Rachel C. Lerner. A Study of Librarian Employment Trends from 1997-2009. A Master's Paper for the M.S. in L.S degree. April, 2011. 70 pages. Advisor: Deborah Barreau

This study looks at Bureau of Labor Statistics data from 1997-2009 for the occupational classification "Librarian" and attempts to identify trends among librarian employment, total national employment and national population data. The librarian employment statistics are categorized into special, academic, government, and school librarians and compared to each other as well as national employment and population figures. While national employment began to dip sharply in 2008, total librarian employment did not reflect as sharp a fall. Librarian employment had seen steady growth since 2005, although in 2008 their numbers did began to fall. Regardless of said growth, librarian job growth has not kept pace with the national population growth over the 13 years studied. The study closes with a discussion speculating as to why trends are so difficult to identify, and how librarian educators can respond to the seeming lack of job growth in the industry.

Headings:

Librarians -- Careers

Librarians -- Supply and Demand

Education for Librarianship

Librarians -- United States of America

A STUDY OF LIBRARIAN EMPLOYMENT TRENDS FROM 1997-2009

by
Rachel Charlotte Lerner

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Approved by:

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Introduction

In a 2000 editorial in *The Journal of Academic Librarianship*, James Matarazzo, then Dean of the Graduate School of Library and Information Science at Simmons College, wrote "In truth, no one pays attention to the human resources supply and demand in a consistent manner" (Matarazzo, 2000). He goes on to state that in the past 4 decades there appear to have been 3 librarian shortage periods and 2 librarian surplus periods (Matarazzo, 2000). In order to determine the state of the market, employment patterns, and trends in the demand for librarians, consistent evaluation of historical and current data must take place. As librarians diversify into careers beyond libraries (due in part to both the economy and the need for personal or company information managers/researchers in an increasingly digital age), understanding employment trends becomes even more important for educational curricula, school recruiting, and job seeking. A comprehensive understanding of where librarians are working and how many librarians are actually in the workforce (whether or not they actually hold a position with the title of librarian), can be utilized to impact how new librarians are educated, who and how many people are recruited into library programs, and how and where we teach people to look for employment.

This Study

The purpose of this study is not to perform a comprehensive supply/demand analysis, nor is it to collect demographic data on graduates regarding where they are working and why. Rather, this study aims to look at retrospective data from the Bureau of

Labor Statistics (BLS) for those whose professional position is labeled "Librarian" by the Occupational Classification Codes used by the BLS within the United States of America, and, if possible, identify trends over a 13-year period from 1997-2009. The statistics gathered will be discussed in relation to national employment and population data for the same years. The librarian data will also be broken down by industry sector (special, academic, public, and government libraries), and the resulting trends will be reviewed against the national employment and population rates. This is an exploratory study; it is not meant to prove a single hypothesis. Instead, it is a longitudinal study on the employment rates and industries of librarians with the threefold goal of identifying reasonable estimates for how many librarians were and are in the workforce, identifying the industries in which they work, and seeking trends or patterns in that data as it relates to national employment and population data.

Background

While Matarazzo may be correct about the lack of consistent evaluation of data, methodology, and regular assessment intervals, there have been a variety of studies in the past 40 years that attempt to capture and evaluate employment data. Unfortunately, one of the most significant deterrents to studying this topic is that there is no single, comprehensive data source. Librarians have no ongoing licensing requirements after earning their professional degrees; therefore, there is no systematic means by which to collect the complete and accurate employment data of all library practitioners (Marshall, Marshall, Morgan, Barreau et al., 2009a; Marshall, Marshall, Morgan, Barreau et al., 2009b). Most studies rely either on survey data and data from the BLS, or else on other census data. Survey data can, of course, be extremely helpful, but it cannot always be

scaled to represent the entire librarian community. Arguably, the most well known survey is the annual *Library Journal* survey of new graduates and their job market. Larry Hardesty analyzed all of the *Library Journal* surveys from 1991-1999 and found that the data consistently accounted for less than half of all library school graduates in any given year (Hardesty, 2002). BLS and census data also have imperfections: this data offers employment approximations by occupation and industry; however, librarians have been branching out from working in libraries and accepting titles other than librarian for quite some time. These workers are often overlooked in census and BLS data (Marshall, Marshall, Morgan, Barreau et al., 2009b). Despite this shortcoming, the BLS is the main source of data for this study. There is a precedent for using such data, as will be seen in the coming discussion, and the data's weaknesses and strengths will be reviewed more thoroughly in the following methodology section.

This section will begin with a review, by decade, of some of the most relevant studies. Following that will be a discussion about why the topic should be studied, as well as the difficulties and deterrents in attempting to investigate this topic.

The '70s

The preeminent study of library employment trends in the 1970s was the BLS study spearheaded by Anne S. Kahl and Mary I. De La Vergne entitled *Library Manpower: A Study of Demand and Supply* (1975). The study was co-sponsored by the BLS and the U.S. Office of Education. The goals of the study were the "identification and analysis of factors which influence manpower needs, and the development of projections of demand for library personnel" (Kahl & De La Vergne, 1975). The BLS study contextualized the need for research of this kind by citing the 1967 announcement by the

American Library Association of a librarian shortage crisis; the shortage was due in part to high federal support for libraries at the time. As a result, there was an increase in recruitment to library schools, but, starting in the 1970s, budget shortages led to fewer jobs and too many librarians (Kahl & De La Vergne, 1975). The study sought to project library supply and demand through 1985, and provided a "comprehensive view" of the profession (Kahl & De La Vergne, 1975). There were two main data groups – statistics from a variety of literature including the U.S. Office of Education, the U.S. Census, and the BLS, and 100 interviews with library heads, administrators, personnel officers, etc. The interviews were conducted to uncover "staffing patterns, job functions, education and training needs, and manpower problems in the library field" (Kahl & De La Vergne, 1975).

The study found that there would be slow growth for the librarian profession between 1970 and 1985 – a growth of 41% for professional librarian employment and 77% for paraprofessionals.

Figure 1: Table of Projected % Growth in Workforce Employment: 1970 - 1985*

	1970	1985	Percent Growth
Librarians	115,000	162,000	41%
Paraprofessionals	120,000	212,000	77%

**(Kahl & De La Vergne, 1975)*

It was predicted that growth in the 1970s would be the slowest – most of the growth would be exhibited from 1980-1985. In addition, it was determined that the majority of open positions available would be the result of replacement needs rather than new positions. It was projected that three quarters of job openings would be replacement positions during 1970-1985, as compared to the 1960s when less than half of the positions available were due to replacements. Between 1960 and 1970, new graduates

were hired for 40% of job openings; between 1970 and 1985, it was estimated that new graduates could be hired for 80% of open positions. The study concluded that the market would be competitive, especially for librarians reentering the field. Additionally, it was observed that with the surplus of new librarians, experienced librarians and managers would be in demand (Kahl & De La Vergne, 1975).

The '80s

In her 1984 study entitled *Projections of the Supply of Librarians,* Nancy Van House attempted to predict the number of librarians that would enter the profession, as well as their salaries, through 1990. She endeavored to use the economic theory of occupational choice, which, she writes, is "concerned with the effects of changes in monetary costs and benefits on the individual's decision to enter an occupation" (Van House, 1984). Van House cited declining rates of library school graduates and the closure of some library schools (perhaps in response to the librarian surplus of the 1970s and early 1980s) as a justification for projecting future librarian supply to prevent a new shortage (Van House, 1984). Van House coupled her intermediate projections (created with a complex system of predictive algorithms) with Michael Cooper's intermediate demand projections from another 1984 study, *Projections of the Demand for Librarians in the United States* (Cooper, 1984), to create a table of projected supply versus projected demand:

Figure 2: Supply and Demand Projections, 1983 - 1990

Year	Job Openings*	Additions to Supply**
1983	10,700	10,300
1984	9,600	10,300
1985	9,500	10,300
1986	8,900	10,300
1987	9,800	10,400
1988	10,300	10,400
1989	9,800	10,500
1990	10,500	10,500

**(Vanhouse, 1984)*
***(Cooper, 1984)*

Van House determined that there would be fierce competition for a small number of jobs (especially those at the entry level), and that employers with empty positions would have a large pool from which to choose due to the continued projection of more new librarians than open positions (Van House, 1984). Furthermore, she wrote that librarians would need to look to the non-library market for jobs to supplement the demand for traditional librarians – she cited *Library and Human Resources Study* data indicating that while only 5% of graduates choose non-library positions immediately following school, 9% of those who leave one job for another choose to take non-library "information professional" positions (Van House, 1984). Ultimately, she concluded that the employment outlook was not encouraging; however, the outlook was better than 10 years prior (Van House, 1984). She concluded with the caveat that projections depend on assumptions, and that every projection has a margin of error (Van House, 1984).

Cooper's 1984 study, *Projections of the Demand for Librarians in the United States,* studied the demand for librarians from 1983-1990 (Cooper, 1984). Cooper looked at 5 areas of librarianship: public, school, academic, special, and non-library "information positions." He used current and past statistical data from a number of sources, including

the BLS, the Employer Survey, and the Estabrook and Heim Surveys. Projections were made by performing mathematical computations that accounted for numerous other variables such as birthrate, economic health, and graduate enrollment. While each library sector had unique projections, he concurred with Van House's overall bleak outlook and predicted that there would be very few new positions created during that timeframe: the major source of open positions would be librarians leaving their jobs (Cooper, 1984). Like Van House, however, he did find that non-library librarian positions presented one area of job growth. Interestingly, he concluded the paper by positing that in order for new librarians to be able to secure these non-traditional library positions, library schools needed to refocus the curriculum to emphasize different types of skills and training (Cooper, 1984).

Both Van House and Cooper worked on the 1983 *Library Human Resources: A Study of Demand and Supply* report spearheaded by Nancy Roderer and King Research, Inc., and commissioned by the National Center for Education Statistics. This report endeavored to project librarian supply and demand through 1990, and was intended to both report its findings and to serve as an "early warning system for labor market imbalances" (Roderer, 1983). The study used a combination of survey data and statistics from the BLS along with their own regression models. They found that circa 1980, there were roughly 131,000 librarians in the workforce: 48% school librarians, 23% public librarians, 15% academic librarians, and 14% special librarians (Roderer, 1983). Roderer et al. projected limited growth – it was estimated that by 1990, there would be an employment increase of only 7,000 librarians (Roderer, 1983). Similarly, the projections for demand were modest at best: small increases in the 80s that were expected to level off

by 1990, certainly less growth than was shown in the 1970's (Roderer, 1983). The authors, in concurrence with Cooper and Van House's solo studies, suggested that educators work to include training for alternative careers into librarian educational curriculums as one response to the lack of job growth (Roderer, 1983). It should be noted that some researchers questioned the validity of some of the data from the Roderer study. Matarazzo (2000) wrote in the same editorial piece referenced earlier:

> A 1982 King Research Study…offered a projection of supply and demand for professional librarians through 1990…The 1980 census data were not available for the King Research project, so the baseline census data on the number of librarians in 1980 was not included in the report. The King investigators did discuss the material collected by the *Current Population Survey* of BLS, which placed the number of librarians in 1980 at 182,000 and explained the reasons these data were not selected….Because I had responsibility for recruiting and placement…I called, as soon as the King report was published, the Bureau of the Census for its 1980 data…I was provided the data I believe is the key to the problem before us. The census data for 1980 reveals 183,000 working librarians. One year later, the Census of Population publication, *Earnings by Occupation and Education*, provided confirmation to the higher number – a number nearly 50,000 higher than that of the King data (Matarazzo, 2000).

