

INEQUALITY AT WORK: SOCIO-DEMOGRAPHIC DISPARITIES IN THE CAREERS OF  
LIBRARY AND INFORMATION SCIENCE GRADUATES

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## **ABSTRACT**

Amber L. Wells: Inequality at Work: Socio-Demographic Disparities in the Careers of Library and Information Science Graduates  
(Under the direction of Francois Nielsen)

In this dissertation, I analyze the career experiences of library and information science (LIS) alumni who graduated from one of five LIS programs in North Carolina between 1964 and 2007. The long-term career experiences of LIS graduates are largely unknown, which is due, in part, to the lack of a systematic tracking system for these alumni. Using a sociological approach, I examine racial and gender disparities in work duties performed by managers, indicators of job quality, and risk of involuntary job loss. In the first chapter, I provide a brief demographic overview of the LIS workforce and economic trends impacting its workers. In the second chapter, I find that using student loans to fund one's LIS graduate degree is associated with lower salaries and less job security (but none of the other five measures of job quality) and discuss what this might mean for professions that require advanced degrees yet offer relatively low salaries. In the third chapter, I find that non-white managers have lower odds of performing 6 of the 11 job functions measured and that the set of job functions performed by male and female managers is similar with the exception of human resources, which women have 38% lower odds of performing. In light of these results, I discuss the possibility that job functions may be a mechanism that produces racial disparities in upward job mobility. In the fourth chapter, I find that involuntary job loss is a rare event in the LIS field (8.7%) and is associated with lower job quality. This relationship is conditioned by both race and gender and the implications for meeting diversity goals are discussed. In the final chapter, I summarize and discuss the main

findings, implications for academic literature and the LIS field, and suggest some directions for future research.

To my loyal canine companion Neo, who, despite his poor health, held on long enough  
for me to complete this work.

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## **CHAPTER 1: INTRODUCTION**

### **1. Introduction**

Little is known about the long-term work experiences of Library and Information Science (LIS) graduates (Marshall, Marshall, Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson, 2009), and concerns about recruitment and retention issues have prompted research aiming to better understand the careers of these workers (Marshall, et al., 2009; Sivak & DeLong, 2009; Steffen & Lietzau, 2009). In this dissertation, I analyze the employment experiences of LIS graduates with a specific interest in how they are shaped by race and gender using a sample of LIS graduates of five North Carolina graduate programs from the Workforce Issues in Library and Information Science (WILIS 1) study. While the LIS field does not have a primary focus on social stratification, it is concerned with diversity in its workforce, which provides an intersection between sociology and those involved in LIS workforce planning.

A large body of sociological research examines career outcomes and work experiences (for a review of these literatures, see Rosenfeld, 1992; Abbott, 1993; Van Leeuwen & Maas, 2010) and it has been well-established that labor market experiences in the U.S. are highly stratified by race and gender (Smith, 2002; DiTomaso, Post, & Parks-Yancy, 2007). The observations and explanations offered by sociologists can inform human resources policies in the LIS field and highlight important institutional and social dynamics that may shape their labor market. In the introductory chapter of this dissertation I present a demographic overview of the LIS workforce, discuss some economic trends affecting the workers in this field, outline research questions guiding my analyses, and provide a description of the data I use.

## **2. National workforce trends and their relevance to the LIS workforce**

In addition to the urgency around the impending retirement of the baby boomer generation, due in large part, to the older age of many librarians (Dohm, 2000; ACRL, 2002; Wilder, 2003), there are a number of recent trends in the U.S. economy that could impact workforce planning in the LIS field. Two of these trends comprise the focus of this dissertation: 1) an increase in student loan use to finance higher education and 2) an increase in organizational restructuring that has led to more involuntary job losses due to downsizing and layoffs.

First, the greater reliance on student loans among U.S. students to finance higher education could deter people from pursuing a career in librarianship because librarian salaries, relative to other professions that require an advanced degree, are low (Matarazzo, 2000). LIS students who plan to enter librarianship may, instead, choose to seek employment in a non-library setting in order to earn a large enough salary to be able to afford their student loan payments. Even among those who are primarily motivated by intrinsic rewards, it is unclear to what extent they will be able to find a job that balances both their need for such rewards and an adequate salary. A limited body of sociological research has found that student loan users earn less and experience slower wage growth (Minicozzi, 2005; Braguinsky & Ohyama, 2012), and are less likely to pursue a career with a focus on public interest (Field, 2009; Rothstein & Rouse, 2011). This could be especially consequential for librarians given their tendency to be employed in organizations that serve the public interest.

Second, despite the relative economic security found in librarianship (Davis, 2009; Morgan & Morgan, 2009), the greater job insecurity facing many workers in the U.S. (Cappelli, 1999; Hacker, 2006; Kalleberg, 2009) could also become a new reality for LIS professionals. The role of librarian is evolving due to advances in information technology and they will,

perhaps, find themselves employed across a broader range of settings (Plutchak, 2012; Funk, 2013) to the extent that they are able to quantify their value to businesses and demonstrate how they can contribute to the bottom-line (Corcoran, 2002; Miller, 2009). If this happens, the LIS workforce may have to contend with the possibility of downsizing and layoffs that accompany organizational restructuring found in many corporate settings (Osterman, 2000). A large body of literature has documented demographic trends among displaced workers finding that men, non-whites, younger, less-educated, and part-time workers with less tenure are at greater risk of involuntary job loss and that workers often suffer lower post-displacement earnings (for a review, see Couch & Placzek, 2010; Brand, 2015). Significantly less research has investigated the relationship between involuntary job loss and non-monetary work rewards (Brand, 2006), but this is especially important for librarians as they have high intrinsic motivations (Sivak & DeLong, 2009; Steffen & Lietzau, 2009).

Both of these trends could also adversely impact diversity in the LIS field, which the American Library Association (ALA) has declared as one of its key action areas (ALA, 2016a). Similarly, the Institute for Museum and Library Services (IMLS) has also demonstrated its commitment to racial diversity through its funding of the Spectrum Scholarship program, which provides financial assistance to underrepresented racial minorities in order to cover some of the educational costs associated with pursuing an LIS degree and, thus, deepen the pool of librarians qualified to fill leadership roles in the profession (Roy, Johnson-Cooper, Tysick, & Waters, 2006). These initiatives will be difficult and the approaches needed to meet them will be even more complicated if the associations between student loan use and involuntary job loss are conditional on race. Given that student loan users are disproportionately non-white and that non-white workers are at greater risk of involuntary job loss, this is important to consider.

### **3. Data source**

The Workforce Issues in Library and Information Science (WILIS) study (Marshall, et al., 2009) was designed to learn more about the careers of graduates from LIS programs. It was a retrospective career study supported by a grant from the Institute for Museum and Library Services with a goal of addressing "...the need for a greater understanding of the long-term experiences of LIS graduates in the workforce" (Marshall, et al., 2009:142). The primary research team from the School of Information and Library Science at the University of North Carolina at Chapel Hill and the University of North Carolina Institute on Aging consisted of: Joanne Gard Marshall, lead principal investigator; Victor W. Marshall, co-principal investigator; Jennifer Craft Morgan, co-principal investigator; Deborah Barreau, co-investigator; Barbara Moran, co-investigator; Paul Solomon, co-investigator; Susan Rathbun-Grubb, research scientist; Cheryl A. Thompson, project manager; Shannon Walker, graduate research assistant.

Data from the WILIS 1 Study were collected from a sample of 2,682 alumni from five LIS graduate programs in North Carolina. Respondents who graduated between 1964 and 2007 were sent a survey questionnaire in 2007. Contact information for alumni was acquired directly from their graduate programs and also a commercial alumni tracking program, in which case the information was subsequently verified with their program. The study had a response rate of 35.4% (N=2,653). Respondents answered questions about their experiences in selecting and attending graduate school and a number of jobs they have held. In the analyses used in this dissertation, it is important to understand the particular jobs for which the respondents provided detailed information as there was a complex skip pattern used in the survey. Respondents were asked to report on five specific jobs: The job held before they entered their LIS program, their first post-graduation job, current/previous job, highest achieving job, and their longest job. For

some people these jobs may fall into the same category. For example, someone may report that their “current” job is also their “highest achieving” job. In these cases they completed only one set of responses (in this case the “current” job section) and all questions about the other job (“highest achieving” job) were skipped and recorded as missing in the data.

#### **4. Research questions**

This dissertation is guided by the following research questions:

1. Are the types of funding sources used for graduate school associated with subsequent job quality? What implications does this have for professions that offer a high level of intrinsic value but low salaries (relative to those in professions with similar education requirements), such as librarianship?
2. Are the job functions performed by managers conditional on race and gender? To what extent might this explain the lower representation of women and non-whites in managerial positions in the LIS field?
3. Is the relationship between involuntary job loss and subsequent job quality conditional on race and gender?

#### **5. A demographic overview of the LIS workforce**

Throughout this dissertation, the discussion of the LIS workforce will be focused primarily on librarians, rather than other information professions encompassed by the term LIS, for two reasons. First, documenting the work settings of LIS graduates and their workforce characteristics can be difficult due to the diversity in the degree (which includes both library and information science). Marshall, Marshall, Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson (2009) argue that the LIS field does “not have the same mechanisms for systematically tracking our workforce as can be found in the licensed professions such as medicine, nursing, and social work....Not only do we not know where LIS graduates are now, but we also do not know where they have been during their careers” (Marshall, et al., 2009:142). Second, most of the people in this study are in library jobs (80%) and those who earn LIS degrees but do not enter librarianship end up in such a variety of settings that it is beyond the

scope of this dissertation to focus on that aspect of the field. However, even those who have left the field report that they are still using their LIS skills (89% among those who have “library science degrees” and 72% among those who have “information science” degrees) (Marshall, et al., 2009), so I include them in my analyses.

### *5.1. Types of librarians and library settings*

#### *5.1.1. LIBRARIANS*

The American Library Association (ALA) and the Bureau of Labor Statistics (BLS) divide librarians into two categories: credentialed librarians (those with a Master’s degree in Library and Information Science or other recognized credential) and non-credentialed librarians. According the ALA’s description of library careers (ALA, 2016b), non-credentialed librarians include pages and library assistants or technicians. These jobs usually do not require a formal educational credential but some employees will get associate’s degrees or certificate. Pages generally work part-time and their tasks include shelving and retrieving materials for patrons. Library assistants or technicians work part- or full-time and generally perform clerical duties, such as checking out books, issuing library cards, and processing materials. Library Technicians and Assistants held 210,700 jobs in 2014 with a median annual salary of \$27,420 (Bureau of Labor Statistics, 2016a).

Credentialed librarians are those that have graduated from an ALA accredited master’s program in library science (there are currently 63 programs across 58 institutions. For a complete list, see ALA, 2016c) and include professional librarians, library managers, and library directors. Librarians teach courses and provide training to library users, assist patrons with research, make decisions about materials to purchase, and other specialized tasks. Library managers generally perform duties related to the operation of departments and human resources issues. Library



directors typically oversee strategic planning and relations with other organizations. Using U.S. Census Data, Davis (2009) found that there were about 65,633 credentialed librarians in 1980, rising to 86,694 in 1990, 105,661 in 2000, and 104,643 in 2005. According to the Bureau of Labor Statistics, 143,100 jobs were held by librarians in 2014 with a median annual salary of \$56,170 (Bureau of Labor Statistics, 2016b).

### *5.1.2. LIBRARY SETTINGS*

Librarians work in a variety of settings, but for the analyses used in this dissertation, I use only four discrete categories of work settings corresponding to the four most common settings: School, public, academic, and special libraries. School librarians generally work in K-12 settings managing the school library and assisting teachers prepare instruction materials. Academic librarians generally work in colleges and universities, assisting students and faculty with research and providing training related to searching for, managing, and organizing information. Public librarians perform a diverse set of roles and functions including many of those performed by other types of librarians. There are also many librarians working in specialized settings, such as health librarians, who work in a variety of medical settings, including medical schools and hospitals, and law librarians (Medical Library Association, 2016), who work in a variety of settings, including private law firms and government libraries (American Association of Law Libraries, 2016).

