars is 483,637 user hours (34.32 hours per user x 14,092 users) or \$16,733,840 (483,637 hours per user x \$34.60 per hour).

The library investment is \$4,003,960 so the cost per hour is \$8.28 (\$4,003,960 / 483,637 hours) and cost per user is \$284 (\$4,003,960 / 14,092 users).

Use of the Library Hall Used for Special Programs

Have you attended any special programs, invited speakers, etc. in the library hall in the past year (12 months) (n=139)

Yes	56.1%
No	43.9%
Total	100.0%

The total number of faculty/staff who have attended special programs is 2,994 attendees (0.561 x 5,337 faculty/staff).

How much time did you spend at these special programs?

In minutes: _____

OR In hours: _____

The average time spent per attendee is 6.81 hours at a cost of \$451.50 per attendee. The total cost in attendee time and dollars is 18,593 hours (6.81 hours per attendee x 2,994 attendees) and \$1,351,791 (\$451.50 per attendee x 2,994 attendees).

Faculty and Staff Average Annual Time Spent Getting, Obtaining, Etc. and Time Spent Using Library Services

Service	Time Getting , etc. (Hrs)	Time Using (Hrs)
Access to articles	12.2	61.3
Access to books	2.1	25.8
Access to other publications	3.2	8.3
Conduct reference services	-	1.0
Research services	-	1.1
Public service desk and telephone assistance	-	0.3
Formal library instruction	-	0.8
Informal library instruction	-	1.0
Use of equipment (assumes 1 hr/use)	-	0.6
Access to AV materials	-	2.8
Access to other materials	-	0.7
Use of library workstations	-	0.2
Use of library duplication services	-	0.4
Access to leisure/workspace	-	3.0
Access to library workrooms	-	6.9
Attend special programs in library rooms	-	4.0
Total	-	120.1

Proportion of time using these services is 5.5% (120.1 hours / 2,200 hours per annum). Total cost is \$7,962.63 per faculty/staff (120.1 hours x \$66.30 per hour).

Students' Average Annual Time Spent Getting, Obtaining, Etc. and Time Spent Using Library Services

Service	Time Getting , etc. (Hrs)	Time Using (Hrs)
Access to articles	30.1	42.5
Access to books	2.9	19.3
Access to other publications	10.9	12.5
Conduct reference services	-	0.2
Public service desk	-	0.2
Telephone assistance	-	0.1
Formal library instruction	-	5.0
Informal library instruction	-	1.9
Use of equipment (assumes 1 hr/use)	-	0.6
Access to AV materials	-	0.9
Access to other materials	-	0.7
Use of library workstations	-	4.4
Use of library duplication services	-	33.7
Access to leisure/workspace	-	18.9
Access to library workrooms	-	5.0
Attend special programs in library rooms	-	-
Total	-	120.1

Students average spending 145.9 hours annually using library services at a cost to them of \$5048. The library investment in providing these services is \$18,254,409 so the cost per student is \$751 (\$18,254,409 / 24,296 students).

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APPENDIX A

LIST OF BRYANT SERVICES

Bryant Library Services

1. Access to current periodicals in library by faculty/staff. (72, 31, 42, 53, 62)
2. Access to journal backfile in library by faculty/staff. (73, 63)
3. Access to electronic journals (academic, research, scholarly, etc.) on reserve by faculty/staff. (1, 32, 43, 54, 64)
4. Access to the library's electronic journal databases by faculty/staff. (17, 32, 43, 54, 64)
5. Access to print books/monographs (text, scholarly, review) in library by faculty/staff. (74, 33, 44, 55, 65)
6. Circulation of books/monographs (see 5) by faculty/staff. (2, 74, 33, 44, 55, 65)
7. Access to electronic/digital books by faculty/staff. (34, 45, 56)
8. Access to print other publications (conference proceedings, government documents, technical reports, trade journals, magazines, etc.) in library by faculty/staff. (75, 35, 46, 57, 66)
9. Circulation of other publications (see 8) by faculty/staff. (75, 3, 35, 46, 57, 66)
10. Access to electronic other publications (see 8) by faculty/staff. (35, 46, 57, 66)
11. Access to audiovisual materials (videos, DVDs, audio cassettes, CD's etc.) in the library by faculty/staff. (4, 36, 47, 58, 67)
12. Access to items in institutional repository/digital commons (faculty materials, news articles, legacy materials, etc.) in library by faculty/staff. (38, 49, 60)
13. Access to equipment (IPads, laptops, MP3 players, DVD players, accessories – battery chargers, internet cables, etc.) to faculty/staff. (6, 40, 51, 69)
14. Access to other materials (lesson materials, Netflix for educational purpose, leisure materials-novels, reference supplies, etc.) in library by faculty/staff. (7, 41, 52, 61, 70)
15. Access to current periodicals in library by students. (72, 31, 42, 53, 62)
16. Access to journal backfile in library by students. (73, 63)
17. Access to electronic journals on reserve by students. (1, 32, 43, 54, 64)
18. Access to the library's electronic journal databases by students. (16, 43, 54, 64)
19. Access to print books/monographs in library by students. (74, 33, 44, 55, 65)
20. Circulation of books/monographs (see 5) by students (2, 74, 33, 44, 55, 65)
21. Access to electronic/digital books by students. (34,, 45, 56)
22. Access to print other publications (see 8) in library by students. (75, 35, 46, 57, 66)
23. Circulation of other publications (see 8) by students. (75, 3, 35, 46, 57, 66)
24. Access to electronic other publications (see 8) by students. (35, 46, 57, 66)
25. Access to audiovisual materials (see 11) in the library by students. (4, 36, 47, 58, 67)
26. Access to items in institutional/digital commons (see 12) Circulation, Special Call. in library by students. (5)
27. Access to items in institutional repository/digital commons (see 13) to students. (38, 49, 60)
28. Access to equipment (see 15) to students. (6, 40, 51, 69)
29. Access to other materials (see 16) in library by students. (7, 41, 52, 61, 70)