Current Studies

Two North Carolina-based studies out of the University of North Carolina, Chapel Hill School of Library and Information Science were conducted between 2005 and 2009. The Workforce Issues in Library and Information Science I and II studies sought to capture career and employment data from program graduates (both what they were doing and why), as well as develop a model by which other institutions could reproduce the study (Marshall, Marshall, Morgan, Barreau et al., 2009a; Marshall, Marshall, Morgan, Barreau et al., 2009b).

The WILIS I study looked at six North Carolina library schools; a survey was constructed and graduates from 1964-2007 were invited to participate in the study. Based on their answers, respondents were asked a series of questions that (depending on the

respondent) could include: education, career outline, job detail, life and work, overall career, continuing education, trends in LIS, and, for recent graduates, a section that asked questions about their specific LIS program. Of the graduates that received a library science degree, 80.2% were working in a library setting, and 9% were working in a non-library setting using library skills (Marshall, Marshall, Morgan, Barreau et al., 2009a). There was a roughly 35% response rate to the study (2,552 people out of 7,566), and of those still working, it was discovered that 497 were school librarians, 306 were public librarians, 467 were academic librarians, 245 were special librarians, and 546 were not working in a library setting (WILIS I Study Team, N.D.). This information is helpful, particularly for the schools surveyed, but there is no real way of knowing whether this data is scalable to the entire librarian population.

The WILIS II study, which is still active, seeks to test the WILIS I instrument on a wide range of institutions in order to build a shared reporting system based on the "community-based participatory research approach" that would serve to track the careers of library school graduates (Marshall, Marshall, Morgan, Barreau et al., 2009b). The survey will be rolled out in three phases and currently includes 42 schools across North America (*Workforce issues in library and information science: Participating LIS programs, N.D.*). The 2009 article that introduces the WILIS II study also reports that this type of demographic, employment, and trend data is sorely needed – both the WILIS I & II studies also surveyed the heads of Library and Information Science departments and found that 56% of responding programs reported dissatisfaction with their current alumni tracking, and that a mere 3% were "very satisfied with their ability to maintain these [alumni] records"(Marshall, Marshall, Morgan, Barreau et al., 2009b). Most programs

(95%) wanted alumni employment data to help with accreditation; other uses were for curriculum development (88%) recruiting (88%) and benchmarking (75%) (Marshall, Marshall, Morgan, Barreau et al., 2009b).

A final notable study published in 2010 used BLS and American Community Survey statistics to obtain national, state and demographic data for librarians, library technicians, and library clerical staff. It found that 91% of librarians are concentrated in three industries: libraries and archives, elementary and secondary schools, and higher education (Manjarrez et al., 2010). These findings coincide roughly with what was discovered through the WILIS I study in 2009. Manjarrez et al. point out that the Bureau of Labor Statistics Occupational Outlook Handbook estimates that over the next 10 years, there will be an 8% growth in the industry, with a projected 172,400 librarian positions by 2018. However, that projected growth rate runs contrary to the lack of growth in librarian employment for the previous 8 years (the time frame of the study) (Manjarrez et al., 2010). Manjarrez et al. theorize that perhaps librarians were hit particularly hard by the current economic downturn (Manjarrez et al., 2010). Despite these grim findings, it is noted out that even if the number of jobs merely remains steady, and the current yearly graduation rate of new librarians stays level at approximately 6,700 for the next 10 years, then "age-based attrition will likely outpace the supply of newly trained librarians entering the field" (Manjarrez et al., 2010). This is predicated, though, on the idea that librarians will be able to retire when they reach retirement age despite the current economic climate.

Why Study This?

Knowing the size and composition of any occupation's workforce has a great impact on how we educate new librarians. A better understanding of the availability of jobs in certain sectors might impact librarian education so that courses may be taught to cover skills needed to obtain work in any burgeoning sub-field. Similarly, if a particular sub-field seems to be reducing its workforce, then this should be reflected in librarian education as well as school recruitment efforts. Diversification and segmentation of the librarian workforce and its impact on education will be reviewed in further detail later in the discussion section of this paper, with respect to the data gathered. Nonetheless, understanding employment trends of librarians can help to provide targeted education reform, and an ever-evolving set of metrics (as jobs are created and dissolved) by which to gauge the relevance of current educational offerings.

Consistently across the literature regarding employment trends for the librarian workforce, there is mention of both the age of the workforce and the potential for job openings due to retirements. As of 2008, there are 78,000,000 baby boomers employed nationally across all occupations in America that are slated to reach retirement age and stop working over the next 20 years (Dohm, 2000). With the current average age of librarians at about 47 (Dohm, 2000), it was projected that between 1998 and 2008 about 39,000 jobs would be available due to retirements or people leaving the profession (Crosby, 2001). (It is important to note, though, that in 1975, the average age of a librarian was 45 – a number remarkably similar to the current average age [Kahl & De La Vergne, 1975].) In a recent study, Lynch projected that between 2010 and 2020, 45% of librarians will reach retirement age (Lynch, 2000). Similarly, the Dohm study concluded that the baby boomer workforce exodus would influence national employment from

2009-2018 (Dohm, 2000). Lynch concurred, adding that librarian retirement projections would be most significant from 2015-2019 (Lynch, 2000). The WILIS I study found that roughly 23% of librarians surveyed did not plan to work past the age of 65, and that roughly half of those surveyed who would have been 62 and older expected to retire within 5 years (Marshall, Marshall, Morgan, Barreau et al., 2009a). Studying employment patterns, then, becomes even more important in the wake of a potential surge in job opportunities – understanding growth trends becomes key to assessing how many new jobs are being created versus how many are vacant because of retirement.

In 2009, as a response to the predictions being made concerning the multitude of retirements on the horizon, Robert M. Stearns wrote in *American Libraries*, "Were I to play Nostradamus, I'd predict that most of these retirements of people will include the retirements of the of the positions themselves: Goodbye person, goodbye job is not an uncommon practice during library budgetary crises" (Stearns, 2009). Economic crisis is yet another reason for studies such as this. Stearns concludes his conjectures by writing that many people who reach retirement age might not be able to afford to retire, regardless of what their plans might have been (Stearns, 2009). While the government projected job growth for librarians at about 5% between the years of 1998-2008, this was lower than the average occupational job growth for the nation (Crosby, 2001). In addition, the 2010 study of BLS data of the entire library profession (including library techs, library clinicians, and the larger "education and library-related disciplines" categories) demonstrated that library techs and clinicians have consistently shown a higher growth rate than professional librarians (Manjarrez, Ray, & Bisher, 2010). The lagging job growth rate and the increase in library techs and clinicians, coupled with the

current economic situation, make it imperative to comprehensively understand the trends of library employment as a whole and by sub-genre. Either a supply shortage or overage could prove crippling in the uncertain job market ahead; remaining abreast of statistics and trends will help make the profession stronger, and help educate new librarians according to market trends.

Methodology

The goal of this paper is to identify and evaluate *trends* in librarian employment over time; it is neither to evaluate industries as stand-alone entities nor to recommend specific industries to emerging librarians. The data is being used to understand the lay of the land and, in conjunction with population and broad national employment statistics, to evaluate the growth of the profession.

About the Data

All data regarding librarians for this project was gathered from Occupational Employment Statistics (OES) distributed by the U.S. Bureau of Labor Statistics (*Occupational employment statistics home page,* 2010.). The data reflected in this paper ranges from 1997-2009; this is also the range of years that offers consistent OES data. Data is available going as far back as 1988, but it is inconsistent, as all industries were not polled each year prior to 1997.

Traditionally, OES data is used to look at employment and wage data at a single point in time using various methods of separating and organizing the data – by state, area, or industry. By their own admission, OES does not employ a single, consistent methodology to collect the data, and therefore does not always encourage researchers to use the data for longitudinal studies. What follows are the prominent problems with the

data, as defined by the Bureau of Labor Statistics. How these changes influence the data for this particular study is also included:

Changes in occupational classification – Before 1998, the OES had a proprietary means by which to code occupations. Between 1999 and 2003, the change to Standard Occupational Classification was still in progress and as such, some occupations had their codes changed on a yearly basis while the crosswalk was perfected. Librarians are classified as 31502 in the old system until 1998; in 1999, the occupational code was immediately switched to 25-4021 and remains steady until at least 2009 (the last year of available data). The occupational classification change did not affect librarian data significantly (*Occupational employment statistics frequently asked questions,* 2010).

Changes in industrial classification – Before 2002, OES data used the SIC (Standard Industrial Code) to codify their industries. In 2002 and in all subsequent years, NAICS (North American Industry Classification System) codes are used to classify industries in the data. While for some of the industries that employ librarians, this simply means finding a single equivalent code for an industry (e.g., Elementary and Secondary Schools have a one-to-one correspondence between SIC and NAICS codes – 8350 and 624400 respectively), for other industries, the mapping is far more complex. For example, the SIC industry "2730 - Books" maps to the NAICS industries "511100 - Newspaper, Periodical, Book, and Directory Publishers" as well as "323100 – Printing and Related Support Activities." This is simple enough, except that SIC "2750 – Commercial Printing," "2740 – Miscellaneous Printing," "2720 – Periodicals Publishing, or Publishing and Printing," and "2710 – Newspapers Publishing or Publishing and Printing" all also map to those two NAICS codes. Not all industries have a one-to-one

correspondence, and therefore larger, less specific groupings must be made to obtain reasonably accurate longitudinal data (*Occupational employment statistics frequently asked questions,* 2010). For the purposes of this study, a SIC/NAICS crosswalk was generated that clustered the data into reasonably analogous groups (see Appendix C).

Changes in Geographical Classification – In 2005, the OES changed how they classify metropolitan areas. Because this study does not take the librarians' location into account, this issue has no bearing on the data (*Occupational employment statistics frequently asked questions,* 2010).

Changes in the Way the Data are Collected – Prior to 2001, if an employer had a worker in a job not listed on their census form (which is tailored to each industry), those workers were listed in an "other" category on the form. After 2001, more information was requested about workers who could not be categorized on the given form, which possibly results in more reported workers in any given industry. Additionally, changes to the form can cause workers to be classified differently from year to year (*Occupational employment statistics frequently asked questions,* 2010).

Changes in the Survey Reference Period – In 2002, the survey dates were changed from October, November, and December to May and November. This could affect the count of seasonal workers, but steady professions such as library work should not see significant data discrepancies because of this change (*Occupational employment statistics frequently asked questions,* 2010).

Changes in Mean Wage Estimation Methodology – In 2002, methods for calculating wages changed – because this study looks only at employment numbers, this

change is unrelated to the data (*Occupational employment statistics frequently asked questions,* 2010).

The OES Methodology – The OES methodology assumes slow employment changes over time, and the data collection processes reflects that assumption.

> In order to produce estimates for a given reference period, employment and wages are collected from establishments in six semiannual panels for three consecutive years. Every six months, a new panel of data is added, and the oldest panel is dropped, resulting in a moving average staffing pattern…This methodology assumes that industry staffing patterns change slowly and that detailed occupational wage rates in an area change at the same rate as the national change in the ECI wage component for the occupational group. The use of 6 data panels to create a set of estimates means that sudden changes in occupational employment or wages in the population or changes in methodology show up in the OES estimates gradually (*Occupational employment statistics frequently asked questions,* 2010).