## *5.2 Gender and racial diversity in the LIS workforce*

### *5.2.1. AGE*

The average age of librarians is higher than that of many other occupations (Davis, 2009; Wilder, 2003; Beveridge, Weber, Beveridge, 2011). The American Library Association (ALA) reports that among credentialed librarians, 34% were under age 45, 60% were between the ages

of 45 and 64, and 5% were aged 65 or older. (ALA, 2012). In another report, the ALA conducted a voluntary, self-selected survey of its 40,353 members in July 2013 and found that 41% were baby boomers (American Library Association, 2013). There is projected to be a shortage of LIS professionals in the coming years as the baby boomers retire (Dohm, 2000) and significant federal funding has been given to attract students to the LIS field, primarily in the form of educational fellowships (Manjarrez, Ray, & Bisher, 2010).

#### *5.2.2. RACE*

In term of race, racial minorities are underrepresented in the LIS workforce. In 2014, whites represented 77.4% of the U.S. population (U.S. Census, 2016) and 63.1% of the national workforce (Toossi, 2015). Davis & Hall (2007) report that the LIS profession was 88% white in 2000 and Beveridge, et al., (2011) found that this number has remained virtually unchanged (89%). In a career study of Library and Information Science alumni (Morgan, Farrar, and Owens, 2009), there was not much racial diversity found in the broader LIS workforce (87% white). Racial disparities are even greater in administrative positions; the ALA Allied Professional Association (2011) found that non-whites (Blacks, Latinos, and Asians combined) in academic libraries represented 6% of directors, 6% of associate directors, and 5% of assistant directors in 2009-10.

#### *5.2.3. GENDER*

Women are the numerical majority in librarianship, but that was not always the case; many of the earliest librarians were men. As public library services grew and research became a more prominent focus in universities, additional library workers were needed to meet the increased demand. Women were often hired to perform some of the more routinized tasks (Record & Greene, 2008:193). In 1870, 20% of librarians were female, which increased to 79%

in 1910, up to 88% in 1920, and eventually 91% in 1930 (Williams, 1995:26). According to U.S Census and BLS data, it is estimated that women made up about 82% of the total number of credentialed librarians (Davis & Hall, 2007). An updated version of that study shows that women made up about 83% of all credentialed librarians in 2009-2010 (American Library Association, 2012) and the BLS (2016c) indicates that they made up about 83% in 2015. Perhaps this decline in the representation of women more recently is due to an increase in the use of technology in the information professions, which may draw more men to librarianship. In the LIS workforce more generally, Morgan, Farrar, & Owens (2009), using the same study used in this dissertation, found that it is also predominantly female (82%).

Librarianship has struggled to maintain its status as a profession. Applegate (2010:291) argues that (referencing (Wiegand [1999]) “the early entrance of women into librarianship as a profession was in some respects accepted because those in power saw librarianship as auxiliary and not central; it did not matter that women were included because librarianship was not important, a monopoly not worth enforcing.” Harris (1992) outlines librarians’ struggle to improve their occupational status discussing the common barriers to women’s work (little autonomy, perceptions of low skill requirements, and less emphasis on research) alongside two other feminized professions: nursing and social work. She argues that women in nursing, social work, and librarianship have attempted to model their professions after those held by men in order to gain professional legitimacy. For example, male dominated professions, such as law and medicine, have successfully created jurisdictions over which they have the power to limit entry and exercise high levels of autonomy. However, the efforts of those in female dominated professions to use education as a credentialing tool have resulted in divisions within the professions (see also, Applegate, 2010) and a greater focus on “science” has primarily served to

rename the profession of librarianship as “library and information science.” According to Applegate, this has greater appeal to men but fails to offer greater rewards to librarians. She concludes that, despite efforts to attain professional legitimacy “...it is not at all clear that occupations, such as librarianship, gain any particular advantage in the status race when they reshape themselves by acquiring the attributes of the traditional professions” (Harris, 1992:21).

In addition to this struggle for status as a profession, women in particular, have struggled to achieve top-level positions. For example, Moran, Leonard, & Zellers (2009) found a larger percentage of female managers in academic librarianship, but not necessarily proportional to their representation in the profession, and that there are more women in mid-level management and administrative positions than in higher level (e.g., directorship) positions. They argue that “[a]lthough it would be highly unusual for the proportions of administrators to exactly mirror the percentages of males and females in the academic library workforce, it is a bit troubling that the only overrepresentation was found in the lower ranks of administration in the smaller, non-ARL [research] libraries” (Moran, et al., 2009:226). They also found that women were overrepresented in lower level managerial positions but underrepresented in directorships.

## **6. Organization of the dissertation**

This dissertation is comprised of five chapters. This first chapter describes the research questions guiding this project, the data used to answer these questions, and provides a demographic overview of the LIS workforce. The second chapter analyses the relationship between student loan use and subsequent job quality. The third chapter examines the extent to which job functions performed by managers differ by race and gender. The fourth chapter explores the association between involuntary job loss and subsequent job quality. The fifth

chapter provides a summary of the primary findings of this dissertation and offers some final conclusions about their implications for sociological literature and the LIS workforce.

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## **CHAPTER 2: STUDENT LOAN USE AND SUBSEQUENT JOB QUALITY IN OCCUPATIONS WITH HIGH INTRINSIC VALUE: EVIDENCE FROM A SAMPLE OF LIBRARY AND INFORMATION SCIENCE GRADUATES**

### **1. Summary**

Despite growing interest in student loan debt, little attention has been paid to the non-monetary work benefits associated with student loan use. Using a sample of alumni of Library and Information Science graduate programs in North Carolina from the WILIS study (N=1,626), I test whether monetary work benefits (salary) and non-monetary work benefits (autonomy, satisfaction, security, opportunities for growth and promotion) are associated with student loan use. I find that those who borrowed for their graduate education earn lower salaries in their current position and report less job security. Aside from the wage and job security penalty, student loan users receive no other apparent penalty in terms of the non-pecuniary work benefits measured in these analyses. Scholarship use, however, is significantly associated with greater autonomy, job satisfaction, and more opportunities for growth and promotion. The implications of these findings for librarianship and other professions that offer high intrinsic value but few financial rewards, relative to other professions with similar educational requirements, are discussed in the context of a rapidly aging population and projections of a significant labor force shortage.

### **2. Introduction**

Students are increasingly using loans to finance their post-secondary education. During the 2014-2015 academic year, undergraduate and graduate students in the United States borrowed over \$100 billion dollars in federal and non-federal loans, which is up from about \$86

billion in 2004-05 (Baum, Ma, Pender, & Bell, 2015); today, student debt is estimated to be \$1.3 trillion (Finaid, 2015). Given the increase in the number of people pursuing graduate degrees and their higher rates of borrowing relative to undergraduate students, this level of indebtedness seems unlikely to decrease in the near future (National Center for Education Statistics, 2015a). Access to student loans can help reduce inequality by providing more opportunities to members of disadvantaged groups, but high levels of debt can negatively impact wages and other labor market outcomes. This increase in indebtedness among graduates could create additional barriers for any occupation, but the effect may be especially strong for those that require a post-secondary education yet offer relatively low financial rewards (often in exchange for more intrinsic rewards), such as teaching, social work, and librarianship. The relatively high cost of using student loans to pursue low-salary jobs could also further exacerbate concerns about workforce diversity since students from lower socioeconomic groups and non-whites are more likely to rely on student loans and typically borrow in larger amounts.

In this paper, I address two research questions: 1) What is the relationship between student loan use and job quality? and 2) What implications might this relationship have for low-salary, high intrinsic value jobs? I use a sample of library and information science (LIS) graduates in North Carolina to examine the extent to which using student loans is associated with job quality with respect to salary, security, autonomy, opportunities for growth and promotion, and job satisfaction. These analyses provide, in part, an analysis about the cost-benefit to using student loans. The returns to post-secondary education have always been significant, on average (Perna, 2005) but some argue that students need to use a more careful, and admittedly difficult, cost-benefit analysis before using educational loans (Oreopoulos & Petronijevic, 2013). As the cost of education and reliance on student loans continues to grow, it may become more difficult

for students to justify the high cost of an intrinsically rewarding job that requires a post-graduate education but offers relatively few financial benefits, especially among low-income and minority students who are more reliant on borrowing.

### **3. Background**

#### *3.1. Student loan use in the U.S.*

##### *3.1.1. HISTORY OF STUDENT LOAN USE IN THE U.S.*

The importance of higher education in the U.S. over the past fifty years is as evident in congressional legislation as it is in the increasingly large number of people pursuing college degrees. The Higher Education Act (HEA) of 1965 provided federal financial aid and support for post-secondary education and, upon being signed into law, President Lyndon B. Johnson reinforced the widely held value of having an educated populace. Addressing the nation, he remarked:

“So to thousands of young people education will be available. And it is a truism that education is no longer a luxury. Education in this day and age is a necessity.... And in my judgment, this Nation can never make a wiser or a more profitable investment anywhere” (Johnson, 1965).

This legislation, in part, guarantees federally subsidized student loans for low-income families on which the U.S. government pays interest while students are enrolled in college. Subsequent reauthorization of the HEA made educational loans accessible to a wider range of recipients with the Middle Income Student Assistance Act of 1978, which raised income limits for eligibility of these loans. In 1992, unsubsidized federal student loans were introduced and made available to all students regardless of financial need, but the interest on these loans is not paid by the federal government even while students are enrolled. However, in July, 2012, subsidized federal loans were no longer available to graduate students (for a more detailed summary of federal legislation

related to student loans see: Rudalevige, 2007; Dynarski & Scott-Clayton, 2013; Belasco, Trivette, & Webber, 2014).

As the use of federal student loans became more widespread, the private student loan industry also became more active. Mazzeo (2007) argues that private student loans have recently begun to constitute an increasingly larger portion of overall student debt, which has increased from 6% in 1996-97 to 18% in 2004-05 while the portion of debt from federally subsidized loans decreased from 54% to 36% over that same time period. However, unlike federal loans, private student loans are not subsidized and interest rates can vary based on one's credit history. He attributes this increase in the use of private educational loans to stagnant limits on federal loans, rising tuition costs, and a growing number of students choosing to attend more elite and private schools.

### *3.1.2. TRENDS IN STUDENT LOAN USE*

The increase in the number of people pursuing graduate degrees has contributed to the rise in student debt in the U.S (Figure 1) (for further discussion, see: Belasco, Trivette, & Webber, 2014; Delisle, 2014). In Figure 2, I present patterns of student loan use among graduate students using data collected by NCES (2015b). The number of master's degrees conferred has steadily grown from 342,863 in 1990-91 to 754,229 in 2011-12 (Figure 1) and, while graduate students make up just 16% of the student population in the U.S., Delisle (2014) estimates that they contribute to 40% of the outstanding student loan debt in the U.S. For example, during the 2011-2012 academic year, 42% of full-time and 33% of part-time undergraduates used student loans but 62% of full-time and 35% of part-time graduate students used loans. In 1995-96, 24% of master's students used student loans compared to 45.7% in 2011-12 with an average amount borrowed of \$9,200 and \$17,500, respectively. Rates of student loan use and amount borrowed

are even higher when calculating the percent of master's students who ever borrowed and the combined amount of student loans accumulated from both undergraduate and graduate school. Among master's students in 1995-96, 54.5% had ever borrowed with an average of \$15,100 in cumulative debt and, by 2011-12, 67.8% had ever borrowed with an average of \$50,200 in cumulative debt.

Borrowing patterns for master's students differ by gender, race, and income-level and a few notable trends appear (see Figure 2). Prior to the 2007-08 academic year, women borrowed at similar rates and for similar amounts each year until 2007-08 when women began to borrow larger amounts at higher rates; in terms of cumulative debt for both undergraduate and graduate student debt, this divergence happens in 2003-04. Blacks borrow the most frequently followed by Hispanics, whites, and Asians, but Asians borrow larger amounts during any given year than any of the other racial groups. In terms of cumulative debt, the racial gap between Asians and other groups in rates of borrowing is larger, but by 2007-08, blacks borrow more than any other racial group, including Asians. Those in lower income quartiles (in terms of household income) generally borrow larger sums more frequently compared to students in higher income groups for both their graduate and undergraduate education.