30. Access to Chinese/Asian library. (37, 48, 59, 68)

Interlibrary Loans

- 31. Interlibrary borrowing of articles for faculty/staff. (8)
- 32. Interlibrary borrowing of books/monographs for faculty/staff. (9)
- 33. Interlibrary borrowing of other publications (see 8) for faculty/staff. (10)
- 34. Interlibrary borrowing of audiovisual materials (see 11) for faculty/staff. (11)
- 35. Interlibrary borrowing of articles for students. (8)
- 36. Interlibrary borrowing of books/monographs for students. (9)
- 37. Interlibrary borrowing of other publications (see 8) for students. (10)
- 38. Interlibrary borrowing of audiovisual materials (see 11) for students. (11)

Reference and Research

- 39. Conduct reference searches (catalog, databases, getting access, etc.) for faculty/staff. (17)
- 40. Assist faculty/staff at the public service desk (to answer questions about library services, circulation, citation assistance, looking up something, trouble shooting, etc. (19)
- 41. Assist faculty/staff on harder matters (telephone reference, text or instant messaging, etc.). (21)
- 42. Consulting with faculty/staff on research projects. (22)
- 43. Conduct reference searches (see 39) for students. (16)
- 44. Assist students at the public service desk (see 40). (18)
- 45. Assist students on harder matters (see 41). (20)

Library Instruction

- 46. Formal class given by library staff for faculty/staff. (24)
- 47. Informal instruction (Access to workstations, searching databases, etc.) for faculty/staff. (27)
- 48. Formal class (see 46) given by library staff for students. (23)
- 49. Informal instruction (see 48) for students. (26)
- 50. Conduct library orientation for students, family, etc. (25)

Other Services

- 51. Duplication services (assist in printing, photocopying, scanning) for faculty/staff. (29)
- 52. Duplication services (see 51) for students. (28)
- 53. Book delivery services for faculty/staff. (30)

Publicity Services

Participated/used by faculty/staff

- 54. Library tours. (76)
- 55. Exhibits and displays. (77)
- 56. Axis TV. (78)
- 57. Library newsletter. (79)
- 58. Library blog, tweets and twitter, facebook page. (80)
- 59. Open house. (81)

Participated/used by students

- 60. Library tours. (76)
- 61. Exhibits and displays. (77)
- 62. Axis TV. (78)
- 63. Library newsletter. (79)
- 64. Library blog, tweets and twitter, facebook page. (80)
- 65. Open house. (81)

Workstations

- 66. Access to workstations by students.
- 67. Access to workstations by faculty/staff.

Library Space

- 68. Access to leisure/workspace by students.
- 69. Access to leisure/workspace by faculty/staff.
- 70. Access to workrooms, (101, 102, 103, 214 and FMC) for course/class by faculty/staff.
- 71. Access to workrooms for special programs/invited speakers.
- 72. Access to Grand Hall for special programs/invited speakers, etc.

Non-University Services

- 73. Interlibrary loans of articles (12).
- 74. Interlibrary loans of books (13).
- 75. Interlibrary loans of other publications (14).
- 76. Interlibrary loans of audio visual materials (15).
- 77. Access to Bryan libraries by non-university users.

APPENDIX B

BRYANT STAFF ACTIVITY LIST

Activity Number

Circulation/Internal Lending (actual lending and receipt of materials)

1. Journals (academic, research, scholarly, etc.) on reserve.
2. Books/monographs (text, scholarly, reviews, etc.).
3. Other publications (conference proceedings, government documents, technical reports, trade journals, magazines, etc.).
4. Audiovisual materials (videos, audio cassettes, DVD's, CD's etc.).
5. Special collection items.
6. Equipment (IPads, laptops, MP3 players, Kindles, other players, accessories – battery chargers, internet cables, etc.)
7. Other materials (lesson materials, Netflix for educational purposes, leisure materials – novels, reference supplies.