Despite these potential problems, data from the BLS OES is used in this study. The OES does concede that "…[longitudinal] comparisons of occupations that are not affected by classification changes may be possible if the methodological assumptions hold" (*Occupational employment statistics frequently asked questions,* 2010). While the industries that employ librarians might be affected by the SIC/NAICS classification change, the switch did not affect the librarian occupational code, so librarians, regardless of their industry title, remain identifiable.

Finally, and perhaps most importantly, the scope of the data offered by the OES is virtually impossible to obtain through traditional surveys. Librarians are employed in all corners of the workforce; finding a truly representative sample of the entire population to survey is difficult at best. Though the statistics offered by OES have their problems, for the purposes of this paper – identifying trends in employment in relation to the national employment and population over time – this is the best set of data available.

All of the data in this paper is collected and distributed by the U.S. Government. One may access (via download) different types of data at different levels of granularity. SICS and NAICS codes are hierarchical structures, moving left to right in specificity. The more zeros found at the end of the code, the less specific the occupation. Inheritance occurs up and down the hierarchy tree. Data from the years 1997-2001 are available at the 2-digit SIC code level (where only the first 2 digits of the code are indexed and all levels of the tree below those two digits are combined) and at the 3-digit SIC code level (same as the 2 digit, but with the granularity expanded to 3 digits). From 2002 forward, data is available at the 3, 4, and 5 digit NAICS code level. See Appendices A and B for examples of the SIC and NAICS code structures.

Gathering and Grouping the Data

From 1997-2001, data parsed at the 3-digit SIC code level was employed; from 2002 forward, the data used was parsed at the 4-digit NAICS code level. These levels of generalization were chosen because in each respective coding system the level selected distinguishes between major occupations while at the same time grouping together subgenres of occupation.

The data sets were downloaded from the Occupational Employment Statistics page of the Bureau of Labor Statistics website (*Occupational employment statistics home page,* 2011) as Microsoft Excel spreadsheets. Data was sorted by Occupational Classification Code and librarian-specific data were selected and placed into a new document. Occupations classified as archivists, media specialists, library assistants, and library techs were not included in this study. Once the librarian-specific data was separated from the original dataset, totals for each year were calculated.

The challenge then became to group the data in a meaningful way. At first, large, sweeping groups were created such as "government," "money," and "education." However, when analyzing the data after creating these groups, two problems were identified. First, there were too many items in the "miscellaneous" category – since the SIC and NAICS codes should have rough equivalents, it did not seem appropriate for there to be so many industries that could not be categorized. Additionally, in some of the larger categories, gaps in the reported data seemed to be creating more fluctuation in the employment numbers than seemed reasonable. For these reasons, a second (and, in hindsight, more calculated) approach was taken to grouping the data.

Looking at the category names from the SIC codes and the NAICS codes, there were correspondences: obvious groups that belonged together such as "541300 – Architectural, Engineering, and Related Services," and "8710 – Engineering, Architectural, and Surveying." It was hoped that that correspondence would be scalable to all of the fields with the use of a SIC/NAICS crosswalk. The NAICS website hosts an online SICS/NAICS crosswalk (www.naics.com/search) which was used to identify corresponding codes and to segment the data. This created more meaningful groupings, the result of which was more continuity within industries despite the 2002 industrial classification change. Although the online database greatly aided in creating the new groupings, the crosswalk is not perfect – there is quite a bit of cross-pollination among categories (more than one SIC code maps to a particular NAICS code or vice versa). This is especially prevalent with the support and consulting occupations. In these cases, the occupations were placed into the most logical categories. It is important to remember that while this might impact individual occupations, these issues have no effect on the total

librarian counts for each year. With logical groups created for the data, yearly employment counts for each group were tabulated. The full results can be seen in Appendices C and D.

The final step to creating usable data was to categorize the industries so that data could be represented in large chunks rather than by industry. While the initial effort endeavored to use the relatively standard breakdown of academic, school, special, public, and "other" libraries, this was not possible, as public librarians are combined with government librarians in the BLS data (as both technically work in government libraries). In light of that setback, it was decided that the categories used would be Academic, School, Government, and Special libraries. The first three sectors were fairly straightforward, and the corresponding industries were easily identified. All other industries were classified under special libraries. A full breakdown of where each industry was placed can be found in Appendix E.

Two secondary sets of data were collected to contextualize the librarian employment statistics. Population data was collected from the website of the U.S. Census Bureau, Population Division (*U.S. Census Bureau Population Estimates: Annual Population Estimates 2000 to 2009, 2010; Historical National Population Estimates: July 1, 1990 to July 1, 1999*, 2000). They provide downloadable tables of current and historical population estimates, and data is available by the decade. There is a slight jump in the population estimates between 1999 and 2000, as the base number used to create the estimates was shifted from the 1990 base to the 2000 base and estimates were adjusted. Also collected were national employment statistics for the entire population (all professions). These data were gathered from the same set of documents as the librarian

statistics, which were provided by the Bureau of Labor Statistics website (*Occupational employment statistics home page,* 2011).

Normalizing the Data

The data collected needed to be normalized in order for the data to be analyzed in context with each other. In other words, not all the data had the same frame of reference. For example, if 25 people were stabbed one year in city A and 30 people were stabbed in city B in the same year, how would one compare the stabbing rates of the two cities to determine which was more dangerous? It would, of course, depend on the population of the cities. In order to compare those numbers to determine if one city is more dangerous than the other, the stabbing rates must be standardized in relation to the population of their cities. So if city A has 10,000 people and city B has 30,000, then the stabbing rate per 10,000 people for city A is 25 and city B is 10, making city B a less dangerous city (Neuman, 2006).

In the same fashion, context was imposed upon the raw data collected for this study in order to find trends, analyze growth or decay, and derive meaning from the numbers. Choosing a base by which to standardize or normalize data is often difficult. For this study, it was decided that because the data was collected from only two sources, the numbers ranged from 10 to the hundred millions, and because we are mainly interested in seeing trends of growth and decay, the data would be normalized against itself. The result of this is that the first year of each category with data reported has a ratio of 1. This was achieved by dividing that first value by itself. Each subsequent value was then divided by that first value. When the first reporting value from each category is standardized to 1, then the data can be looked at in proportion to one another. This way, if

an industry that begins with 50 positions has only gained 10 jobs over a year, we can see if it is proportionally similar to the growth of an industry that begins with far more positions. The normalized numbers were truncated to two decimal places.

The normalization process was completed in two stages: first on a macro level, with the full employment statistics for all librarians and all occupations, as well as for the overall population data, and then on a micro level for each of the library sectors created and each of the industries clustered within the librarian employment data. The full results of this process, along with the raw data, can be seen in Appendix D and Figure 6. A sample of the normalization process is seen below (Figure 3):

Figure 3: Example Normalization Process: Higher Ed

Year	Raw		Normalized
1997	21,830	21,830/21,830 =	1.00
1998	21,900	21,900/21,830 =	1.00
1999	21,350	21,350/21,830 =	0.98
2000	22,540	22,540/21,830 =	1.03
2001	23,290	23,290/21,830 =	1.07
2002	24,200	24,200/21,830 =	1.11
2003	24,790	24,790/21,830 =	1.14
2004	24,990	24,990/21,830 =	1.14
2005	24,470	24,470/21,830 =	1.12
2006	24,770	24,770/21,830 =	1.13
2007	23,970	23,970/21,830 =	1.10
2008	24,460	24,460/21,830 =	1.12
2009	25,000	25,000/21,830 =	1.15

Results

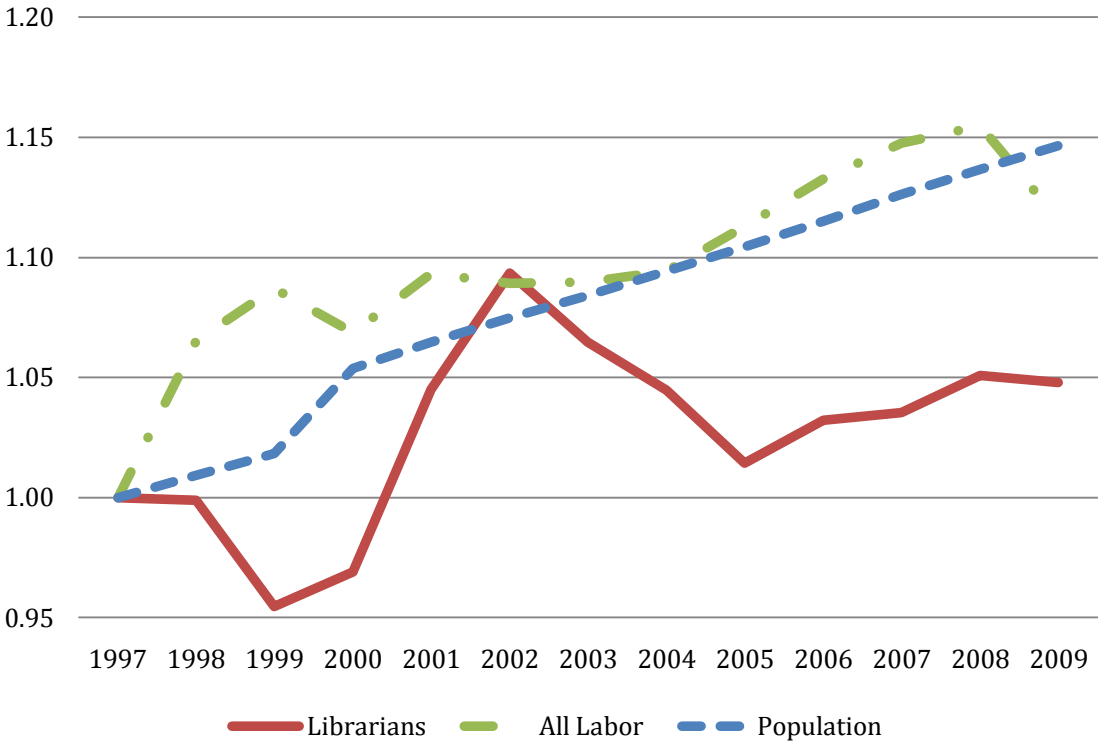
Total Librarian Employment and Population

While national employment dipped sharply and quickly following 2008 (perhaps as a result of the economic recession), the total librarian employment did not reflect as sharp a fall: -.03 (all labor) versus less than -.01 (librarians) using the normalized data.

However, librarian employment did decrease tremendously between 2002 and 2005 – a -.08 fall (over 11,000 jobs lost) – while national employment experienced a slight increase over the same period. Since the 2005 low, librarian employment has shown slow but steady growth, between .01 and .02 per year, until 2008. Furthermore, 1999 presents the lowest figure for librarian employment in the years studied: .95 (roughly 136,000 jobs) while total national employment is reported at a relative high of 1.09. From these results, it seems as though national employment does not parallel overall librarian employment. In some cases, especially between 1998 and 2005, there are points of opposing growth – where there is growth in one, there is decline in the other. A noteworthy point, depicted in the graph below (Figure 4), is that while population growth is consistent and national labor (though it experiences peaks and valleys) generally keeps pace with population, librarian employment rates exhibit almost no consistency in this regard – librarian employment at a glance seems unpredictable when compared to population and national employment.

As mentioned earlier, OES data collection underwent a change in methodology after 2001 – census forms given to industries allowed for further clarification of job duties to those employees assigned the "other" classification. The Department of OES warns researchers that industry employment data might exhibit a rise in 2001 because of that change. Librarians did experience a .04 increase from 2001-2002, but employment was on a course of growth consistent with those numbers, starting the previous year.