Previous research has reported similar borrowing rates and loan amounts of average graduate student debt, but many of the recent articles on graduate student debt do not analyze gender, racial, or family-income level differences in terms of the likelihood to enter debt or amount incurred (Minicozzi, 2005; Rothstein & Rouse, 2011; Grayson, Newton & Thompson, 2012; Yoon, 2012; Oreopoulos & Petronijevic, 2013; Zhang, 2013; Kuhl, Reiser, Eickhoff, & Petty, 2014). Among those that do, we see trends similar to those reported in Figure 2 for both

graduate students (Addo, 2014; Belasco, Trivette, & Webber, 2014) and undergraduates (Jackson & Reynolds, 2013; Houle, 2014).

### *3.2. Funding an LIS education and labor force trends*

Student loan debt and anticipated work rewards are important concerns that may shape the future supply of librarians and the demographic composition of the profession. Acquiring a position within a library does not require a college education, but securing employment as a credentialed librarian generally requires a master's degree. Although librarianship is among the top 10 occupations with the highest percent of people that have master's degrees (57%) (Bureau of Labor Statistics, 2014a), librarians report significantly lower salaries than all but one of these occupations (exercise physiologists) with an average of \$56,170 (Bureau of Labor Statistics (2014b) (Table 1). Given the growing concern about projected shortages in librarianship due to a rapidly aging population within the profession, educational requirements in the profession, the rising cost of tuition, and increased reliance on student loans to fund this educational credential, the state of funding for LIS students is important to understand. In this section, I will review the history of funding an LIS education in the U.S. and workforce trends in librarianship.

The importance of libraries in the U.S. has long been recognized by both private donors and the federal government. Early library schools were operated primarily by state and public libraries, but in the 1920s formal library schools were created within universities and colleges and were often financed by private donations, such as the Carnegie Corporation (Smith, 2008). A big advance in library education came with Title II of the Higher Education Act of 1965, which provided fellowships, specifically, to library students as well as additional funding for library schools in order to improve librarianship training (Smith, 2008).



As a result, the number of librarians increased from 106,000 in 1960 to 115,000 in 1970 (Bureau of Labor Statistics, 1975). Wilder (1995; 2003) argues that this was likely due to an increased need for education professionals (including librarians) to teach the large baby boomer generation followed by a labor market flooded by baby boomers. Using U.S. Census Data, Davis (2009) found that there were about 65,633 credentialed librarians in 1980, rising to 86,694 in 1990, 105,661 in 2000, and 104,643 in 2005. According to the Bureau of Labor Statistics, 143,100 jobs were held by librarians in 2014 with a median annual salary of \$56,170 (Bureau of Labor Statistics, 2016).

In the 1990s there was growing concern among those in the Library and Information Science (LIS) field about workforce recruitment and retention. As is the case in many other occupations, employers were anticipating labor shortages as baby boomers transitioned into retirement (Dohm, 2000). However, this was a more urgent concern for the LIS field because the average age of librarians was (and still is) higher than that of other professions (Wilder, 1995; ACRL, 2002; Lipscomb, 2003; Wilder, 2003).

In response to this concern of a labor supply shortage in librarianship and with support from First Lady Laura Bush, the Institute for Museum and Library Services (IMLS) announced the creation of the Laura Bush 21<sup>st</sup> Century Librarian program (LB21) (Flagg, 2002). The program launched in 2003 and provided federal funding for proposals that met their goal to “support projects that recruit and educate the next generation of librarians, faculty, and library leaders” (ICF, 2013: iii). The types of projects funded include those that support master’s and doctoral education, early career development, and research efforts; it has awarded 369 grants and almost 200 million dollars (IMLS, 2014). An independent study conducted a review of the impact of the funding and found that these grants were effective in terms of providing financial

assistance (e.g., scholarships), networking opportunities through conference participation, mentorship programs, internships, cutting edge instruction improvements, and partnerships with other organizations/institutions. In terms of factors affecting successful academic achievements, they found that scholarships, support systems developed through cohort approaches, and valuable faculty relationships developed through mentorship programs were helpful to students funded by these grants. However, they recommended, among many things, targeting more pre-professionals, including baccalaureate students pursuing library degrees.

Today, professionals in the LIS field remain concerned with recruitment and retention. Manjarrez, Ray, & Bisher (2010:12) argue that, given the rate of master's degrees conferred in LIS between 1970-2006, which has been about 6,000 per year (Snyder, 2008) paired with the rapidly aging population of librarians, the "age based attrition will likely outpace the supply of newly trained librarians entering the field." ACRL (2002) worked with the other members of the Ad Hoc Task Force on Recruitment & Retention Issues for the Association of College and Research Libraries to produce a report on the state of the profession and concluded that the growing demand for library professionals is the result of several factors, including retirement due to aging of the LIS workforce, low unemployment rates in the field, flat or declining graduate degrees attained in the field, increased competition from other occupations, low salaries, and a negative image of the profession; all of which deter people from pursuing a career in LIS. Matarazzo (1989; 2000) has also voiced this concern about low salaries in librarianship contributing to recruitment and retention issues. However, librarianship attracts people who are intrinsically motivated by things like an appreciation of books and learning as well as a desire to provide a public service and make a difference (Steffen & Lietzau, 2009; Sivak & DeLong,

2009; Jones, 2010), which could, perhaps, minimize the role of lower salaries as a deterrent to pursuing a career in LIS.

Striking a balance between high intrinsic and low extrinsic rewards can be difficult, but is made more tenuous by the additional burden of student loan debt acquired in order to gain the credentials required for entry into a position like librarianship. Given the American Library Association's (ALA) interest in diversity within the field, its designated mission of serving people of all populations, and goal of recruiting people of color as one of its key action areas (ALA, 2016), the increases in student loan use in the U.S. could be especially consequential to meeting diversity goals since non-whites and low-income students are more likely to borrow and borrow in larger sums. Although, there is some evidence to suggest that those in the LIS field may be shielded from some of the effects of a financial recession (Morgan & Morgan, 2009), graduates with student loan debt will likely be more vulnerable to financial recessions affecting professions with these characteristics, which could have significant implications for recruitment and retention efforts in terms of workforce diversity.

### *3.3. Associations between student loan use, educational attainment, and post-graduation outcomes*

Student loans can remove the financial barriers to entering a credentialed profession, like librarianship and, in doing so, has the potential to significantly reduce social and economic inequality. However, despite increasing access to higher education among the less advantaged, their use is often associated with poorer educational and occupational outcomes. Using loans to finance one's college education is associated with college completion, graduate school enrollment and program choice, marital status, and psychological functioning. In terms of work outcomes, loans are associated with earnings and job choice. A large (but recent) body of research has documented the effects of student loan use on educational outcomes, but the

relationship between student loan use and work outcomes has received considerably less attention. Even less is known about the relationship between student loan use and non-monetary dimensions of post-graduation job quality, especially among those who earn graduate degrees. I briefly describe the associations between student loan use and non-work outcomes and then present a more detailed discussion of work-related outcomes.

### *3.3.1. STUDENT LOAN USE AND NON-WORK OUTCOMES*

Student loan use has been linked to educational experiences and other areas of one's personal life and these effects can vary by race. Among undergraduates, the use of loans for black and Hispanic students is associated with lower graduation rates relative to white students (Kim, 2007) and black students borrow larger sums than white students, which appears to be a function of black students taking more time to complete college (Jackson & Reynolds, 2013). In terms of graduate school, previous student loan debt reduces the odds of enrollment (Rothstein & Rouse, 2011; Zhang, 2013) and, with the exception of blacks and Asians, odds of enrollment decrease as debt levels increase (Malcolm & Dowd, 2012). Student loan debt acquired by students at public colleges reduces the probability of entering a doctoral or professional program but is not significantly associated with enrollment in other master's programs (Zhang, 2013). Once in graduate programs previous debt can affect program selection. Forty one percent of graduates reported that previous student loan debt affected their area of specialization within their program (Kuhl, Reiser, Eickhoff, & Petty, 2014). Fifty-one percent felt very burdened by student loan debt payments, but 54% said if they had to do it over again that they would borrow about the same amount.

The relationship between student loan use and features of one's personal life is often contingent on demographic characteristics. For example, student loan use is associated with

poorer psychological functioning (measured using indicators of nervousness, calmness, sadness, and happiness) for students from wealthy families and better psychological functioning for students from less wealthy families (Walsemann, Gee, Gentile, 2015). In terms of relationships, some research found that student loan debt is not associated with marital status (Zhang, 2013) but subsequent work found that debt is associated with lower rates of marriage for women, but not men (Addo, 2014). Finally, between 53% to 67% of students report that student loan debt has affected their personal decisions including buying a home or car, getting married, and having children (Kuhl, et al., 2014). These effects are significant in and of themselves, but spillover between work and home life is common (Schieman, Milkie, & Glavin, 2009) and could have impacts on work opportunities and rewards.

### *3.3.2. STUDENT LOAN USE AND WAGES*

Student loan use is significantly associated with earnings and has been the most frequently researched with respect to work outcomes, but the nature of that relationship is unclear and many approaches have been used to better understand it. Using a nationally representative sample of men attending two and four year colleges, Minicozzi (2005) found that students with educational loan debt had higher starting salaries but lower wage growth over the four years following graduation. She argued that perhaps those who used student loans felt more financially constrained and picked a job that offered greater financial rewards regardless of their other career preferences. Educational debt under \$9,000 was variable in terms of starting salaries, but debt over \$9,000 was significantly associated with consistently lower wage growth over four years. Similarly, Rothstein & Rouse (2011) found, in a sample of graduates at a highly selective private college, that graduates with student loan debt were more likely to work in a high-salary

industry, less likely to work in a low-salary industry, and earned annual salaries that were, on average, \$2,000 larger than those who did not have student loan debt.

Braguinsky & Ohyama (2012) found the opposite result using a nationally representative sample of people who received a bachelor's or master's degree in science or engineering. In their study, those who used educational loans earned lower salaries in their first job after graduation. High borrowers (those who borrowed loan amounts in the 80<sup>th</sup> percentile within their cohort) earned more than low borrowers (those who borrowed loan amounts below the 80<sup>th</sup> percentile within their cohort) and were more likely to attend private and high quality schools. Borrowers also had lower GPAs, which offset the wage benefits of going to a high quality school. This effect was even larger among less privileged students (those whose parents did not graduate from college and who did not receive financial aid from their parents) as these student loan users were 50% more likely to attend private colleges and to graduate, have drastically lower GPAs than non-borrowers, and earned \$3,000 less in their first job after graduation. They argue that borrowers may have felt more pressure than those who did not borrow to shorten their job search in order to begin loan repayment.

One reason for the difference in results could be that there is more variability in the occupations and industries that employ graduates in Minicozzi's (2005) analysis and Rothstein & Rouses's (2011) study than in Braguinsky & Ohyama's (2012) analysis of science and engineering majors. The average salary in Science, Technology, Engineering, and Math (STEM) fields is much larger, on average, than the salary of those in non-STEM fields. A report produced by Burning Glass Technologies (2014) found that, of the online job advertisements listed in 2014, the average salary for entry-level positions (those with a bachelor's degree) in a STEM field was \$66,123, compared with only \$52,999 for those in non-STEM fields. Given this, it

could be that the low end of a high-salary field is comparable to a high salary in a low salary field. Graduates of STEM fields may not feel as much anxiety about loan repayment because the salaries are large enough to afford their monthly payments. As Braguinsky & Ohyama (2012) argue, these results may not be contradictory and, instead, could indicate that borrowers are taking jobs with higher initial earnings but fewer non-monetary benefits, such as mentoring, training, and opportunities for growth and promotion. Thus, while borrowers are earning higher salaries and repaying their student loans, those without student debt are investing in human capital and developing skills that will eventually make them more competitive in the labor market.