Interlibrary Lending

8. Interlibrary borrowing of articles from external sources including HELIN and InRhode (lookup, receipt, scan, delivery, etc.).
9. Interlibrary borrowing of books/monographs (See 2).
10. Interlibrary borrowing of other publications (See 3).
11. Interlibrary borrowing of audiovisual materials (See 4).
12. Interlibrary lending of articles to external sources including HELIN and InRhode (receipt of request, locate, photocopy/scan or e-version, send).
13. Interlibrary lending of books/monographs (receipt of request, obtain, mail, process returned copy, etc.).
14. Interlibrary lending of other publications (See 3).
15. Interlibrary lending of audiovisual materials (See 4).

Reference and Research/Public Services

16. Conduct reference searches for students (catalog, databases, getting access, etc.).
17. Conduct reference searches for faculty/staff.
18. Assist students at the public service desk (to answer questions about library services, circulation, citation assistance, updating a patron record, looking up something, trouble shooting, etc.) often under 20 minutes.
19. Assist faculty/staff at the desk (See 18).
20. Assist students on harder matters often over 20 minutes (telephone reference, text messaging or instant messaging, etc.).
21. Assist faculty/staff on harder matters (See 20).

22. Consult in faculty/staff research.

Library Instruction

23. Present a formal class for students (class preparation, classroom time, follow-on, invited, technology sandbox, etc.).
24. Present a formal class for faculty/staff (See 23).
25. Conduct library orientation for students, family, etc.
26. Give informal instruction for students (on use of workstation, searching databases, etc. more than 18-22).
27. Give informal instruction for faculty/staff (See 26).

Other services

28. Duplication services for students (assist in printing, photocopying, scanning).
29. Duplication services for faculty/staff (See 28).
30. Book delivery service for faculty/staff (receive request, obtain materials, delivery).

Operational Activities

31. Collection development and management of print journals (review and approve materials, gift and exchange, collection weeding, identify missing/lost materials, etc.).
32. Collection development and management of electronic journals (review and approve materials, gift and exchange, collection weeding, identify missing/lost materials, etc.).
33. Collection development and management of print books/monographs (See 31).
34. Collection development and management of electronic books/monographs (See 31).
35. Collection development and management of other publications (See 3, 31).
36. Collection development and management of audiovisual materials (See 4, 31).
37. Collection development and management of Chinese/Asian materials (See 31).
38. Collection development and management of items in repository/digital commons (See 31).
39. Collection development and management of digital art collection (31).
40. Collection development and management of equipment (See 6, 31).
41. Collection development and management of other materials (See 7, 31).
42. Acquisitions of print journals (order new subscriptions, databases, order back orders, contact vendors/consortia, negotiate licenses, receive and verify, approve payments, invoice processing, visa reconciliation).
43. Acquisitions of electronic journals (order new subscriptions, databases, order back orders, contact vendors/consortia, negotiate licenses, receive and verify, approve payments, invoice processing, visa reconciliation).
44. Acquisition of print books/monographs (order, receive and verify, approve payments, process invoice).
45. Acquisition of electronic books/monographs (order, receive and verify, approve payments, process invoice).
46. Acquisition of other publications (See 3, 44).
47. Acquisitions of audiovisual materials (See 4, 44).
48. Acquisition of Chinese/Asian materials (See 44).
49. Acquisition of items in repository/digital commons (See 44).

50. Acquisition of art collection (See 44).
51. Acquisition of equipment (See 6, 44).
52. Acquisition of other materials (See 7, 44).
53. Cataloging of print journals (copy and enhanced, receive from HELIN, original, etc.)
54. Cataloging of electronic journals (copy and enhanced, receive from HELIN, original, etc.)
55. Cataloging of print books/monographs (See 53).
56. Cataloging of electronic books/monographs (See 53).
57. Cataloging of other publications (See 7, 53).
58. Cataloging of audiovisual materials (See 4, 53).
59. Cataloging of Chinese/Asian materials (See 53).
60. Cataloging of items in repository/digital commons (See 53).
61. Cataloging of other materials (See 7, 53).
62. Physical processing of journals in current periodicals room (initial shelving, weeding).
63. Physical processing of journals in backfiles (initial shelving, binding, spine labeling, barcodes, repair, weeding).
64. Processing electronic journal databases (set-up and maintenance, make changes, deal with Serials Solutions, etc.).
65. Physical processing of books/monographs (initial shelving, display, shelf maintenance, weeding).
66. Physical processing of other publications (See 3, 65).
67. Physical processing of audiovisual materials (See 4, 65).
68. Physical processing of Chinese/Asian materials (See 65).
69. Physical processing of equipment (6, 65).
70. Physical processing of other materials (See 7, 65).
71. Mail processing of publications and other materials.
72. Reshelving of current periodicals (including ILL, circulation and HELIN returns).
73. Reshelving of journal backfiles (See 72).
74. Reshelving of books/monographs (See 72).
75. Reshelving of other publications (See 3, 72).