Figure 4: Librarian Employment, National Employment, and Population Trends: 1997 - 2009



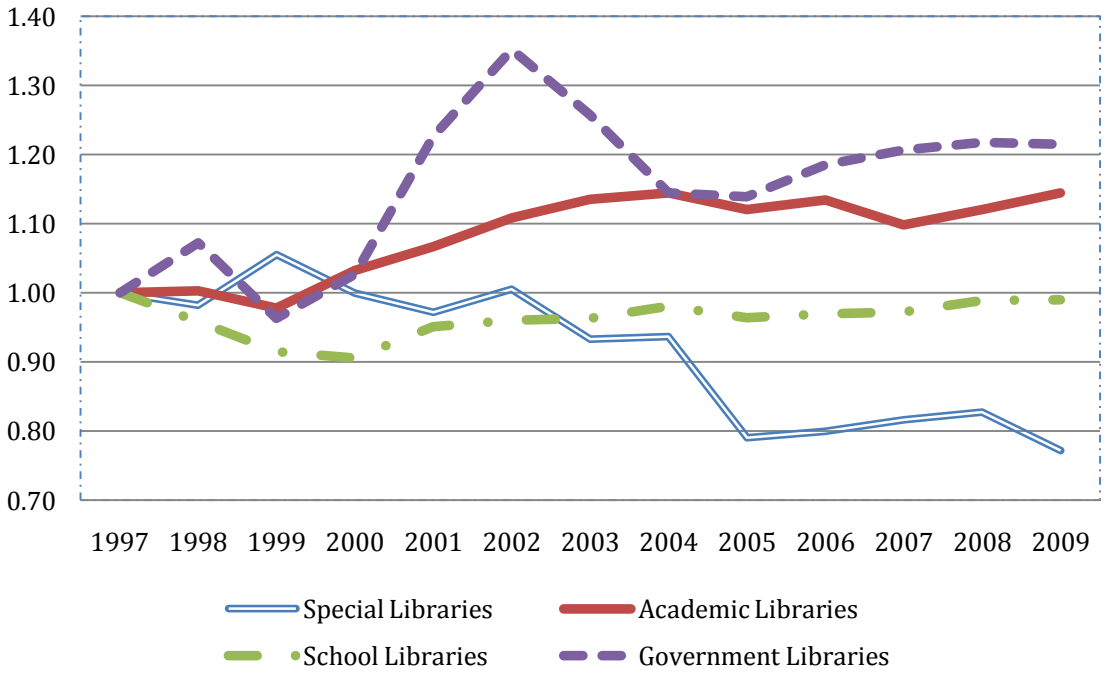
Irrespective of the current slow job growth (notwithstanding the 2008-2009 dip), the number of librarians in comparison to the overall population is dropping. As of 2009, there are fewer librarians per 10,000 people (4.87) than there were in 1999 (5.00), when there were the fewest recorded librarians employed in the survey period. Since the high employment rates of 2002 (5.42 librarians per 10,000 people), the number of librarians per 10,000 people has been steadily declining almost every year – what little growth in the number of employed librarians is seen here is offset by the fact that that growth is not keeping pace with that of the general population.

Figure 5: Librarians per 10,000 People: 1997 - 2009

Year	Librarians Per 10,000 People
1997	5.33
1998	5.27
1999	5.00
2000	4.90
2001	5.23
2002	5.42
2003	5.23
2004	5.09
2005	4.89
2006	4.93
2007	4.90
2008	4.93
2009	4.87

Figure 6 compares the growth of the main library sectors (special, academic, school, and government) against each other. It can be seen that the fastest falling sector is special libraries, while government libraries remain the largest employers of librarians (with academic libraries close behind). A more in-depth look at the results and trends of each of these four sectors follows.

Figure 6: Librarian Employment Trends by Library Type: 1997 - 2009



Year	All Librarians	All Labor	Special Librarians	Academic Librarians	School Librarians	Government Librarians
1997	1.00	1.00	1.00	1.00	1.00	1.00
1998	1.00	1.07	0.98	1.00	0.96	1.07
1999	0.95	1.09	1.06	0.98	0.92	0.96
2000	0.97	1.07	1.00	1.03	0.91	1.03
2001	1.05	1.09	0.97	1.07	0.95	1.23
2002	1.09	1.09	1.01	1.11	0.96	1.35
2003	1.06	1.09	0.93	1.14	0.96	1.26
2004	1.04	1.09	0.94	1.14	0.98	1.14
2005	1.01	1.11	0.79	1.12	0.96	1.14
2006	1.03	1.13	0.80	1.13	0.97	1.19
2007	1.04	1.15	0.82	1.10	0.97	1.21
2008	1.05	1.15	0.83	1.12	0.99	1.22
2009	1.05	1.12	0.77	1.15	0.99	1.22

Special Librarians

Special libraries, here defined as any workplace that employs a librarian that is not an academic, school, or government library, account for the smallest percentage of

librarian employment for all 13 years surveyed. Beginning at about 12% of all positions and reducing to slightly less than 9% of all positions between 1997 and 2009, special librarians cover a wide range of industries and non-traditional library positions (see Appendix E). This is an especially difficult population to identify and survey because in many circumstances special librarians do not use the title of librarian, though they hold an MLS.

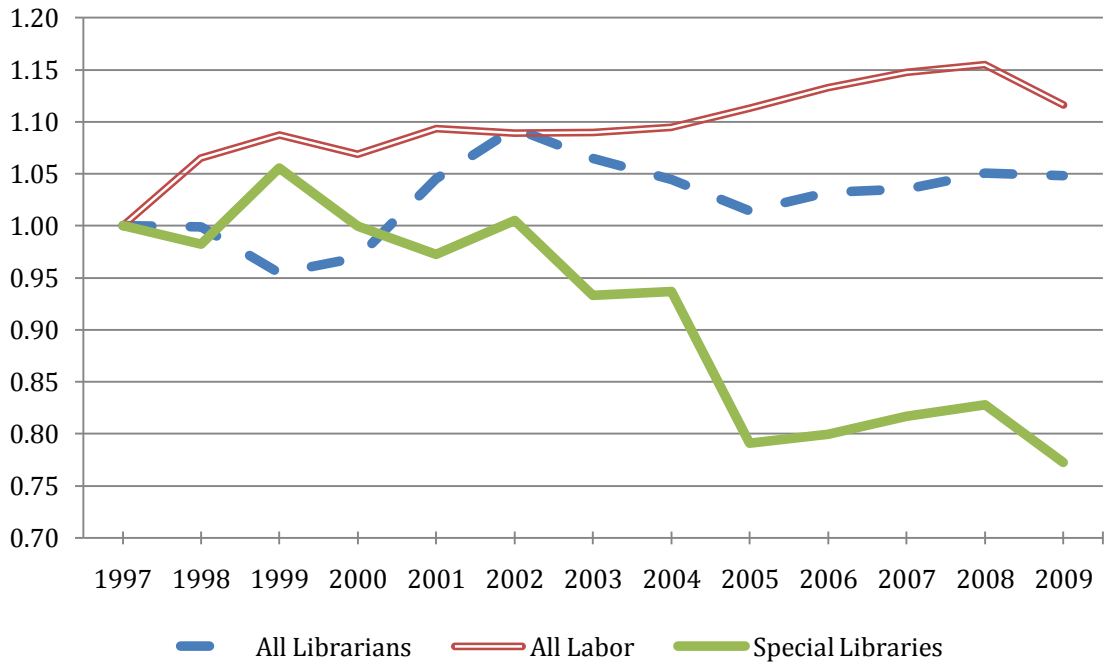
Figure 7: Table of Special Librarian Employment as a Percentage of Total Librarian Employment

Year	Special Librarian Employment – Raw Numbers	Special Librarian % of Total Librarian Employment
1997	17320	12.14%
1998	17020	11.94%
1999	18280	13.42%
2000	17310	12.52%
2001	16840	11.29%
2002	17410	11.16%
2003	16160	10.64%
2004	16230	10.89%
2005	13700	9.47%
2006	13850	9.40%
2007	14150	9.58%
2008	14340	9.56%
2009	13380	8.95%

Special librarians do not seem to follow the general trend of overall librarian employment until 2002, at which point they follow the very general trend, with a more exaggerated decline. During the relatively low total librarian employment of 1999, where total librarian employment dipped to .95, special librarians were flourishing at their high point of 1.06 (18,280 jobs, or 13.42% of all librarians). After 1999, however, despite some small increases between 2003 and 2004 as well as between 2005 and 2008, there is a marked decrease in the number of special librarians. This follows a similar shape as the

entire library workforce, albeit far more dramatic in its points of decline. While there seems to be some similarity in the trends of the national labor force and special librarians between 1998 and 2000 as well as 2005 and 2009, there is little similarity in their respective trends in between 2000 and 2005.

Figure 8: Special Librarian Employment Trends in Comparison to All Librarians and All Labor: 1997 - 2009



Academic Librarians

Academic librarians account for between roughly 15.30% and 16.75% of the total employed librarian population over the 13-year period. Despite the economic troubles beginning in 2008, the academic library population is increasing its workforce, with the only job deficits reported between 2004 and 2005 (520 jobs) and 2006 and 2007 (800 jobs). Over 3,000 librarians were added to the academic librarian workforce over the 13 years studied. While the highest employment rate by percentage in this sector actually occurs in 2005 (16.91%, or 24,470 positions), due to the changing composition of the

profession, the highest numerical employment rate in the academic library segment occurs in the final survey year, 2009 (16.72%, or 25,000 jobs).

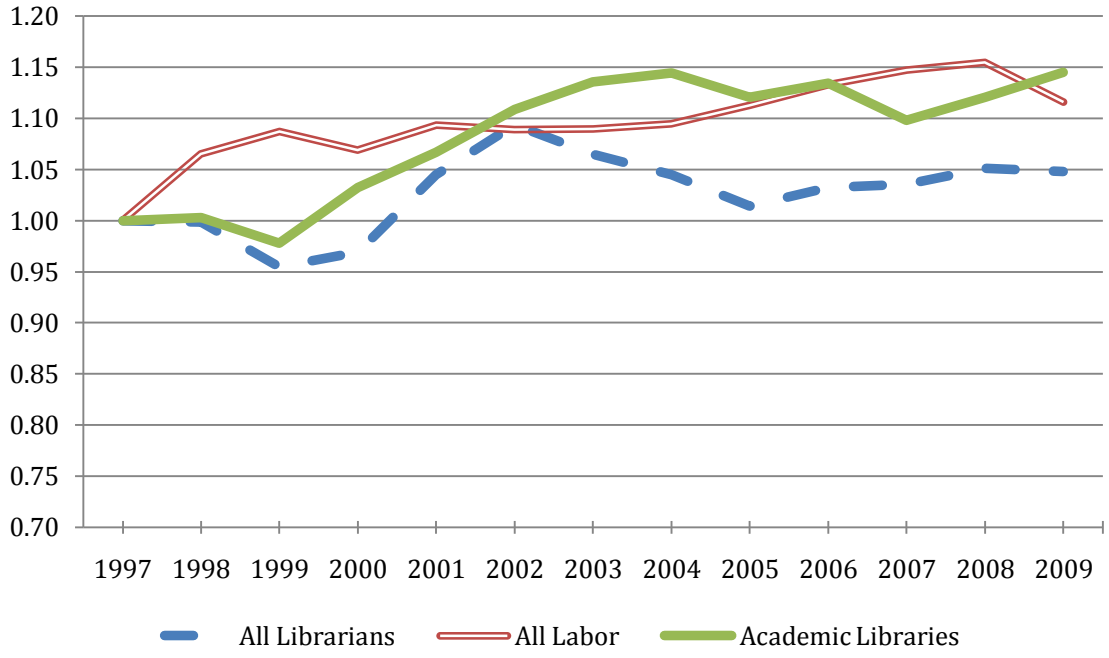
Figure 9: Table of Academic Librarian Employment as a Percentage of Total Librarian Employment

Year	Academic Librarian Employment – Raw Numbers	Academic Librarian % of Total Librarian Employment
1997	21830	15.30%
1998	21900	15.37%
1999	21350	15.67%
2000	22540	16.30%
2001	23290	15.62%
2002	24200	15.51%
2003	24790	16.32%
2004	24990	16.76%
2005	24470	16.91%
2006	24770	16.81%
2007	23970	16.22%
2008	24460	16.31%
2009	25000	16.72%

Academic librarian employment patterns, like special librarians, do not follow the general librarian trend, nor do they show any real correspondence to overall national labor patterns. However, for every year surveyed, academic librarian normalized data shows one clear pattern – it is above the trend line for all librarians. Academic librarian employment rates have shown superior performance relative to all librarians. Furthermore, while the total librarian and national employment rates begin to decline between 2008 and 2009 (national labor more sharply), academic librarians' employment rate continues steadily on its upward trend from 2007. The most notable area of similarity between total librarian employment and academic librarian employment trends occurs beginning in 1998 and ending in 2002. Academic librarians experience a slight dip in numbers (-.02) between 1998 and1999 and then undergo a sharp recovery (.13 by 2002)

that extends beyond 2002. This corresponds to the general shape of the total librarian employment trends, which also experience a dip between 1998 and 1999 (-.05) and a recovery between 1999 and 2002 (.14).