Zhang (2013) used a nationally representative sample of college graduates and found no relationship between using loans and annual salary one year after graduation. However, the aggregate-level analyses may hide some differences that are found in the previous studies. Zhang (2013) includes measures for college major, but does not measure an interaction effect between loan use and gender, race, or any particular major. It could be the case that student loan debt is associated with career outcomes in some occupations but not others or that some professions provide more scholarship funding than others and that this aggregate-level measure of debt obscures these types of differences. For example, entry-level salaries in the engineering field (which is heavily dominated by white men) are relatively high and recent graduates of these programs may be able to more easily afford monthly loan payments than graduates of humanities programs who earn much lower starting salaries. There may be more pressure among humanities graduates (in which women and racial minorities are overrepresented) to pursue higher incomes than what is typically afforded in their chosen profession; this relationship between student loan debt and career outcomes may be conditional on the average range of starting salaries in a

profession. Subgroup analyses focusing on occupations with different demographics might lead to different results. Zhang (2013) also uses a continuous measure of student loan debt, which could hide categorical differences in different levels of debt. It could be that there is not much difference between borrowing \$1,000 and \$5,000, but there is likely a difference between borrowing \$1,000 and \$20,000.

### *3.3.3. STUDENT LOAN USE AND OTHER WORK OUTCOMES*

Relatively less attention has been paid to the relationship between student loan use and the non-monetary characteristics of the jobs people choose, but recent work has shown evidence that it is associated with the choice of working in the public or private sector industry, area of specialization within an occupation, and experiences with entrepreneurship.

Student loan debt may deter people from choosing public interest jobs and, beyond the financial constraint, there appears to be a psychological barrier to using loans. Field (2009) found that law school graduates who used student loans were less likely to choose a job in public interest law than those who did not pay for their program with student loans. In their study, they made use of a recent change in policy in which the law school offered two types of financial aid packages based on a lottery system: One package offered students educational loans, for which the school would make payments if they chose a job in public interest law (lottery losers). The other package offered tuition remission and students would be required to repay this amount if they did not choose a public interest job (lottery winners). Since there was a significant difference in occupational choice between the lottery winners and lottery loses, despite similar monetary value in aid, Field (2009) argues that there may be a psychic or social cost of debt that encouraged students with loans to make different choices. This conclusion is supported by the findings from Walseman, Gee, Gentile (2015), which find that student loan use is significantly



associated with mental health (i.e., stress). In an analysis of a broader range of students at a highly selective private college, Rothstein & Rouse (2011) reported similar results and found that borrowers were less likely than non-borrowers to be working in public services industries (i.e., non-profit, government, and education sectors).

Grayson, Newton, and Thompson (2012) found, in a sample of medical school students, that 31% of students switched specialties between years one and four of medical school and that higher anticipated debt is associated with increased probability of switching one's preference to a specialty that offers higher average salaries. Students who switched from a preference for primary care jobs (with lower average salaries) to high-paying, non-primary care jobs between years one and four anticipated similar levels of debt in their first year of medical school but significantly more debt in their fourth year of medical school (\$104,115 v. \$93,743). Switchers also anticipated significantly higher incomes in year four (\$195,852 v. \$125,476) than in year one (\$119,852 v. \$104,805), and placed a greater value on income in year four (with no significant differences in value during year one). Similarly, Kuhl, Reiser, Eickhoff, & Petty (2014) found, in a sample of recent graduates of genetic counseling programs, that 38% of graduates reported that student loan debt affected their job choice or opportunities for professional growth.

Successful entrepreneurship has also been linked to student loan debt. Using a nationally representative sample of U.S. families, Krishnan & Wang (2015) found that student loan use decreased the propensity to start a business. This effect was stronger for younger cohorts, people in high-technology industries, and for those who have a financially dependent spouse. This effect was consistent even among people who prefer high-return, high-risk investments; student loan use, even among this group, reduced the propensity to start a business. Finally, student loan use

decreases the income earned from that entrepreneurial business by an average of \$94 per one percent increase in student loan amount.

Clearly, there appear to be some negative associations between student loan debt and occupational outcomes, especially for those who borrow large amounts, but Avery & Turner (2012) argue that popular claims about students borrowing too much is far too general a statement to make as the cost of college can differ by the type of institution (private v. public) and the rewards to a college degree also vary by major. They argue that some students may not borrow enough to enable them to devote the time and energy needed to fully reap the rewards of a college education. Others stress the need for students to carefully consider whether using student loans to fund their education is cost-effective given their field of study. For example, Oreopoulos & Petronijevic (2013) argue that students need to carefully evaluate the quality of the educational institution and employment prospects in their chosen field. While logical, the impact of this solution would likely be low. For example, they acknowledge the non-pecuniary benefits of a college degree, the difficulty in conducting this cost-benefit analysis, and that this assessment is not the same for all students. Surely these should be part of the solution, but for first generation college students and many non-whites, who have relatively little experience with college, it is unrealistic to expect that their cost-benefit calculation is nearly as realistic as someone whose parents, relatives, and friends attended college before them.

Although research on the link between student loan use and occupational outcomes is limited, especially with respect to the non-monetary features of work, the available evidence suggests an association. If LIS students are already expecting to earn a low salary it would likely be important for them to be reasonably confident that they could expect non-monetary work rewards or, at the very least, avoid penalty for student loan use with respect to these work

rewards. If student loan use is increasing and also associated with avoidance of public interest jobs, this could have serious implications for a profession that, despite offering many intrinsic rewards, requires advanced degrees and offers lower salaries than similarly credentialed professions, such as librarianship. Our economic structure in the U.S. relies, to some extent, on the desire of people to pursue service-oriented work for less pay, and it would be harmful to this structure if we priced many students out of the ability to pursue these goals, especially those from low SES and minority backgrounds, for whom the price may be even higher.

#### *3.4. Job quality: The importance of intrinsic work characteristics*

Although non-monetary work rewards are not often used in research on the effects of student loan use, they are featured prominently in sociological and psychological research. However, there is no general consensus about which features of work should be included in measures of job quality (Gallie, 2013; Osterman, 2013) or how much weight should be given to each indicator (Findlay, Kalleberg, & Warhurst, 2013). Scholars of work argue that we need to better conceptualize job quality and (Findlay, et al., 2013) and use more precise measurements of the concept in order to produce better research and policy. Studies generally report that, while salary is an important indicator of job quality, non-monetary factors actually play a larger role in determining job quality and many draw the conclusion that we should take a multidimensional approach to studying job quality using some combination of intrinsic and extrinsic rewards (Jencks, Perman, & Rainwater, 1988; Kalleberg & Vaisey, 2005; Osterman, 2013). Some of the most commonly used indicators of job quality include job satisfaction, autonomy, opportunities for growth and promotion, job security, and earnings; these are the indicators I use in my analyses.

Job satisfaction is usually measured with a single indicator of overall satisfaction or a combination of several indicators and indicates satisfaction with one's work experience in a general sense, considering all features of that job (Kalleberg & Vaisey, 2005; Bryson, Barth, & Dale-Olsen, 2013; Cooke, Donaghey, & Zeytinoglu, 2013) but the former has been critiqued as a useful measure because it does not always correlate with more objective measures of job quality and it is, therefore, unclear what is actually being measured (Osterman, 2013). Autonomy is usually measured with indicators of how much discretion employees have over their daily tasks, working hours and the way in which their work is done (Jencks, Perman, & Rainwater, 1988; Kalleberg & Vaisey, 2005; Cottini & Lucifora, 2013; Gallie, 2013; Green, Mostafa, Parent-Thirion, Vermeulen, Van Houten, Biletta, & Lyly-Yrjanainen, 2013; Holman, 2013; Iskander & Lowe, 2013). Job security is usually measured by the extent to which one feels like they can keep their job if they want to (Jencks, Perman, & Rainwater, 1988; Kalleberg & Vaisey, 2005; Morgan, & Morgan, 2009; Cooke, et al., 2013; Holman, 2013; Van der Meulen Rodgers & Menon, 2013). Opportunity for growth and promotion is usually measured by the extent to which this job offers training, career development, and the opportunity for upward mobility in the organization (Kalleberg & Vaisey, 2005; Holman, 2013; Iskander & Lowe, 2013). Salary and wages are usually measured by either yearly or hourly earnings (Jencks, Perman, & Rainwater, 1988; Kalleberg, Reskin, & Hudson, 2000; Kalleberg & Vaisey, 2005; Morgan & Morgan, 2009; Cooke, et al., 2013; Holman, 2013; Van der Meulen Rodgers & Menon, 2013).

It is especially important to include non-monetary measures of job quality when studying LIS professionals because they have high intrinsic work motivations. In the sample I use for these analyses in this paper, LIS graduates place greater value on intrinsic rewards than extrinsic rewards (Table 2). Respondents in this sample were asked: "Please tell us how much the

following affected your decision to enter an LIS program” and could reply with “not at all,” “a little,” “a moderate amount,” or “a lot.” About one quarter of respondents reported that salary (25%) or benefits (27%) influenced their decision to enter an LIS program “a lot” or “a moderate amount,” but a much larger percentage reported that they chose to enter an LIS program because “it seemed like a good fit for [their] interests” (93%) or that they “wanted a job where [their] could make a difference” (71%). Given their high levels of intrinsic motivation it is important to assess the payoff for using loans in terms of their specific work goals.

#### **4. Hypotheses**

This review of the literature suggests that people who use loans may be faced with special obligations that require higher salaries in the short term; this may necessitate the sacrifice of non-monetary and intrinsic work rewards. Student loan users may be constrained in terms of their ability to seek employment that offers lower salaries but more opportunities for professional growth and skill development that will likely pay off in the future. Therefore, I propose the following hypotheses. Relative to people who did not use student loans, those who did will report:

1. Less autonomy
2. Less job satisfaction
3. Fewer opportunities for growth and promotion
4. Less perceived job security
5. Lower salaries in their current job.
6. Higher salaries in the job held immediately after graduate from their LIS program.
7. A smaller salary increase between their first post-graduation job and their current job.

## 5. Data

### 5.1 *WILIS study*

The Workforce Issues in Library and Information Science (WILIS 1)<sup>1</sup> study sought to learn more about the careers of graduates from Library and Information Science (LIS) programs (Marshall, Marshall, Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson, 2009) using the life course perspective (Marshall, Rathbun-Grubb, & Marshall (2009). The WILIS 1 Study, as supported by a grant from the Institute for Museum and Library Services, had the goal to address "...the need for a greater understanding of the long-term experiences of LIS graduates in the workforce" (Marshall, Solomon, & Rathbun-Grubb, 2009 2009:142). Data from the WILIS 1 Study were collected from a sample of 2,682 alumni from five LIS graduate programs in North Carolina. Respondents who graduated between 1964 and 2007 were sent a survey questionnaire in 2007. Contact information for alumni was acquired directly from their graduate programs and also a commercial alumni tracking program, in which case the information was subsequently verified with their program. Overall, the study had a response rate of 35.4% (n=2,653). Respondents answered questions about their experiences in selecting and attending graduate school as well as questions about a number of jobs they have held.

In the analyses used in this paper, it is important to understand the particular jobs for which the respondents provided detailed information as there was a complex skip pattern used in the survey. Respondents were asked to report on five specific jobs: Their job before the LIS program, their first post-graduation job, current job, highest achieving job, and their longest job.

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<sup>1</sup> The WILIS 1 study was supported by a grant from the Institute for Museum and Library Services. The primary research team from the School of Information and Library Science at the University of North Carolina at Chapel Hill and the University of North Carolina Institute on Aging consisted of: Joanne Gard Marshall, lead principal investigator; Victor W. Marshall, co-principal investigator; Jennifer Craft Morgan, co-principal investigator; Deborah Barreau, co-investigator; Barbara Moran, co-investigator; Paul Solomon, co-investigator; Susan Rathbun-Grubb, research scientist; Cheryl A. Thompson, project manager; and Shannon Walker, graduate research assistant.

For some people these jobs may fall into the same category. For example, someone may report that their “current” job is also their “highest achieving” job. In these cases they completed only one set of responses (in this case the “current” job section) and all questions about the other job (“highest achieving” job) were skipped and recorded as missing in the data.