Library Publicity Activity

76. Library tours
77. Exhibitions and displays (preparation, taking up and down).
78. Marketing via Axis TV (preparation).
79. Library newsletter (writing, publishing).
80. Library blog, tweets and twitter, facebook page.
81. Open House.
82. Outreach.

Library Management and Administration

83. Management and administration (finance, budgeting, and accounting; personnel management and staff development; managing student workers; facilities management; policies and procedures; reporting to supervisors; record keeping and statistics; etc.).

**Non-processing
Activities**

84. Attending internal staff and other meetings (time going to and from and in meetings).
85. Professional development and training (internal training, workshops, society meetings, HELIN meetings).
86. OSHA breaks/lunch.

Systems Activities (write in your areas that involve the following and time involved)

87. Other administration (programming, workstation and server support, trouble shooting, vendor contacts, etc.).
88. Administration activities for ILS (involving cataloging, circulation, reserves, acquisitions, e- resources management, OPAC, proxy services).
89. Administration activities for the institutional repository system.
90. Website content management.

Scanning

91. Scanning for electronic reserves.
92. Scanning for Institutional Repository (Digital Commons).
93. Scanning for Website.

Photography

94. Photography and photo editing.
95. Open and close library
96. Inventory

APPENDIX C

STAFF BASIC DATA FORM

All data from this form are confidential and analyzed by **University of Tennessee Staff**.

(1) Please provide your name:

(2) Indicate your work status by checking the following

Permanent _____

Temporary _____

Full-time _____

Part-time _____

If part-time:

Number of months assigned _____ months (e.g., 9 months)
or

Number of weekly hours assigned _____ hours (e.g., 20 hours)

Please provide your best estimate of the data provided below.

(3) If you were paid overtime in the past 12 months (2010), please indicate the amount paid and number of days or hours involved:

Amount of overtime paid \$ _____

Number of days or hours involved:

_____ days
or

_____ hours

(4) If you were paid a bonus in the last year (2010), please indicate the amount.

\$ _____

(5) Please indicate the number of hours that you worked above a normal 40 hour (or 37.5, 35 hour) workweek that was not compensated.

_____ Hours
(6) Please indicate the number of days you took off in 2010 and were paid:

Vacation _____ days

Sick Leave _____ days

Holidays _____ days

Jury duty _____ days

Military duty _____ days

Paternity leave _____ days

Other _____ days

(7) Please indicate any days you took off in 2010 for which you were not compensated (e.g., paternity leave, military, etc.) _____ days

(8) If you joined the library staff in 2010, indicate the number of months you have worked there. _____ months

THANK YOU!

APPENDIX D

INSTRUCTIONS FOR FILLING OUT THE ACTIVITY LOG

The purpose of the Activity log is to determine what activities related to serials you have performed in the last year (2010) and to indicate how much time you spent on these activities. To help you identify all of the activities that you did which were related to serials, we have included a list of activities and a code for each activity.

Please look through the list and select the activities that best describe what you do, especially as it relates to your work with serials. Make a note by any activity which you do **over the period of a year in any capacity of your library job.**

Record the activity code number, located to the left of the activity and a brief description of the activity, and whether it relates to print (P) or electronic (E) journals or books on the Activity log, recognizing that sometimes it will be both (P and E). If the print and electronic distinction is not relevant, place a (0) on the form in this area. For any activities which you perform that are not included on the numbered list (but which are related to serials), record them at the bottom of the log and number them beyond the last number given on the list.

Record the proportion of time you spend annually **at work** performing each activity. Do not include time when you are not at work such as vacation, holidays, etc. As a guide, if you work full-time, one week is about 2% of your time. Two 15 minute coffee breaks each day account for about 6% of your time over the course of a year. On the next page is a guide for converting actual time spent to a percentage of total time.

In past studies, it has been useful for the participants to first record the percentages of time for the activities they did not perform regularly, such as something you do once or twice a year; then calculate the numbers for coffee breaks, meetings, professional development and so on, and then record the percentages for your regular activities.

Don't worry about listing the activities in any particular order on your form.

If you only work with serials for part of the day (say, half the day in serials cataloging, the other half in general reference), please state the percentage of general reference time and all other non-serials activities on the last lines of the log and calculate all percentages accordingly.

Be sure the percentage column totals 100%.

Please give your name at the bottom of each form you fill out so we can relate to the staff basic data form.

These surveys will be kept confidential, and only aggregated numbers will be used for analysis.