Figure 10: Academic Librarian Employment Trends in Comparison to All Librarians and All Labor: 1997 - 2009



School Librarians

School librarians comprise the majority of the librarian labor force. In 2002 and 2003, school librarians are at their lowest employment percentages, at 40.22% (62,760 jobs) and 41.41% (62,920 jobs) of the total librarian workforce, respectively. While there has been a somewhat steady recovery since those lows, with school librarians comprising 43.28 % (63,720 jobs) of the total librarian workforce in 2009, this sector has recouped neither the job rates nor the percentage of total librarians displayed in the first year surveyed, 1997 (45.79%, or 65,340 jobs). While there have been some vast fluctuations in this particular sector, there has been a consistent overall pattern of job loss with recoveries that do not quite reach past numbers. Using the 1997 and 2009 data, 620

positions have been lost over the 13 years studied. While this number is very small, especially compared to the size of this particular demographic, this means that there has been absolutely no new growth in the sector besides recovery from previous job loss.

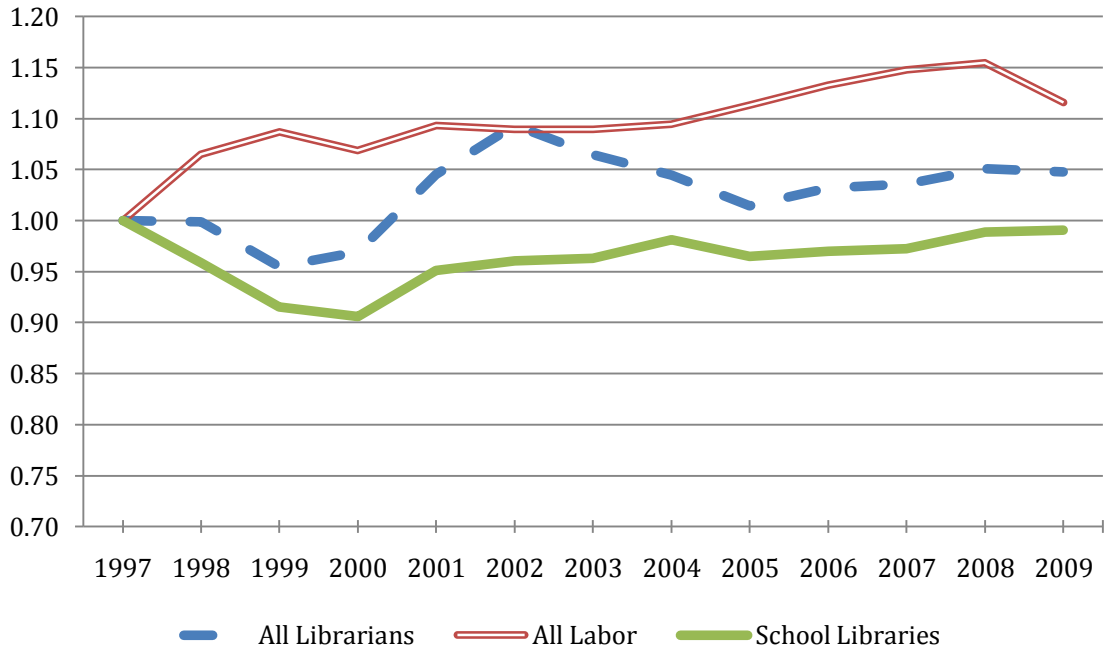
Figure 11: Table of School Librarian Employment as a Percentage of Total Librarian Employment

Year	School Librarian Employment – Raw Numbers	School Librarian % of Total Librarian Employment
1997	65340	45.79%
1998	62620	43.93%
1999	59800	43.90%
2000	59200	42.81%
2001	62150	41.67%
2002	62760	40.22%
2003	62920	41.41%
2004	64120	43.01%
2005	63030	43.55%
2006	63390	43.03%
2007	63550	43.01%
2008	64620	43.09%
2009	64720	43.28%

More than any of the other sectors discussed here, school librarian employment trends show a relationship with both the national labor trends and the total librarian employment trends. Normalized school librarian employment rates are consistently below the national labor average as well as total librarian employment rates. There was a steep fall in school librarians from 1997 through 2000 (-.09), which is mirrored in the dip in total librarian employment from 1998-1999 and the national employment decline from 1999-2000. Since 2000, school librarians have experienced a slow recovery through 2009 (.04), with only one small setback between 2004 and 2005 (-.02). This mirrors the general upward trend of the national labor force between 2000 and 2008, despite the fact

that school libraries do not exhibit the employment decline that both national and total librarian employment display after 2008.

Figure 12: School Librarian Employment Trends in Comparison to All Librarians and All Labor: 1997 - 2009



Government Librarians (Including Public Librarians)

Government librarians comprise the second largest sector of librarians in the workforce. Generally, over the 13-year period surveyed, they account for between 26.78% and 33.12% of the workforce. At its lowest percentage of the general librarian population in 1999 (26.78%), government librarians numbered 38,210. When in 1999 they dipped to 36,800 jobs, government librarians comprised 27.01% of the total librarian workforce – a larger percentage, despite the job deficit. At their peak in the survey period (2002), government librarians accounted for 33.12% of all librarian employment, with 51,680 jobs. While there was a swift dip to 29.34 % in 2004, government librarians had a steady increase in number of positions until the 2008-2009 period, where there was a loss of 110 jobs. Despite this loss, however, the percentage of government librarians to total

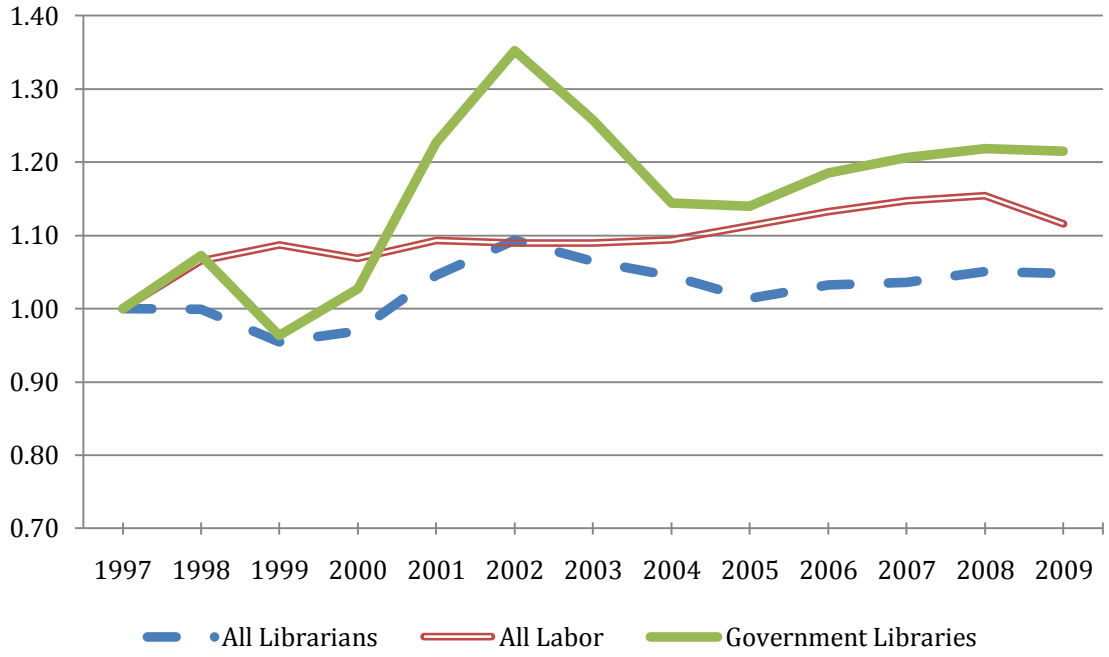
librarians continued upward during that same period, with 31.06% of all librarians in government positions in 2009.

Figure 13: Table of Government Librarian Employment as a Percentage of Total Librarian Employment

Year	Government Librarian Employment – Raw Numbers	Government Librarian % of Total Librarian Employment
1997	38210	26.78%
1998	40990	28.76%
1999	36800	27.01%
2000	39250	28.38%
2001	46860	31.42%
2002	51680	33.12%
2003	48070	31.64%
2004	43730	29.34%
2005	43540	30.08%
2006	45300	30.75%
2007	46100	31.20%
2008	46550	31.04%
2009	46440	31.06%

Government librarians follow a very similar trend to the total librarian employment statistics; however, their normalized employment rates are consistently higher than overall librarian employment. Both total and government librarians dipped to their lowest rates in 1999 at .95 and .96 respectively, and both showed growth between 1999 and 2002; total librarians reached a rate of 1.09 and government libraries reached an impressive high of 1.35. From there, both total and government librarians showed steady decline through 2005 (-.08 and -.21 respectively). While both groups show recovery growth between 2005 and 2008, each begins to decline again in 2009. Government librarians certainly show the most dramatic highs in their normalized data among the four groups; however, they are one of two groups, the other being special librarians, that show the beginnings of a decline in employment in 2008.

Figure 14: Government Librarian Employment Trends in Comparison to All Librarians and All Labor: 1997 - 2009



Discussion

Discussion of the Data

One of the more fascinating aspects of the data presented is that there proves to be less consistency in trending between national labor statistics and total librarian statistics than originally anticipated. When the data is broken down, special and academic librarian employment rates seem to bear the least resemblance to the total librarian and national labor employment trend lines. Special librarians are perhaps a unique case because they can hold many titles other than librarian (this will be addressed in more detail later in the discussion), and thus their employment data might not be as complete as one would hope. Academic librarians, however, have no such excuse. Government librarian trend data certainly resembles the total librarian employment chart more than any other sector,

while school librarian patterns most closely resemble the national employment trend data. This is surprising, given that based on the composition of the entire librarian workforce, where school librarians comprise more than half of the population, one might expect them to mirror the total librarian data more than national data.