## *5.2. Outcome Variables*

I use seven measures of job quality in these analyses. The first four outcome variables measure job satisfaction, autonomy, opportunities for growth and promotion, and job security in one’s current job. The last three outcome variables measure annual salary and include the annual salary in one’s current job, annual salary at one’s first post-graduation job (post-graduation salary), and the amount of increase in annual salary between those two jobs. The frequencies, means, and standard deviations for these variables are reported in Table 5 and are discussed in the context of the results section of this paper.

### *5.2.1. SALARY & JOB SECURITY*

Salary is measured as an annual value (it was converted into 2007 dollars using the average Consumer Price Index for each year) for both one’s current job and the job they held immediately after graduation from their LIS program; for cases in which respondents reported hourly wages, this value was calculated by multiplying the number of weekly hours worked by the hourly wage reported, which was then multiplied by 52 weeks. Job security was measured using a survey question that asked respondents to indicate the extent to which they agreed with the following statement: “Compared to five years ago, I am more concerned about my job security” (1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly Agree). I reverse-coded this variable and frame the discussion in terms of perceived job *security* rather than *lack of* perceived job security.

### *5.2.2. AUTONOMY, JOB SATISFACTION, AND OPPORTUNITIES FOR GROWTH AND PROMOTION*

Measures of autonomy, job satisfaction, and opportunities for growth and promotion were created using four survey questions each, which asked respondents to indicate the extent to which they agreed with each statement based on a four item Likert scale (1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly Agree). The sum of the four survey responses is divided by four to create an average value for autonomy, job satisfaction, and opportunities for growth and promotion; values can range from one to four.

#### *5.2.2.1. Autonomy*

The Cronbach's alpha for the autonomy items is 0.7336. The survey questions included are:

- I have a lot of say about what happens on my job.
- I decide when I take breaks.
- It is basically my responsibility to decide how my job gets done.
- I generally have opportunities for creative input and innovation in my work.

#### *5.2.2.2. Job satisfaction*

The Cronbach's alpha for the satisfaction items is 0.8475. The survey questions included are:

- Overall I am satisfied with what I do in my job.
- I am generally happy with my current work environment.
- I still like my job.
- Knowing what I know now, if I had to decide all over again, I would still decide to take the job I now have.



### ***5.2.2.3. Opportunities for growth and promotion***

The Cronbach's alpha for the opportunities for growth and promotion items is 0.8170.

The survey questions included are:

- I have the opportunity to develop and apply the skills I need to enhance my career.
- My employer does a good job of helping develop my career.
- I believe that I have opportunities for promotion within the field given my education, skills, and experience.
- I have opportunities to develop leadership skills.

### ***5.3 Control and explanatory variables***

The main explanatory variables used in these analyses are funding sources for graduate school; descriptive statistics are presented in Table 4 and discussed in the results section. All are dichotomous and measure whether one used any of the following sources to fund their graduate education: scholarships, loans, family assistance, personal savings, employer funding, library work, non-library work, grants, assistantships, and other funding source. Values of 0 indicate that respondents did not use the funding source and values of 1 indicate that respondents did use that resource.

Control variables used in these analyses are presented in Table 3 and include gender (0=male, 1=female), race (a categorical variable where: 1=white, 2=black, 3=Asian/Pacific Islander (PI), and 4=other race), age, age<sup>2</sup>, and the five-year cohort in which they graduated from their LIS program (with the exception of 1954-69, which I combined due to small sample sizes in earlier cohorts, and 2005-07, in which case the date of the survey completion occurred before the end of a five-year period). I include a categorical variable to indicate the work setting in which the respondent is currently employed (1=school library, 2=public library, 3=academic

library, 4=other library, 5=non-library), managerial status for one's current job (1=supervisor, 2=middle manager, 3=senior administrator, 4=non-manager) and job held immediately after graduation from LIS program (0=non-supervisor, 1=supervisor), organizational size in both one's current and first post-graduate position (1=1-9 employees, 2=10-24 employees, 3=25-99 employees, 4=100-499 employees, 5=500-999 employees, and 6=1000+ employees), the number of years respondents have been employed in their current and first post-graduation job (tenure) , the number of hours worked per week in their current and first post-graduation jobs, their salaries in both their current and first post-graduation job as well as the amount the income increase between the two jobs. Finally, I include a variable indicating from which of the five LIS programs the respondent graduated: The University of North Carolina at Chapel Hill (UNC-CH), Appalachian State University (ASU), East Carolina University (ECU), The University of North Carolina at Greensboro (UNC-G), and North Carolina Central University (NCCU).

## **6. Methods**

### *6.1. Analytic sample*

I restrict my sample to those who were employed at the time of the survey (N=2,046). Of these, 415 people had missing values on at least one outcome variable and were also dropped from the analyses and I drop an additional five cases that had missing cases on variables that were collinear and prevented convergence in the multiple imputation process. I end up with an analytic sample of N=1,626. To handle the remaining missing data in the independent variables I use multiple imputation with chained equations (Allison, 2001). Multiple imputation calculates coefficients that are averaged over several datasets and addresses potential biases in standard errors (Rubin, 1987). I present the percent missing for each variable along with descriptive statistics for both the raw data and the imputed values in Table 3. The first column shows the

frequencies and means for the original data set, which includes only cases that had valid values on these variables, (i.e., before imputation was used). The second column includes the frequencies and means averaged over the five sets of imputed data, and the third column shows the percentage of missing data in the original data set. We can see that there is not much variation in the frequencies and means of each variable between the columns, indicating that there were not significant biases in the imputation process that resulted in significantly different imputed datasets.

## *6.2. Methodology*

In the bivariate analyses, independent samples t-tests and chi-squared tests are used to examine gender differences in the outcome variables and main explanatory variables and one-way analysis of variance (ANOVA) tests to examine racial differences. In the multivariate analyses, Ordinary Least Squares (OLS) regression is used to test my hypotheses. Specific bivariate or multivariate findings about the graduate program variable are not reported due to confidentiality agreements made with the schools, but significance tests indicating whether the graduate program one attended had a statistically significant effect on each dependent variable denoted with the appropriate *F*-statistic or chi-squared value and asterisks representing p-values are provided.

## **7. Results**

### *7.1. Descriptive & bivariate results*

#### *7.1.1. CONTROL VARIABLES*

Descriptive statistics for the control variables are presented in Table 3 (with the exception of loan use, which is presented in Table 4). *Demographics.* The sample is mostly female (80%) and white (89%; the non-white respondents in the sample are 6% black, 2% Asian, 3% other

racial status) and the mean age is 47.6 years. *School characteristics.* Most of the sample graduated from UNC-CH (51%) followed by UNC-G (20%), NCCU (14%), ECU (8%), and ASU (7%) with a relatively even distribution of graduation cohorts but a greater representation of more recent graduates. *Work characteristics.* Most people are currently working in school libraries (25%), followed by non-library settings (24%), academic libraries (22%), public libraries (15%), and other library settings (14%). In their first post-graduation job, 86% of respondents worked in library settings. In their current position, sixty-one percent of respondents are non-managerial employees, 11% are supervisors, 16% are middle managers, and 13% are senior administrators and, in their first post-graduation job, 53% were supervisors. Four percent currently work in an organization with fewer than 10 employees and others worked in organizations with between 10-24 employees (5%) and others worked in organizations with between 25-99 employees (21%), between 100-499 employees (25%), between 500-999 employees (12%), and 1,000 or more employees (33%). In their first post-graduation job, 3% of respondents worked in an organization with fewer than 10 employees and others worked in organizations with between 10-24 employees (5%), 25-99 employees (26%), 100-499 employees (27%), 500-999 employees (10%), and 1000 or more employees (29%). On average, respondents have worked at their current job for 6.8 years and work an average of 40.2 hours per week. Respondents were employed in their first post-graduation job for an average of 5.1 years and worked an average of 39.6 hours weekly. Their average current salary is \$55,008, post-graduation salary is \$43,038, and salary increase is \$11,970 in this sample.

Descriptive results for the main explanatory variables (funding sources used for one's LIS program) and selected bivariate analyses are presented in Table 4. Seventeen percent used scholarships, 31% loans, 36% family assistance, 39% savings, 9% employer assistance, 47%

library work, 16% non-library work, 11% grants, 25% assistantships, and 9% used other funding resources. Women use family assistance more often and men use personal savings, non-library work, assistantships, and other funding sources more often. Whites rely heavily on both personal savings and library work; blacks rely heavily on scholarships, loans, and grants; Asians rely heavily on family assistance, personal savings, and assistantships.

#### 7.1.2. *OUTCOME VARIABLES*

Descriptive results for each outcome variable and selected bivariate analyses are presented in Table 5. *Non-monetary measures.* In this sample of LIS alumni, the mean value for each non-monetary measure of job quality is: autonomy (3.24), job satisfaction (3.22), for opportunities for growth and promotion (3.00), and job security (2.86). Women have lower scores on autonomy and opportunities for growth and promotion, but slightly higher values for job satisfaction. Asians have the lowest scores on both autonomy and job security. Those who use loans have lower scores on both job satisfaction and job security. *Monetary measures.* The mean value for current salary is \$55,008 and \$43,038 for post-graduation salary. The average difference between the salaries for these two jobs is \$11,970. Women earn less than men and had lower salary increases between their post-graduation and current salaries, those who used loans earned lower post-graduation salaries, and Asians earned more than all other racial groups in both their post-graduation and current salaries.

#### 7.2. *Multivariate results*

Multivariate results are discussed in the order and context of each hypothesis. Table 6 presents the full models for each of the job quality measures with the estimates of all control and explanatory variables shown. The reference categories for all models are: Gender (male), race (white), graduation cohort (2005-07), work setting (non- library), managerial status (non-

manager), and organization size (1,000+ employees). In the post-graduation salary and salary increase models, current work characteristics are replaced with those related to one's first post-graduation job. Reference categories for these variables are: Library setting (non-library) and supervisory position (non-supervisor). Due to a confidentiality agreement made with the participating universities I cannot disclose information that would identify specific results associated with any of the programs. Therefore, coefficients for graduate program are not included in the regression models, but *F*-statistics are reported to indicate whether the categorical variable as a whole is statistically significant.

Tables 7 through 13 present the results for four sets of models predicting each outcome variable, but only the coefficients for funding variables are presented. The presentation of the results in this way allows for a clearer picture of how the effect sizes of funding variables change when demographic, school, and work characteristics are added to the models. The first model includes only the primary explanatory variables (funding sources). The second model adds demographic characteristics (gender, race, age, and age-squared). The third model adds school variables (graduation cohort and graduate program). The full model adds work variables (work setting, managerial status, organizational size, and number of years in current job).

*7.2.1. HYPOTHESIS 1: PEOPLE WHO USE LOANS WILL REPORT LOWER LEVELS OF AUTONOMY IN THEIR CURRENT JOB.*

Table 6 indicates that there is no significant association between using student loans and the level of autonomy in one's current job. However, using scholarships is significantly associated with greater autonomy. Relative to whites, Asians report less autonomy and relative to those working in non-library settings, school librarians have less autonomy. Relative to non-managers, supervisors and senior administrators (but not middle managers) report more autonomy, relative to organizations with 1,000 or more employees those with only 1-9 report

more autonomy, and those who work more hours report more autonomy, on average. Graduate program is also significantly associated with reported levels of autonomy; the  $R^2$  values increase from .017 to .043 with the addition of this variable, but the increase is even larger when work variables are included ( $R^2=.102$ ) (see Table 7).

#### *7.2.2. HYPOTHESIS 2: PEOPLE WHO USE LOANS WILL REPORT LOWER LEVELS OF JOB SATISFACTION.*

Table 8 indicates that people who use loans report lower levels of job satisfaction in the first two models, but once school and work variables are included this effect disappears.

Scholarship users, however, report higher levels of job satisfaction. Relative to whites, blacks report less job satisfaction, those who work more weekly hours also report less job satisfaction, and senior administrators report greater job satisfaction than non-managers (see Table 8).

Graduate program is not significantly associated with job satisfaction and the  $R^2$  values across each of the four models increase only slightly.