Without further research, one can only speculate as to the reasons behind the overall lack of trending similarity – perhaps it is due to the fact that librarians can and do work in a wide and varied range of industries that fluctuate under different conditions, rather than a single industry that can be measured in isolation. Additionally, much of the librarian workforce relies on funding from the government: all government libraries, the majority of school libraries, and many universities and colleges. Because of this, they could be more sensitive to the vicissitudes of the economy than other industries.

What is clear from the data is that librarian employment growth is not keeping pace with overall population growth. This is reflected in the number of librarians per 10,000 people (see figure 5), which has dropped during the 13-year survey period. As the number has dropped by less than 1 librarian per 10,000 people in the past 13 years, it may not seem an alarming number, but because librarian growth is not keeping pace with population growth, that number could begin to fall more rapidly. While the long-term effects of fewer librarians per capita might not be known at the moment, the trend is startling, especially given that the overall number of librarians had been increasing from 2005 until 2008.

Similar to the lack of trending consistency between national and total librarian employment, there seems to be a lack of correspondence between the different library sectors examined. Academic and school librarians appear to have more in common than

the other sectors, but that commonality does not seem to be predictive. Why these sectors behave so differently even though they all employ librarians cannot be answered simply; one theory, mentioned earlier, could be that these areas are extremely diverse and impacted by different economic, social, and political indicators. While the direct and indirect causes for the lack of correspondence between the four separate librarian sectors can only be speculated, it is important to understand that the futures of each of these sectors therefore do not necessarily impact the others. While the decline of one sector will certainly put pressure on the others to absorb those workers, it should be noted that only once in the 13-year period surveyed was there what seemed to be a direct fall in one sector and rise in another. This occurred in 1999, when special librarians experienced a drop and government librarians experienced a rise. This is not conclusive evidence, nor does it mean that prospering sectors are not absorbing workers from failing sectors. What it does show, though, is that each sector could ostensibly be treated as its own profession with its own unique fluctuations and indicators.

While two of the library sectors, academic and school librarians, did not experience declining job numbers between 2008 and 2009, special libraries, government libraries, national labor as a whole, and overall librarian employment all showed a decline in employment. The current economic downturn began in late 2007 and early 2008. Though further research must be conducted to truly understand whether the economic downturn is actually the root cause of the declining number of librarians working in the United States, one might speculate that it had at least some effect on the employment rates of librarians. Ultimately, there are so many factors at work that it is hard to make a definitive conclusion as to why two sectors experienced losses and two

did not. There may have been a dearth of job losses, but not in the sense that people were being laid off. Rather, because of the retirement situation among librarians, some might have retired as planned, or else were offered early retirement packages, and those positions were not filled. Nevertheless, the fact that certain sectors experienced losses while others continued to grow is certainly significant, and when the 2010 and 2011 data is released, it will be most interesting to see how each of the sectors are affected. Perhaps then, when there is more data and perspective (regarding the trajectory of the economic downturn), we will be more able to determine the root causes of the declining overall librarian employment rates.

Throughout this study, it has become clear that it is very difficult to find predictive trends within the library profession – there are so many factors that determine the rise and fall of employment in each of the four separate sectors that it becomes very difficult to make predictions for the future. Yet there is value in understanding past data and trends to prepare for future scenarios. Traditional librarian employment rates are dropping and we are in a period of economic downturn; though there are those who are optimistic about retirement providing the jobs needed to support incoming librarians (Crosby, 2001; Crosby, 2001; Lynch, 2000) ,the reality of the current economic situation is that many librarians might not be able to retire even if they wanted to, as Stearns suggests. Furthermore, even if librarians do retire, many institutions may take the opportunity to leave positions vacant and save money (Stearns, 2009). In the 2009 *Library Journal* placement survey, 15.5% of new graduates had found positions in the nebulous "other" category (Maatta, 2009). The 2010 survey showed almost double that number in the "other" category – 27% (Maatta, 2010). These positions all have the

potential to be overlooked in surveys such as those conducted by the BLS; in truth, with numbers as high as 27% of new graduates taking alternative library positions (add to that Hardesty's finding that these surveys generally collect data on less than half of that year's graduating students [Hardesty, 2002]), it is almost impossible to truly determine how many librarians are employed in the workforce.

Because of the potential these alternative careers hold for new graduates along with the possibility that retirement rates will not meet expectations, we need to prepare new graduates for a variety of different types of work. (Manjarrez predicted about 6,700 per year [Manjarrez et al., 2010], but the 2010 *Library Journal* placement survey listed 5,160 graduates in 2009 [S. L. Maatta, 2010].) At the very least, library school curricula should support the educational needs of librarians who are interested in pursuing alternative careers. With respect to the data collected in this study, academic libraries represent the only sector with recent demonstrated growth – obviously curricula should not be altered so as to become unrecognizable as library programs; rather, the options should be made available to students and/or incorporated into traditional curricula so as to benefit all students.

In a chapter in the 1991 *Advances in Librarianship,* Koenig discusses LIS skills that can be used in other settings including organization of information and data, identification and understanding of information sources, and the reference interview – understanding the needs of one's "client" (Koenig, 1991). Koenig also examines and identifies different careers that librarians can pursue including marketing, publishing, consulting, systems analyst, information broker, and information officer (Koenig, 1991). A 1985 survey of librarians in alternative careers conducted by Sellen and Vaughn found

that 70.67% of the surveyed population would recommend that a library degree be pursued to work in a similar position (Sellen & Vaughn, 1985). Those who would not recommend obtaining the MLS degree (29.36%) made various alternative coursework and/or degree suggestions including business, computer science, public administration, communication, education, and journalism (Sellen & Vaughn, 1985).

Schools, therefore, should respond to the data – employment rates of traditional librarians are at the very least inconsistent and are currently dropping, as seen in this study, the number of alternative librarians is rising (according to *Library Journal* surveys), and the market, at least when looking retrospectively, is somewhat unpredictable – and reevaluate curricula to include material that will be useful to the growing population of alternative librarians. The 1985 survey mentioned earlier (Sellen & Vaughn, 1985) provides a starting point for identifying coursework that might be appropriate for inclusion: business, computer science, public administration, communication, education, and journalism. Perhaps creating relationships with these degree programs to have special topics courses or joint seminars that would benefit both schools could be a place to begin. Whatever course the profession may take (and as this paper concludes, the trends are very difficult to predict), graduate programs should leverage the data that is available and respond by providing guidance and coursework in areas where graduates are finding positions.

Future Research

The data collected for this study does not include information for library technicians and other paraprofessional library positions. As these areas are also an integral part of the profession, there is value in performing a systematic analysis of

paraprofessional positions. In particular, it would be interesting to explore how many paraprofessional positions those with professional library degrees currently occupy, and why these positions were chosen. In addition, performing a similar trend analysis on paraprofessional library positions using the approach taken in this study would help to further define the current and future state of the profession as a whole.

Continued research regarding employment statistics and trends in the library field is essential for understanding and nurturing the growth of the profession. Having a firm grasp on this data will also help educators, recruiters, and students truly comprehend the direction the profession will take in the coming years. One method for expanding this type of research might be to somehow discover the "hidden librarians" who work outside of libraries in positions other than those titled "librarian." The BLS and many other surveying bodies use occupational codes to classify the individuals included in the data. This proves problematic for research such as this paper as there are people who have the degree of MSLS and use those skills in their jobs, but are not called librarians (Marshall, Marshall, Morgan, Barreau et al., 2009a). While the WILIS studies are attempting to capture some of this data for their participating schools, a more focused approach to specifically gather data on the "hidden librarians" might help researchers and educators to understand just how many of these professionals exist in the workforce, and the level of demand for more information professionals outside of traditional libraries. It might also be advantageous to study the role of outsourcing library duties and staffing in librarian employment patterns.

In addition to gathering more complete data, especially regarding professionals employed outside of libraries, future research might focus around a more rigorous

statistical analysis of current and historical data. This would help researchers better understand the statistical significance of trends, such as the difference between the patterns of the various types of work environments (special, academic, school, and government libraries). In addition to in-depth statistical analysis of this type of data, it might be interesting to attempt to find correlations between historical and current events and the peaks and valleys of librarian employment. The data gathered and analysis performed for this study was merely for the identification of these trends – performing thorough statistical analysis and aligning those findings with national events might help us understand what to expect from the different professional sectors in the future when similar events occur.

Finally, it might be advantageous for future researchers – perhaps in conjunction with the current WILIS studies – to take a school-by-school look at where graduates from the past 5-10 years are working, and compare those numbers to the curricula of their respective schools to see if any patterns emerge. Understanding where graduates are finding work and if there is any relationship between that and the overarching curricula of their institutions might provide insight into how programs should be supporting different aspects of the industry.

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Appendices

Appendix A: SIC Structure Example

SICS CODE STRUCTURE		
Major Group **22**: Textile Mill Products		
	Industry Group **221**: Broadwoven Fabric Mills, Cotton	
		2211: Broadwoven Fabric Mills, Cotton
	Industry Group **222**: Broadwoven Fabric Mills, Manmade Fiber and Silk	
		2221: Broadwoven Fabric Mills, Manmade Fiber and Silk
	Industry Group **225**: Knitting Mills	
		2251:Women's Full-Length and Knee-Length Hosiery, Except Socks
		2252: Hosiery, Not Elsewhere Classified
		2253: Knir Outerware Mills
		2254: Knit Underwear and Nightware Mills
		2257: Weft Knit Fabric Mills
http://www.osha.gov/pls/imis/sic_manual.display?id=15&tab=group		

Appendix B: NAICS Code Structure Example

NAICS CODE STRUCTURE				
54: Professional, Scientific, & Technical Services				
	541: Professional, Scientific, & Technical Services			
		5411: Legal Services		
			54111: Offices of Lawyers	
				541110: Offices of Lawyers
			54112: Offices of Notaries	
				541120: Offices of Notaries
			54119: Other Legal Services	
				541191: Title Abstract & Settlement Offices
				541199: All Other Legal Services
		5142: Accounting, Tax Preparation, Bookkeeping & Payroll Services		
			54121: Accounting, Tax Preparation, Bookkeeping & Payroll Services	
				541211: Offices of Certified Public Accountants
				541213: Tax Preparation Services
				541214: Payroll Services
				541219: Other Accounting Services
http://www.census.gov/cgi-bin/sssd/naics/naicsrch				

Appendix C: Full Crosswalk Results

SIC	NAICS	Title	97	98	99	00	01	02	03	04	05	06	07	08	09
6320		Accident and Health Insurance and Medical	✓	✓	✓										
6330		Fire, Marine, and Casualty Insurance	✓	✓		✓	✓								
6310		Life Insurance	✓	✓	✓										
	524100	Insurance Carriers						✓		✓	✓	✓	✓	✓	✓
8720		Accounting, Auditing, and Bookkeeping Services	✓		✓	✓	✓								
	541200	Accounting, Tax Preparation, Bookkeeping, and Payroll Services						✓	✓	✓					
7310		Advertising				✓	✓								
	541800	Advertising and Related Services						✓	✓	✓	✓	✓			
3720		Aircraft and Parts				✓	✓								
	336400	Aerospace Product and Parts Manufacturing						✓	✓	✓	✓	✓	✓	✓	✓
2730		Books	✓	✓	✓	✓	✓								
2750		Commercial Printing	✓	✓		✓									
2740		Miscellaneous Publishing	✓	✓			✓								
2720		Periodicals Publishing, or Publishing and Printing	✓	✓	✓	✓	✓								
2710		Newspapers Publishing, or Publishing and Printing	✓	✓	✓	✓	✓								
	511100	Newspaper, Periodical, Book, and Directory Publishers						✓	✓	✓		✓	✓	✓	✓
	323100	Printing and Related								✓					