#### *7.2.3. HYPOTHESIS 3: PEOPLE WHO USE LOANS WILL REPORT FEWER OPPORTUNITIES FOR GROWTH AND PROMOTION.*

Table 6 indicates that using loans is not significantly associated with fewer opportunities for growth and promotion. However, scholarship users report greater opportunities for growth and promotion and those who funded their graduate education through non-library work or grants report fewer opportunities for growth and promotion. Relative to whites, Asians report fewer opportunities for growth and promotion, and relative to those who graduated from their LIS program between 2005-07, those graduating between 1970-74, 1975-79, 1990-94, and 1995-99 report fewer opportunities for growth and promotion. Relative to those working in non-library settings, public librarians report more opportunities for growth and promotion, relative to non-managers both middle managers and senior administrators report more opportunities for growth and promotion, and those who work more weekly hours report more opportunities for growth

and promotion. Graduate program is not significantly associated with reported opportunities for growth and promotion (see Table 9).

#### *7.2.4. HYPOTHESIS 4: PEOPLE WHO USED LOANS WILL REPORT LESS JOB SECURITY.*

Table 6 indicates that using loans is associated with lower reported job security but none of the other funding variables is significantly associated with this measure of job quality.

Relative to whites, those in the Asian and “other” racial categories report less job security, as do older respondents (although the significant age-squared term indicates a non-linear effect).

Relative to those working in non-library settings, public librarians report more job security; middle managers and supervisors report more job security than non-managers. Graduate program is not significantly associated with job security (see Table 10).

#### *7.2.5. HYPOTHESIS 5: PEOPLE WHO USED LOANS WILL REPORT LOWER SALARIES IN THEIR CURRENT JOB.*

Table 6 indicates that using loans is significantly associated with lower salaries (\$2,467, on average) in one’s current job and, although this effect is significant in the full model, it is not significant in model two (demographics) or model three (demographics + school). Family assistance is also associated with lower salaries (\$2,398, on average), but non-library work is associated with higher salaries (\$3,070, on average). Women’s salaries are, on average, \$10,704 lower than men’s, Asians earn, on average, \$9,399 larger salaries than whites and, there is a significant trend toward lower salaries among those who graduated more recently from their LIS program, which is likely due to more recent graduates having less work experience. Relative to those working in non-library settings, school, public, and academic librarians earn lower salaries (\$5,753, \$10,306, and \$11,985 lower, respectively), supervisors and senior administrators (but not middle managers) earn more than non-managers (\$7,777 and \$14,248, respectively), those working in smaller organizations earn less, on average, and those who work more hours earn



more. Graduate program is also significantly associated with one's current salary, but the  $R^2$  values jump much higher between the school characteristics and work models (.163 to .421) than between the demographic and school characteristics models (.092 to .163) (see Table 11).

#### *7.2.6. HYPOTHESIS 6: THOSE WHO USED LOANS WILL REPORT HIGHER POST-GRADUATION SALARIES*

Table 6 indicates that student loan use is not significantly associated with post-graduation salaries. Non-library work is associated with higher post-graduation salaries (\$2,571) and both library work and "other" funding are associated with lower post-graduation salaries (\$1,901 and \$3,444, respectively). Women earn significantly lower post-graduation salaries than men (\$2,349 less) and Asians earn significantly more than whites (\$10,962). People working in library settings earn less than those working in non-library settings (\$2,991 less) and supervisors earn more than non-supervisors (\$2,322). People working in larger organizations earn more, as do those who work more hours and were employed in their first post-graduation job longer. Graduate program had a significant effect on post-graduation salary but the  $R^2$  values increase more after adding the work variables (.147 increase) than after adding the school variables (.015 increase) (See Table 12).

#### *7.2.7. HYPOTHESIS 7: THOSE WHO USED LOANS WILL HAVE LESS WAGE GROWTH BETWEEN THEIR POST-GRADUATION SALARY AND THEIR CURRENT SALARY.*

Table 6 indicates that there is no significant association between student loan use and wage growth, but those who used "other" funding sources had higher salary increases between their first post-graduation job and their current job (\$3,445). Women have lower average wage growth than men (\$7,788) and there appears to be a significant but not linear pattern of wage growth across graduation cohorts. Relative to those currently working in non-library settings, public and academic librarians experienced less wage growth (\$4,898 and \$5,319, on average) and supervisors and senior administrators experienced larger wage growth than non-managers

(\$8,574 and \$14,622) in their current position. Relative to people currently working in organizations with 1,000 or more employees, LIS graduates who work in smaller organizations experienced smaller wage growth with the exception of those in organizations with 500-999 employees. In terms of respondents' post-graduation jobs, those who started in smaller organizations experienced larger wage growth, and those who worked fewer hours and had fewer years in their first post-graduation job had lower salaries (\$928 and \$505 less, respectively). Graduate program is not significantly associated with a salary increase between post-graduation and current salaries (see Table 13).

I should also note that while these analyses do not include measures of intelligence or academic ability, it is reasonable to assume that better students go to more prestigious universities. So, we would expect graduate program to capture that effect and be significantly associated with job quality measures if academic ability were driving these results. However, we see that the graduate program one attended is significantly associated with only three of the seven measures of job quality (autonomy, current salary, and post-graduation salary).

## **8. Discussion**

It is clear that student loan use has increased significantly since the 1990s, likely due to the increased availability of loans after the implementation of the Higher Education Act of 1965 and its subsequent expansion of access to middle income families. However, we know surprisingly little about the work-related consequences of using student loans, especially among graduate students. The limited amount of research that is available suggests that student loan use is associated with lower salaries (Minicozzi, 2005; Rothstein & Rouse, 2011), smaller wage growth (Minicozzi, 2005), and less desire to pursue a public interest job (Field, 2009; Rothstein & Rouse, 2011) or entrepreneurship (Krishnan & Wang, 2015). In this paper, I test the

association between using student loans (and other resources) to fund one's graduate education and seven measures of job quality: Autonomy, job satisfaction, opportunities for growth and promotion, job security, current salary, post-graduation salary, and salary increase between these two jobs.

Student loans may provide access to otherwise unavailable opportunities (e.g., access to a graduate education), but their association with poorer job quality is troubling. Given the interest accumulated on student loans and lower salaries in librarianship relative to other professions, this can make getting an LIS degree especially costly for those using student loans. However, these results do not suggest an entirely bleak picture for student loan users and there does not appear to be a penalty for student loan use in terms of the other three non-monetary features of job quality (autonomy, satisfaction, and opportunities for growth & promotion). Perhaps, these LIS students are doing a thorough cost-benefit analysis, as recommended by Oreopoulos & Petronijevic (2013), and are incorporating non-monetary benefits into that assessment. If student loan users in LIS programs are seeking large salaries and job security, they may be disappointed (relative to non-loan users), but if they are seeking other intrinsic rewards (which they are likely to do), they are just as likely as non-loan users to get them. If the cost-benefit analysis done by prospective LIS students incorporates non-monetary work rewards, student loan users might actually be making beneficial decisions in terms of providing better work conditions than they would have had otherwise; the student loan use penalty (in terms of lower salaries and less job security) may be worth it.

In terms of other funding sources, scholarships are associated with the most positive work outcomes, including higher levels of autonomy, job satisfaction, and more opportunities for growth and promotion. The use of scholarships among these LIS graduates does not imply the

absence of loans, but it likely implies a decreased need for them. Reduced debt burden after graduation could enable students to put greater focus on and prioritize non-monetary features of their jobs, while worrying less about financial concerns (e.g., salary). The findings about scholarship use are especially difficult to interpret because it is unclear whether these scholarships were merit-based or available only to those in specific demographic groups (e.g., racial minorities) as this distinction was not made in the survey questionnaire.

These results, however, should be interpreted with caution. An alternative interpretation of these links between funding sources and job quality could be that better prepared students with more academic ability are both more likely to receive scholarships and less likely to use loans. If this is the case, the background characteristics of students could be driving these results rather than the fact that students used a particular type of funding for their graduate education.

To the extent that student loan use and subsequent job quality are causally related, this could have important implications for professions that are high in intrinsic value but relatively low in financial value, such as librarianship. For example, the programs funded by the LB21 and administered through the Institute for Museum and Library Services (IMLS), many times, offer tuition assistance and other non-loan financial aid, which may help the profession to reach their workforce diversity goals (ALA, 2016); it could impact the ability of people from disadvantaged populations to achieve their intrinsic work goals as they are more likely to use loans and borrow in larger amounts. These programs would likely benefit from being able to demonstrate a link between scholarship use and attaining positions with high intrinsic value, which is a primary work motivation for many librarians.

Job quality outcomes for LIS graduates using funding sources other than scholarships have been more varied. Family assistance is associated with lower current salaries, library work

is associated with lower post-graduation salaries, non-library work is associated with fewer opportunities for growth and promotion but higher current and post-graduation salaries, grants are associated with fewer opportunities for growth and promotion, and those who used other funding sources report lower post-graduation salaries but larger wage growth between their first post-graduation job and current job.

Finally, it is possible that better students get higher quality jobs and that this association is driving the effect in these results. I do not have access to respondents' academic records, but I do test for the effect of the graduate program they attended in an attempt to control for this possibility. If I assume that better students attend more prestigious universities, then I would expect that academic ability would appear in this measure of graduate program attended. I find that this variable explains some of the effect, especially for the salary variables, but is only associated with one of the non-monetary measures (autonomy). I would also expect the amount of variation explained in each model would increase by a large amount after adding the school characteristics variables (including graduate program) into the regression models. In Table 7, we see that, for the autonomy estimates, the  $R^2$  value does increase from .017 to .043 once graduate program is added to the model for the autonomy estimates, but it increases to .101 once work variables are included, which is a larger increase. The same pattern can be seen both the estimates for the post-graduate salary and current salary; a jump in the  $R^2$  value once graduate program is added, but a much larger increase between the school and work models. Finally, even after including graduate program in the models, funding sources remain significantly associated with job quality measures. Future work should investigate the extent to which student loan use and job quality are associated using more comprehensive measures of ability and preparedness in order to rule out the possibility of background factors confounding this relationship.

## 9. Implications

These findings have implications for both the sociology literature and the LIS field. In terms of sociology, these results provide moderate evidence to support general findings about the ways in which labor market outcomes are stratified by SES (through the use of loans in these analyses), gender, and race. More specifically, this is, to my knowledge, the first analysis to look at the effects of using student loans on job quality for *graduate*-level education, as opposed to loans supporting an undergraduate education. These findings suggest that, despite increased access to post-baccalaureate education offered by the opportunity to use student loans, there are still costs associated with this option (lower salaries and less perceived job security). While not all student loan users are poor and non-white, members of these groups are overrepresented among student loan users and are thus, more vulnerable to these potential costs. Education is certainly becoming more available to people from disadvantaged backgrounds, but it is not necessarily the “great equalizer” as argued by Horace Mann (1848), former congressman and secretary of the Massachusetts Board of Education. Both people who do and do not use loans can pursue higher education and graduate from an LIS program, but once they graduate their employment experiences can still vary by important demographic characteristics

This paper also has important implications for the LIS field. Efforts to combat the growing concern about the graying of the workforce and eventual mass retirement of the baby boomers, have, in part, relied on programs to increase funding opportunities that help recruit new entrants to the field and retain those who are already employed. These findings could further justify the value of and need for programs supported by LB21, which offer financial aid to graduate students in LIS programs as well as librarians early in their careers. If students know that, despite using loans to pursue a career in a lower salary field, that they will earn the intrinsic

rewards they seek, this could reassure them that a career in LIS is worth pursuing (ACRL, 2002). However, the lower salaries could dissuade some students from pursuing a career in LIS (Matarazzo, 1989; 2000), especially if they had to use loans to fund their education. Given that student loan use is more common among low SES and minority students, this could harm efforts at increasing diversity in the profession (ALA, 2016).

## **10. Limitations and Directions for Future Research**

These findings suggest several avenues for future research that would both increase our understanding of the relationship between funding sources and subsequent job quality and address some of the limitations of this study. First, studies should investigate the effect of varying amounts of student loan debt on job quality. One of the primary limitations of this research is that the WILIS 1 data do not specify the amount of aid received for each of the funding resources or the source of students' grants or loans. It could be that those who accrue larger amounts of student debt have even poorer job quality or that those who receive large amounts of student aid in the form of scholarships have higher job quality. It could also be that the use of federal loans is associated with different outcomes than the use of private loans, which can differ in terms of repayment options and interest rates. The few (but statistically significant) associations between loan use and measures of job quality in these results may be an artifact of imprecise measurement, which with more precision (e.g., loan amounts and sources) might produce more robust results. Second, it would be useful to examine how these outcomes vary by race in a more diverse sample; some have found that using loans has a larger negative impact on educational outcomes for black students than white students (Jackson & Reynolds, 2013).

Third, it would be useful to look at additional indicators of non-monetary benefits, such as organized mentoring programs, to see if the slower wage growth reported by student loan

users (Minicozzi, 2005) is, in fact, due to these students sacrificing opportunities to develop human capital and social capital for immediate financial rewards in the form of higher salaries as suggested by Braguinsky and Ohyama (2012). Fourth, it would be useful to look at graduate application records, including GPA and GRE scores, in order to see if better students are driving these results with regard to the positive effects of scholarship use. Although using graduate program as a proxy for this is useful, a more direct measure would increase the reliability of this control. Finally, it would be valuable to incorporate a broader range of background characteristics in future analyses in order to determine whether the relationship between funding sources, especially loan use and scholarship use, and job quality is causal or, rather, driven by characteristics of the types individuals using these funding sources.



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## **CHAPTER 3: GENDER AND RACIAL DIFFERENCES IN JOB FUNCTIONS AMONG LIBRARY AND INFORMATION SCIENCE SUPERVISORS, MIDDLE MANAGERS, AND SENIOR ADMINISTRATORS**

### **1. Summary**

We now see a greater presence of women and minorities among managerial employees in the U.S. However, many argue that this increase in female and non-white representation among managers represents a process of job title proliferation, in which people are given administrative titles without commensurate responsibilities or point out that most female and non-white managers are found in jobs with high concentrations of women and non-whites and which offer lower pay and less authority (bottom-up ascription). Using a sample of managers who are alumni of one of five Library and Information Science graduate programs in North Carolina from the WILIS 1 study (N=893), I test whether women and non-white managers are performing similar job functions as their white, male counterparts. I find that male and female managers are generally performing the same functions with the exception of human resources; women have 38% lower odds of performing this function. Non-white managers, on the other hand, are performing a significantly different set of job functions than white managers and fewer functions, overall. Non-white managers have lower odds of performing job functions related to communications and public relations, facilities and space planning, financial management, general management, staff training and evaluation, and strategic planning.

### **2. Introduction**

Women and racial minorities have increasingly gained access to managerial positions in the U.S., but discrepancies in pay and authority remain. They earn less, have less authority over

fewer domains, are heavily overrepresented in some industries, underrepresented in others, and manage primarily other women and minorities. These disparities exist even in highly feminized, professional occupations that often require advanced degrees, such as librarianship. Among the theories used to explain this persistent gender and racial inequality in managerial positions, two have received considerable attention in the sociological literature. First, it could be that women and minorities are receiving a managerial title without the pay and authority typically associated with that position (job title proliferation). Second, it could be that female and non-white managers are just as likely as white men to promote others like themselves through similar social closure processes (homosocial reproduction). However, since women and non-whites are more heavily concentrated in low-wage, service sector industries, the requisite rewards (pay and authority) associated with these positions are lower than those found in higher-wage and more prestigious occupations (bottom-up ascription); homosocial reproduction is a mechanism that enables the bottom-up ascription process.

In this paper, I address the need to more precisely define the mechanisms producing gender and racial inequalities in job authority and explore the possibility that differences in the job functions performed by managers may explain some of these gender and racial disparities in authority attainment. Specifically, I examine the extent to which female and non-white supervisors, middle managers, and senior administrators perform different work tasks (job functions) than their white, male counterparts in a sample of alumni from five Library and Information Science (LIS) graduate programs in North Carolina, many of which work in library settings that are predominantly female and white.



### 3. Background

The enactment of the Civil Rights Act of 1964 prohibited the use of race- and sex- based discrimination at work (Tomaskovic-Devey, Zimmer, Stainback, Robinson, Taylor, McTague (2006) and, in part, encouraged the shift toward gender and racial desegregation in many occupations, including management. In this review of the literature I discuss trends in the representation of women and non-whites in managerial positions since 1964, the ways in which managerial positions differ by gender and race, and two popular explanations for the persistence of these differences. I finish by proposing that a focus on job functions may help us to better understand the processes perpetuating gender and racial inequality at work. This review consists of both a discussion of demographic trends across a broad range of occupations in the U.S. as well as trends specific to the LIS field.

#### *3.1. The representation of women and non-whites in managerial positions*

The representation of women and minorities in managerial positions has increased since the implementation of the Civil Rights Act of 1964. According to U.S. Census data, women made up about 17% of managers in 1970 (Jacobs, 1992), which increased dramatically to about 40% in the 1990s. Cohen, Huffman, & Knauer (2009) argue that this upward trend largely tapered off in the 1990s, during which time women represented about half of all managers in the 2000s (Cohen & Hoffman, 2007).

The representation of racial minorities in managerial positions has also increased since the 1960s alongside a decrease in the percentage of white, male managers. The percentage of white men among managers in the private sector shifted from about 91% to 57% between 1966 and 2000, the percentage of white women shifted from about 7% to 28%, the percentage of black

men shifted from about 1% to 4%, and the percentage of black women shifted from less than 1% to about 3% (Stainback & Tomaskovic-Devey, 2009).

### *3.2. Demographic trends in library and information science: Gender and race*

Academics and professionals in the Library and Information Science (LIS) field have been interested in gender and racial diversity in terms of both managerial positions, specifically, and the LIS workforce more broadly. Women are overrepresented and minorities are underrepresented in the field relative to their proportional representation in the U.S. labor force and both are underrepresented in managerial positions.

#### *3.2.1. FEMALE REPRESENTATION IN LIS*

Women are the numerical majority in librarianship, but that was not always the case; many of the earliest librarians were men. When public libraries became more popular and research a more prominent focus in universities, additional workers were needed to meet the increased demand and women were often hired to perform some of the more routinized tasks (Record & Greene, 2008:193). In 1870, 20% of librarians were female, which increased to 79% in 1910, up to 88% in 1920, and eventually 91% in 1930 (Williams, 1995:26). Using U.S Census and Bureau of Labor Statistics (BLS) data, Davis & Hall (2007) estimated that women made up about 82% of the total number of credentialed librarians (those who have a master's degree or higher) in 2000. An updated version of the study showed that women made up about 83% of all credentialed librarians in 2009-2010 (American Library Association, 2012) and the (BLS, 2016) indicates that they made up about 83% in 2015.

Despite their overrepresentation in the LIS field and increasingly greater presence in managerial positions, women continue to be underrepresented in decision-making positions within libraries, especially in academic settings. Researchers have used the term “glass escalator”

(Williams, 1992) to describe the phenomenon that men tend to rise up managerial ranks much more quickly than women in female-dominated occupations (Williams, 1992; Williams, 1995; Maume, 1999; Smith, 2012). The American Library Association's (ALA) annual survey found that, in contrast with women's overwhelming majority among credentialed librarians, they represented only 65% of library directors in public library settings and 57% in academic settings and earned about \$7,000 less than men in 1999 (Lynch, 1999). Although women have not achieved parity with men in terms of authority attainment in the LIS field, there have been significant increases in female representation in managerial positions since the 1970s. Moran, Leonard, & Zellers (2009) found that the percent of female directors in Association of Research Library (ARL) institutions increased from 2% in 1972 to 12% in 1982, 39% in 1994, and 61% in 2004. The percent of female assistant/associate directors increased from 20% in 1972 to 38% in 1982, 51% in 1994, and 58% in 2004. The percent of female departmental heads increased from 51% in 1972 to 57% in 1982, 62% in 1994, and 64% in 2004.

### *3.2.2. NON-WHITE REPRESENTATION IN LIS*

Racial minorities have been significantly underrepresented in both the LIS field overall and in managerial positions, specifically. Using U.S. Census Data, Beveridge, Weber, & Beveridge (2011) found that black librarians represented about 2% of all librarians in 1950, 9% in 1990 and 7% in 2009. Davis & Hall (2007) reported that the profession was 88% white in 2000 and the BLS (2014) report that, in 2014, 3.6% were black, 4.0% were Asian, and 5.7% were Hispanic or Latino. In terms of managerial representation, non-white librarians in academic settings were underrepresented to an even larger degree than in the LIS field in general. The ALA Allied Professional Association (2011) found that non-whites (Blacks, Latinos, and Asians

combined) in academic libraries represented 6% of directors, 6% of associate directors, and 5% of assistant directors in 2009-10.

The ALA has been interested in diversity within the field and designated, as one of its key action areas, its mission of serving people of all populations and recruiting people of color (ALA, 2016). In order to reduce racial disparities, specifically, a number of scholarship programs have been established to increase the number of underrepresented minorities in librarianship. For example, the Spectrum Scholarship program was implemented in 1997, which provides financial assistance to those in underrepresented racial groups for expenses associated with earning a master's degree in an ALA-accredited program, student membership in the professional organization (ALA), and travel to the organization's annual conference<sup>1</sup>.

However, Adkins & Espinal (2004) argue that the effect of these programs has been minimal. The number of minority students enrolled in a Master of Library Science (MLS) program remained at about 10% a year before and a year after the implementation of the Spectrum Scholarship program and that percent remained constant through 2001. The number of minority students who graduated from MLS programs did increase from 8.6% in the 1995-96 academic year to 10.2% in the 2000-01 academic year, but were still severely underrepresented relative to their proportion in the general U.S. population<sup>2</sup>.

### *3.3. Explanations for gender and racial inequality among managers*

Despite the greater presence of female and non-white managers in both the U.S. labor force and the LIS field, some remain skeptical that these trends represent unmitigated evidence

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<sup>1</sup> As of May 2004, 257 people had received this scholarship, but only 64 percent (n=164) had reported on their progress in the survey conducted by the program (Roy, Johnson-Cooper, Tysick, & Waters, 2006). Among those who took the survey, 118 graduated and 100 were working full-time in an LIS setting at the time of the survey.

<sup>2</sup> In 2001 Asians comprised 4% of the U.S. population, blacks represented 13%, and Latinos represented 13% (Adkins & Espinal, 2004).

of significantly increased gender and racial equality, especially with respect to pay and authority (Jacobs, 1992). In their review pieces, Smith (2002) and DiTomaso, Post, & Parks-Yancy (2007) outline a body of research demonstrating that men have more authority than women, whites have more authority than non-whites, and that these disparities are not primarily explained by differences in human capital (e.g., education and work experience). More specifically, they note that women and minorities have less authority over fewer domains, remain at lower levels of management, manage primarily other women and minorities, and are employed in industries that offer relatively fewer rewards in terms of pay and authority (e.g., service sector and social services). In this section, I discuss some of these differences among managers in the context of two of the most prominently cited explanations in the sociological literature: Job title proliferation and bottom up ascription.

### *3.3.1. JOB TITLE PROLIFERATION*

Those who study gender and racial disparities in workplace authority from the *job title proliferation* perspective argue that the increasingly larger number of female managers is not an indisputable indicator of reduced gender inequality. Rather, proponents of this perspective argue that employers felt pressure to reduce the appearance of gender and racial discrimination after the passing of the Civil Rights Act of 1964. This is often referred to as the “glorified secretary hypothesis” (Jacobs, 1992) and is used to describe the proposition that women are sometimes hired into positions with administrative titles, but that do not involve the same responsibilities as similarly ranked jobs. It is generally demonstrated by the fact that female managers often lack the prestige, authority, responsibilities, or job tasks typically associated with that role (Reskin & Roos, 1990; Jacobs, 1992). I start this discussion of job title proliferation research as it relates to the general labor force and then turn to the management occupation, specifically.