		Support Activities													
8640		Civic, Social, and Fraternal Associations	✓	✓	✓	✓	✓								
8610		Business Associations	✓	✓	✓	✓	✓								
8620		Professional Membership Organizations	✓	✓	✓	✓	✓								
8630		Labor Unions and Similar Labor Organizations			✓	✓	✓								
8690		Membership Organizations, not elsewhere classified	✓	✓	✓	✓	✓								
	831400	Civic and Social Organizations						✓	✓	✓		✓	✓	✓	✓
	813900	Business, Professional, Labor, Political, and Similar Organizations						✓	✓	✓	✓	✓	✓		✓
4840		Cable and Other Pay Television Services				✓	✓								
	515200	Cable and Other Subscription Programming						✓							
6010		Central Reserve Depository Institutions	✓	✓		✓	✓								
6020		Commercial Banks	✓		✓	✓	✓								
6030		Savings Institutions			✓										
	521100	Monetary Authorities - Central Bank						✓	✓	✓	✓	✓		✓	
	522200	Nondepository Credit Intermediation						✓							
	522100	Depository Credit Intermediation						✓	✓	✓	✓	✓	✓	✓	
8220		Colleges, Universities, Professional Schools, and Junior Colleges	✓	✓	✓	✓	✓								

	611300	Colleges, Universities, and Professional Schools						✓	✓	✓	✓	✓	✓	✓	✓
	611200	Junior Colleges						✓	✓	✓	✓	✓	✓	✓	✓
7370		Computer Programming, Data Processing, and Other Computer Related Services	✓	✓	✓	✓	✓								
	541500	Computer Systems Design and Related Services						✓	✓	✓	✓	✓	✓	✓	✓
	518200	Data Processing, Hosting, and Related Services						✓		✓					
	518100	Internet Service Providers and Web Search Portals											✓		
8350		Child Day Care Services		✓											
	624400	Child Day Care Services						✓	✓						
8210		Elementary and Secondary Schools	✓	✓	✓	✓	✓								
	611100	Elementary and Secondary Schools						✓	✓	✓	✓	✓	✓	✓	✓
8710		Engineering, Architectural, and Surveying	✓	✓	✓	✓	✓								
	541300	Architectural, Engineering, and Related Services						✓	✓	✓	✓	✓	✓	✓	✓
9010		Federal Executive Branch and United States Postal Service (OES designation)				✓	✓								
9010		Federal Government (OES	✓	✓	✓										

		designation)													
	999100	Federal Executive Branch								✓	✓				
	999100	Federal Executive Branch (OES designation)										✓	✓	✓	✓
	999100	Federal Executive Branch and United States Postal Service (OES designation)						✓	✓						
6710		Holding Offices		✓											
	551100	Management of Companies and Enterprises						✓	✓	✓	✓	✓	✓	✓	✓
8060		Hospitals	✓	✓	✓	✓	✓								
	622100	General Medical and Surgical Hospitals						✓	✓	✓	✓	✓	✓	✓	✓
	622200	Psychiatric and Substance Abuse Hospitals						✓	✓	✓	✓	✓	✓	✓	✓
	622300	Specialty (except Psychiatric and Substance Abuse) Hospitals						✓	✓	✓	✓	✓	✓	✓	✓
8320		Individual and Family Social Services	✓	✓	✓										
	624100	Individual and Family Services						✓							
8330		Job Training and Vocational Rehabilitation	✓	✓	✓	✓	✓								
	624300	Vocational Rehabilitation Services						✓	✓	✓					
3820		Laboratory Apparatus and Analytical, Optical, Measuring, and Controlling Instruments			✓	✓									

	334500	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing						✓	✓	✓	✓	✓	✓	✓	✓
8110		Legal Services	✓	✓	✓	✓	✓								
	541100	Legal Services						✓	✓	✓	✓	✓	✓	✓	✓
8230		Libraries	✓	✓	✓	✓	✓								
	519100	Other Information Services						✓	✓	✓	✓	✓	✓	✓	✓
9030		Local Government (OES designation)	✓	✓	✓	✓	✓								
	999300	Local Government (OES designation)						✓	✓	✓	✓	✓	✓	✓	✓
8740		Management and Public Relations Services	✓	✓	✓	✓	✓								
	541600	Management, Scientific, and Technical Consulting Services						✓	✓	✓	✓	✓	✓	✓	✓
	561100	Office Administrative Services						✓	✓		✓	✓	✓	✓	
	561200	Facilities Support Services						✓	✓	✓	✓	✓	✓	✓	✓
5190		Miscellaneous Non-Durable Goods		✓		✓	✓								
	424900	Miscellaneous Nondurable Goods Merchant Wholesalers						✓	✓	✓			✓	✓	✓
7820		Motion Picture Distribution and Allied Services		✓			✓								
7810		Motion Picture Production and Allied Services	✓	✓											
	512100	Motion Picture and Video Industries								✓	✓	✓			

8410		Museums and Art Galleries	✓	✓	✓	✓	✓								
	712100	Museums, Historical Sites, and Similar Institutions						✓	✓	✓	✓	✓	✓	✓	✓
8050		Nursing and Personal Care Facilities	✓												
8360		Residential Care	✓	✓	✓	✓	✓								
	623200	Residential Mental Retardation, Mental Health and Substance Abuse Facilities						✓	✓	✓					
8010		Offices and Clinics of Doctors of Medicine	✓				✓								
	621100	Offices of Physicians						✓	✓	✓	✓	✓	✓	✓	✓
7360		Personnel Supply Services			✓	✓	✓								
	561300	Employment Services						✓	✓	✓		✓	✓	✓	✓
4830		Radio and Television Broadcasting Stations		✓		✓	✓								
	515100	Radio and Television Broadcasting						✓		✓	✓	✓	✓	✓	✓
8660		Religious Organizations	✓	✓	✓	✓	✓								
	813100	Religious Organizations						✓	✓	✓	✓	✓	✓	✓	✓
8730		Research, Development, and Testing Services	✓	✓	✓	✓	✓								
	541700	Scientific Research and Development Services						✓	✓	✓	✓	✓	✓	✓	✓
	541900	Other Professional, Scientific, and Technical Services						✓	✓			✓	✓	✓	

8290		Schools and Educational Services, not elsewhere classified	✓	✓	✓	✓	✓								
8240		Vocational Schools	✓	✓	✓	✓	✓								
	611400	Business Schools and Computer and Management Training						✓	✓	✓	✓	✓	✓	✓	✓
	611500	Technical and Trade Schools						✓	✓	✓	✓	✓	✓	✓	✓
	611600	Other Schools and Instruction						✓	✓	✓		✓	✓	✓	✓
	611700	Educational Support Services						✓	✓	✓		✓	✓	✓	✓
6280		Services Allied With The Exchange of Securities	✓	✓	✓	✓	✓								
6730		Trusts	✓	✓	✓	✓	✓								
6210		Security Brokers, Dealers, and Flotation Companies	✓	✓	✓	✓	✓								
	523900	Other Financial Investment Activities						✓	✓	✓			✓	✓	
	523100	Securities and Commodity Contracts Intermediation and Brokerage						✓	✓	✓	✓		✓	✓	✓
8390		Social Services, not elsewhere classified	✓	✓	✓	✓	✓								
	813200	Grantmaking and Giving Services						✓	✓	✓					✓
	813300	Social Advocacy Organizations						✓	✓	✓	✓			✓	✓
9020		State Government (OES designation)	✓	✓	✓	✓	✓								
	999200	State Government (OES designation)						✓	✓	✓	✓	✓	✓	✓	✓

7920		Theatrical Producers (except Motion Picture)			✓	✓	✓								
	711100	Performing Arts Companies						✓	✓	✓	✓	✓	✓	✓	✓
6720		Investment Offices	✓	✓											
8420		Arboreta and Botanical or Zoological Gardens	✓	✓	✓	✓	✓								
5960		Nonstore Retailers				✓	✓								
8990		Services, not elsewhere classified			✓										
8090		Miscellaneous Health and Allied Services, not elsewhere classified	✓	✓	✓										
	511200	Software Publishers						✓	✓	✓					
	561400	Business Support Services												✓	
	325400	Pharmaceutical and Medicine Manufacturing						✓	✓	✓	✓	✓	✓	✓	

*Appendix D: Raw and Normalized Data Results**

**Data gathered from* (*Occupational employment statistics home page,* 2010.)

Grand Totals – All Librarians		
Year	**Raw**	**Normalized**
1997	142,700	1.00
1998	142,530	1.00
1999	136,230	0.95
2000	138,300	0.97
2001	149,140	1.05
2002	156,050	1.09
2003	151,940	1.06
2004	149,070	1.04
2005	144,740	1.01
2006	147,310	1.03
2007	147,770	1.04
2008	149,970	1.05
2009	149,540	1.05

Grand Totals – All Occupations		
Year	**Raw**	**Normalized**
1997	117,073,130	1.00
1998	124,704,600	1.07
1999	127,274,000	1.09
2000	125,119,710	1.07
2001	127,980,410	1.09
2002	127,523,760	1.09
2003	127,567,910	1.09
2004	128,127,360	1.09
2005	130,307,840	1.11
2006	132,604,980	1.13
2007	134,354,250	1.15
2008	135,185,230	1.15
2009	130,647,610	1.12

National Population Stats		
Year	**Raw**	**Normalized**
1997	267,783,607	1.00
1998	270,248,003	1.01
1999	272,690,813	1.02
2000	282,171,957	1.05
2001	285,081,556	1.06
2002	287,803,914	1.07
2003	290,326,418	1.08
2004	293,045,739	1.09
2005	295,753,151	1.10
2006	298,593,212	1.12
2007	301,579,895	1.13
2008	304,374,846	1.14
2009	307,006,550	1.15

Insurance		
Year	**Raw**	**Normalized**
1997	170	1.00
1998	200	1.18
1999	60	0.35
2000	30	0.18
2001	40	0.24
2002	70	0.41
2003	0	0.00
2004	70	0.41
2005	50	0.29
2006	40	0.24
2007	40	0.24
2008	50	0.29
2009	50	0.29

Organizations and Labor Unions		
Year	**Raw**	**Normalized**
1997	650	1.00
1998	600	0.92
1999	880	1.35
2000	680	1.05
2001	620	0.95
2002	560	0.86
2003	520	0.80
2004	500	0.77
2005	250	0.38
2006	390	0.60
2007	320	0.49
2008	100	0.15
2009	350	0.54

Advertising		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	0	0.00
2000	180	1.00
2001	90	0.50
2002	130	0.72
2003	90	0.50
2004	50	0.28
2005	40	0.22
2006	40	0.22
2007	0	0.00
2008	0	0.00
2009	0	0.00

Cable TV		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	0	0.00
2000	60	1.00
2001	30	0.50
2002	50	0.83
2003	0	0.00
2004	0	0.00
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Aerospace/Aircraft		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	0	0.00
2000	110	1.00
2001	80	0.73
2002	120	1.09
2003	120	1.09
2004	110	1.00
2005	90	0.82
2006	100	0.91
2007	70	0.00
2008	60	0.00
2009	70	0.00

Banks		
Year	**Raw**	**Normalized**
1997	90	1.00
1998	40	0.44
1999	190	2.11
2000	150	1.67
2001	130	1.44
2002	160	1.78
2003	90	1.00
2004	100	1.11
2005	100	1.11
2006	90	1.00
2007	40	0.44
2008	60	0.67
2009	0	0.00

Printing and Publishing		
Year	**Raw**	**Normalized**
1997	1,660	1.00
1998	1,450	0.87
1999	890	0.54
2000	1,000	0.60
2001	1,060	0.64
2002	920	0.55
2003	880	0.53
2004	750	0.45
2005	0	0.00
2006	460	0.28
2007	460	0.28
2008	540	0.33
2009	480	0.29

Higher Ed		
Year	**Raw**	**Normalized**
1997	21,830	1.00
1998	21,900	1.00
1999	21,350	0.98
2000	22,540	1.03
2001	23,290	1.07
2002	24,200	1.11
2003	24,790	1.14
2004	24,990	1.14
2005	24,470	1.12
2006	24,770	1.13
2007	23,970	1.10
2008	24,460	1.12
2009	25,000	1.15

Computers/Internet		
Year	**Raw**	**Normalized**
1997	90	1.00
1998	390	4.33
1999	220	2.44
2000	250	2.78
2001	200	2.22
2002	270	3.00
2003	120	1.33
2004	330	3.67
2005	200	2.22
2006	170	1.89
2007	130	1.44
2008	140	1.56
2009	150	1.67

Holding Offices		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	40	1.00
1999	0	0.00
2000	0	0.00
2001	0	0.00
2002	390	9.75
2003	360	9.00
2004	320	8.00
2005	290	7.25
2006	310	7.75
2007	290	7.25
2008	230	5.75
2009	210	5.25

Child Day Care		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	40	1.00
1999	0	0.00
2000	0	0.00
2001	0	0.00
2002	30	0.75
2003	30	0.75
2004	0	0.00
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Hospitals		
Year	**Raw**	**Normalized**
1997	1,810	1.00
1998	1,840	1.02
1999	2,200	1.22
2000	2,160	1.19
2001	2,170	1.20
2002	2,070	1.14
2003	2,030	1.12
2004	1,790	0.99
2005	1,770	0.98
2006	1,560	0.86
2007	1,400	0.77
2008	1,270	0.70
2009	1,280	0.71

Elem Schools		
Year	**Raw**	**Normalized**
1997	64,870	1.00
1998	62,180	0.96
1999	59,380	0.92
2000	58,840	0.91
2001	61,790	0.95
2002	62,330	0.96
2003	62,590	0.96
2004	63,750	0.98
2005	62,790	0.97
2006	62,990	0.97
2007	63,120	0.97
2008	64,110	0.99
2009	64,240	0.99

Social Services		
Year	**Raw**	**Normalized**
1997	30	1.00
1998	80	2.67
1999	60	2.00
2000	0	0.00
2001	0	0.00
2002	120	4.00
2003	0	0.00
2004	0	0.00
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Architecture and Engineering		
Year	**Raw**	**Normalized**
1997	340	1.00
1998	290	0.85
1999	630	1.85
2000	500	1.47
2001	550	1.62
2002	440	1.29
2003	320	0.94
2004	300	0.88
2005	240	0.71
2006	280	0.82
2007	250	0.74
2008	240	0.71
2009	250	0.74

Vocational Training		
Year	**Raw**	**Normalized**
1997	30	1.00
1998	30	1.00
1999	60	2.00
2000	40	1.33
2001	50	1.67
2002	60	2.00
2003	60	2.00
2004	50	1.67
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Instrument Manufacturing		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	30	1.00
2000	30	1.00
2001	0	0.00
2002	50	1.67
2003	50	1.67
2004	60	2.00
2005	50	1.67
2006	30	1.00
2007	30	1.00
2008	40	1.33
2009	30	1.00

Legal Services		
Year	**Raw**	**Normalized**
1997	4,610	1.00
1998	4,150	0.90
1999	3,660	0.79
2000	3,020	0.66
2001	2,390	0.52
2002	2,270	0.49
2003	2,100	0.46
2004	2,000	0.43
2005	1,870	0.41
2006	1,800	0.39
2007	1,850	0.40
2008	1,910	0.41
2009	1,900	0.41

Other Libraries		
Year	**Raw**	**Normalized**
1997	4,400	1.00
1998	4,560	1.04
1999	4,740	1.08
2000	4,670	1.06
2001	5,270	1.20
2002	5,910	1.34
2003	5,950	1.35
2004	6,080	1.38
2005	6,100	1.39
2006	5,730	1.30
2007	6,510	1.48
2008	7,010	1.59
2009	6,130	1.39

Local Government		
Year	**Raw**	**Normalized**
1997	33,970	1.00
1998	36,440	1.07
1999	32,230	0.95
2000	34,790	1.02
2001	42,190	1.24
2002	47,150	1.39
2003	43,550	1.28
2004	39,240	1.16
2005	39,070	1.15
2006	41,060	1.21
2007	42,000	1.24
2008	42,430	1.25
2009	42,290	1.24

MGMT, PR, and support services		
Year	**Raw**	**Normalized**
1997	780	1.00
1998	750	0.96
1999	1,090	1.40
2000	1,020	1.31
2001	790	1.01
2002	650	0.83
2003	540	0.69
2004	480	0.62
2005	380	0.49
2006	370	0.47
2007	300	0.38
2008	270	0.35
2009	310	0.40

Non-durable goods		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	70	1.00
1999	0	0.00
2000	90	1.29
2001	60	0.86
2002	50	0.71
2003	70	1.00
2004	250	3.57
2005	0	0.00
2006	0	0.00
2007	40	0.57
2008	40	0.57
2009	40	0.57

Motion Pictures		
Year	**Raw**	**Normalized**
1997	100	1.00
1998	240	2.40
1999	0	0.00
2000	0	0.00
2001	30	0.30
2002	0	0.00
2003	0	0.00
2004	260	2.60
2005	120	1.20
2006	110	1.10
2007	0	0.00
2008	0	0.00
2009	0	0.00

Museums, etc.		
Year	**Raw**	**Normalized**
1997	680	1.00
1998	600	0.88
1999	700	1.03
2000	760	1.12
2001	670	0.99
2002	670	0.99
2003	640	0.94
2004	590	0.87
2005	700	1.03
2006	710	1.04
2007	700	1.03
2008	720	1.06
2009	730	1.07

Residential Care		
Year	**Raw**	**Normalized**
1997	130	1.00
1998	60	0.46
1999	110	0.85
2000	110	0.85
2001	80	0.62
2002	30	0.23
2003	30	0.23
2004	30	0.23
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Doctors' Offices		
Year	**Raw**	**Normalized**
1997	90	1.00
1998	0	0.00
1999	0	0.00
2000	0	0.00
2001	120	1.33
2002	160	1.78
2003	170	1.89
2004	210	2.33
2005	140	1.56
2006	80	0.89
2007	70	0.78
2008	40	0.44
2009	50	0.56

Employment Services		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	80	1.00
2000	100	1.25
2001	80	1.00
2002	90	1.13
2003	140	1.75
2004	150	1.88
2005	0	0.00
2006	560	7.00
2007	490	6.13
2008	360	4.50
2009	250	3.13

Radio		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	60	1.00
1999	0	0.00
2000	30	0.50
2001	40	0.67
2002	50	0.83
2003	0	0.00
2004	60	1.00
2005	30	0.50
2006	40	0.67
2007	70	1.17
2008	60	1.00
2009	60	1.00

Religious Orgs		
Year	**Raw**	**Normalized**
1997	140	1.00
1998	140	1.00
1999	150	1.07
2000	230	1.64
2001	190	1.36
2002	210	1.50
2003	200	1.43
2004	120	0.86
2005	100	0.71
2006	100	0.71
2007	100	0.71
2008	120	0.86
2009	120	0.86

R&D		
Year	**Raw**	**Normalized**
1997	820	1.00
1998	820	1.00
1999	1120	1.37
2000	960	1.17
2001	850	1.04
2002	860	1.05
2003	690	0.84
2004	680	0.83
2005	640	0.78
2006	560	0.68
2007	530	0.65
2008	600	0.73
2009	670	0.82

Other Schools		
Year	**Raw**	**Normalized**
1997	470	1.00
1998	440	0.94
1999	420	0.89
2000	360	0.77
2001	360	0.77
2002	430	0.91
2003	330	0.70
2004	370	0.79
2005	240	0.51
2006	400	0.85
2007	430	0.91
2008	510	1.09
2009	480	1.02

Investments		
Year	**Raw**	**Normalized**
1997	390	1.00
1998	290	0.74
1999	660	1.69
2000	450	1.15
2001	610	1.56
2002	240	0.62
2003	200	0.51
2004	170	0.44
2005	140	0.36
2006	0	0.00
2007	240	0.62
2008	220	0.56
2009	60	0.15

Social Services		
Year	**Raw**	**Normalized**
1997	120	1.00
1998	100	0.83
1999	160	1.33
2000	120	1.00
2001	140	1.17
2002	330	2.75
2003	320	2.67
2004	280	2.33
2005	40	0.33
2006	0	0.00
2007	0	0.00
2008	40	0.33
2009	90	0.75

State Government		
Year	**Raw**	**Normalized**
1997	2560	1.00
1998	2920	1.14
1999	2560	1.00
2000	2440	0.95
2001	2670	1.04
2002	2530	0.99
2003	2530	0.99
2004	2580	1.01
2005	2610	1.02
2006	2470	0.96
2007	2360	0.92
2008	2350	0.92
2009	2410	0.94

Theatre		
Year	**Raw**	**Normalized**
1997	0	0.00
1998	0	0.00
1999	250	1.00
2000	250	1.00
2001	270	1.08
2002	210	0.84
2003	180	0.72
2004	130	0.52
2005	130	0.52
2006	150	0.60
2007	130	0.52
2008	120	0.48
2009	100	0.40

Miscellaneous		
Year	**Raw**	**Normalized**
1997	150	1.00
1998	180	1.20
1999	130	0.87
2000	130	0.87
2001	100	0.67
2002	150	1.00
2003	190	1.27
2004	270	1.80
2005	230	1.53
2006	170	1.13
2007	90	0.60
2008	100	0.67
2009	0	0.00

Accounting		
Year	**Raw**	**Normalized**
1997	40	1.00
1998	0	0.00
1999	210	5.25
2000	180	4.50
2001	130	3.25
2002	90	2.25
2003	70	1.75
2004	40	1.00
2005	0	0.00
2006	0	0.00
2007	0	0.00
2008	0	0.00
2009	0	0.00

Federal Government		
Year	**Raw**	**Normalized**
1997	1,680	1.00
1998	1,630	0.97
1999	2,010	1.20
2000	2,020	1.20
2001	2,000	1.19
2002	2,000	1.19
2003	1,990	1.18
2004	1,910	1.14
2005	1,860	1.11
2006	1,770	1.05
2007	1,740	1.04
2008	1,770	1.05
2009	1,740	1.04

Appendix E: Library Categories

Special Libraries

Insurance
Organizations and Labor Unions
Advertising
Cable T.V.
Aerospace/Aircraft
Banks

Printing and Publishing
Accounting
Computers/Internet
Holding Offices
Child Day Care
Social Services
Architecture and Engineering
Vocational
Instrument Manufacturing
Motion Pictures
MGMT, PR, and Support Services
Non-durable goods
Residential Care
Doctor's Offices
Employment Services
Radio
Religious Orgs
R&D
Social Services
Investments
Theatre
Misc.
Museums
Legal Services
Hospitals
Other Libraries

Academic Libraries

Higher Ed

School Libraries

Elementary Schools
Other Schools

Government Libraries

Local Government
State Government
Federal Government