Strang & Baron (1990) provided one of the first attempts to define and measure job title proliferation in their analysis of 3,173 civil service job descriptors and titles in California and they argue that this proliferation of job titles masks gender and racial segregation. They found that jobs with a more balanced gender and racial composition had more detailed distinctions within job titles and descriptions in terms of hierarchical level (vertical), specialty (horizontal), and across organizations. Among jobs that required professional credentials and also feminized, professional occupations (e.g., teaching, nursing, social work) there were a larger number of specialized job tasks that modified the job titles (functional proliferation). They concluded that “the association between ascriptive characteristics and detailed distinctions among job titles suggests that job title proliferation serves to segregate sexes and races within seemingly integrated lines of work” (Strang & Baron, 1990:492).

#### ***3.3.1.1. Gender***

Reskin & Roos (1990) focused specifically on women’s entry into male-dominated fields, finding that women’s inroad into male-dominated occupations was limited and less indicative of greater gender equality than it appeared. In their analysis of U.S. Census data, Reskin & Roos (1990) found that while women’s labor force participation rate increased, they made more movement into some occupations than others, such as clerical workers, teachers, waiters, and bank tellers (Reskin & Roos, 1990). However, they argue that “[t]hough women did make progress in desegregating traditionally male occupations, by the time women gained access to them, the occupations had lost much of their attraction to men and were becoming less advantageous for women as well. Women’s success in these occupations was in large measure hollow” (Reskin & Roos, 1990:84).

Jacobs (1992:283) was also among the first to test job title proliferation among managers and coined the phrase “glorified secretary hypothesis” in which he predicted that women were being promoted into managerial positions in name only and without the higher pay and greater authority often associated with that role. Using data from the Current Population Survey and the General Social Survey, he compared the salaries and authority of male and female managers finding that the gender gap in authority remained constant between the 1970s and 1980s but that the gender wage gap decreased between 1969 and 1987 (from 56.9 to 61.1% of male managers’ earnings). He argued that his findings may be artifacts of his data and, at least in part, the result of using broad categories of managerial and supervisory status as indicators of authority, which may hide more subtle differences.

Subsequent research continued to find a gender gap in pay and authority among managers, but focused on more detailed measures of authority. For example, Reskin & Ross (1992) found, in a sample of 222 Illinois managers, that female managers had less decision-making authority than male managers in terms of both having any level of input and in making final decisions and that having more authority raised women’s, but not men’s earnings. They suggest that “...the barriers to managerial titles are more easily breached than those to final authority” (360). McGuire & Reskin (1993) found, in a national sample of employed people in 1980, that the financial returns to education and tenure on both authority and income were lower for women than for men and that this effect was stronger for black women; black women earned even less and had even less authority than white women. Peterson, Philpot, and O’Shaughnessy (2007) found that female board members of Fortune 500 companies were more likely to sit on nomination committees and less likely to sit on compensation committees. More recently, Maume (2012) found that women waited longer for promotions than men. Again, interpreting the

increasing representations of women in managerial positions without context can lead us to mistake this trend as a clearer indicator of gender equality than it actually is.

### **3.3.1.2. *Race***

Although job title proliferation research has generally focused on gender, some work using this framework has also been applied to racial gaps in authority attainment. Similar trends have been found for non-whites relative to their white counterparts. Non-white managers earn less than white managers (Jacobs, 1992; McGuire & Reskin, 1993) and exercise less autonomy (Maume, 2012). In this section, I discuss explanations used for the existence of the racial gap in pay and authority.

Collins (1997) made some of the earliest and most profound contributions to this line of research both in terms of theorizing and providing empirical evidence. She argued that the skills of highly-educated black executives erode over time because they are routed into racialized jobs that offer fewer opportunities to develop core skills, which are acquired in more mainstream positions. Using interviews conducted with a sample of 76 black executives in the 52 largest white corporations in Chicago, she found that black executives reported being steered into jobs that were connected to the black community, affirmative action, or civil rights issues. She reports that these "...racialized jobs became routine work centered on a narrow set of administrative tasks extracted from generalist personnel functions" (Collins, 1997:61). As a result, black executives did not acquire a broad enough set of skills to be qualified for promotion into higher-level executive positions.

Another, related explanation for the racial gap in authority was proposed by Smith (2001). He argued that particularistic manipulation, or "normative modes of minority exclusion from opportunities to demonstrate job-relevant promotion criteria produce racial differences in



authority attainment” (Smith, 2001:449), explains why we see racial differences in authority at work. He suggested that there may be informal channels (outside of formal credentials and labor market conditions) that affect access to authority, to which black men may have less access than white men due to differences in the compositions of their social networks and informal mentoring opportunities. Using a multistage, stratified, random sample of 1,603 white, black, and Latino men in 1994, he found that black men were half as likely to control monetary rewards at work net of a set of relevant controls (e.g., education, tenure, previous promotions). Formal credentials (e.g., education) and structural features of jobs (e.g., private v. public, and firm size) were stronger predictors (greater magnitude of effect) of having authority over monetary rewards for black men than white men. Relative to white men, black men in this study were assessed, to a larger degree, by formal qualifications, which may lead one to consider what else contributed to white managers’ assessments.

Both Collins (1997) and Smith (2001) argue that the informal processes through which managerial positions are assigned route non-white managers into different types of positions and subsequent research supports both explanations. In addition to earning less than their white counterparts, non-white supervisors and managers are half as likely to advance into managerial positions (Maume, 1999), wait longer for promotions (Maume, 2012), were more likely to sit on audit and public affairs committees, but less likely to sit on executive committees (Peterson, Philpot, and O’Shaughnessy, 2007). In his study comparing men defined as managers by the U.S. Census occupational codes and those who self-identify as supervisors, Maume (2012) found that Black and Latino supervisors, but not managers, exercised less autonomy, felt less respected by coworkers, and perceived more job insecurity than their white counterparts.

### 3.3.2. *BOTTOM-UP ASCRIPTION*

Those who study gender and racial disparities in workplace authority from the *bottom-up ascription* perspective focus on the proportional overrepresentation of women and non-whites in managerial positions in industries where they represent a larger portion of the non-managerial labor force and primarily manage other women and non-whites (Elliott & Smith, 2001; Smith & Elliott, 2002; Stainback & Tomaskovic-Devey, 2009; Maume, 2012;). There are at least two explanations for this demographic trend. First, employers may match employees and managers, based on gender and race, in order to reduce perceptions of discrimination (Elliott & Smith, 2001). An organization with an entirely female and non-white staff but all white, male managers would look highly suspicious. Additionally, since there are a larger supply of women and non-whites in these industries it is relatively easier to find female and non-white managers.

Second, managers in these industries (which are predominately female and non-white) may engage in the same social closure processes and homosocial reproduction (Kanter, 1977) that white men use to secure power at the top of the administrative hierarchy in predominately white and male organizations (Elliott & Smith, 2004). This means that, when women and non-whites hold both positions of authority and represent a large proportion of the workforce in organizations or industries, they may be more likely to promote other women and minorities in order to preserve their power in those roles. Therefore, gender and racial differences in pay and authority are, in part, the result of women and minorities working and being promoted to managerial positions in gender and racially segregated industrial sectors that pay substantially less and offer fewer job rewards (e.g., authority, prestige).

A significant body of research has found support for the bottom-up perspective in explaining gender and racial disparities in authority attainment. First I discuss the pattern of

finding female and non-white managers primarily managing other women and non-whites and then I turn to a discussion about the tendency for people to hire and promote ascriptively similar others.

Most of the increase in the number of female and non-white managers has been found in industries and occupational specialties that have greatly expanded and which are predominately female and non-white, such as the service sector (Reskin & Roos, 1990; Hughes, 2001; Cohen, Huffman, & Knauer, 2009), labor relations, public relations (Cohen, et al., 2009), banking, and publishing (Reskin & Roos, 1990). Since these industries were previously female- and minority-dominated, there were already more women and non-whites in the labor supply to compete for the managerial positions within these industries, which should increase the likelihood of seeing a larger representation of women and minorities in managerial roles than we might otherwise see in a predominately white, male-dominated occupation or industry.

Similarly, Stainback & Tomaskovic-Devey (2009) found that women and non-whites are increasingly more represented in managerial positions and that this is due, in large part, to new opportunities in the expanding service sector economy managing other women and minorities. Using EEOC data, including a sample of private sector U.S. establishments, they found that white men were overrepresented (relative to their representation in the labor force) by about 60% in managerial positions compared with their representation in the labor market in most employment sectors and that this trend remained mostly steady from 1966 to 2000. Relative to their representation in the local labor force white women were underrepresented by 66% in 1966 and about 10% in 2000, black men were underrepresented by about 90% in 1966 and 44% in 2000, and black women were underrepresented by more than 90% in 1966 and 66% in 2000.

Further, they found that white women, black men, and black women were significantly less likely to manage those in other gender and race categories than white men.

Other research focuses on whether the chances of promotion into positions of authority are affected by the ascriptive similarity (by race and gender) of managers and workers as well as the gender and racial composition of occupations and industries. In terms of demographic composition of an occupation, Maume (1999), using data from the Panel Study of Income Dynamics during 1981-87, found that higher percentages of blacks and women in an occupation significantly decreased women's chances, but not men's, of promotion into managerial positions. However, in terms of homosocial reproduction and promoting ascriptively similar others, Elliott & Smith (2004) found, using a multistage, stratified, random sample of white, black, and Latino men and women between 1992-94, that male and female managers hired ascriptively similar others regardless of race or gender, but since white men are more often in the position to hire, they have more opportunities to practice this. They also found that the effects of human capital on promotions varied, such that network assistance and work experience were equally predictive of promotion for non-white men and women regardless of ascriptive similarity to their superiors. However, for white women, work experience was a stronger predictor of promotion into a supervisory (but not managerial) position when they were ascriptively similar to their superiors.

To summarize this review so far, it is clear from the literature that female and non-white managers are paid less and have less authority at work. However, we know comparatively less about the process through which these disparities are produced. Many suggest that the presence of more female and minority managers in industries where they are more highly represented is, in part, the result of a larger supply from which to select female and non-white managers. Others suggest that the same social closure processes that produce a larger number of white, male

administrators in most other industries produce more female and non-white managers in low-wage and service sector jobs (homosocial reproduction). Due to their large number, women and minorities in the service sector and social service industries are able to control resources (power and authority) in those organizations and pass on that power to similar others. However, the ways in which this power is transferred are unclear. It could be that managers help to expand the networks of similar others in a way that offers them the ability to meet powerful actors (Elliott & Smith, 2004). It could also be that managers help similar others to develop higher levels of human capital that will make them more competitive when higher-level managerial positions become available.

It is evident that examining changes in the number of people who identify or are identified as managers is, perhaps, too simplistic a metric for interpreting the complexities of gender and racial inequality among managers. The characteristics of managerial positions and the rewards they confer differ by race and gender. While there are many well-supported explanations for these differences, there is a need to understand the underlying processes inherent in their hypotheses in greater detail.

### *3.4. The importance of job functions*

Job title proliferation and bottom-up ascription explanations each hypothesize ways in which gender and racial inequalities in supervisory and managerial positions persist and, while there is significant support for these explanations, the mechanisms through which these inequalities are facilitated are less obvious. In this section I discuss how examining job functions could help to explicate these mechanisms. Specifically, I discuss the need to more precisely define the work done by managers and propose job functions (specific work tasks and duties

performed by managers) as a mechanism underlying the processes described in these explanations.

Previous research points to at least two avenues for future research on gender and racial disparities in workplace authority: 1) gaining a better understanding of which people are doing which jobs and 2) identifying and using more precise measures of authority. In terms of identifying who is making decisions in the workplace, Stainback & Kwon (2012:232) argue that “...future research should seek to...more precisely specify which organizational actors are making which decisions affecting gender inequalities...” Stainback & Tomaskovic-Devey (2009:817) say that their “...conclusions might be strengthened if [they] could examine more proximate mechanisms leading to managerial composition.” In terms of how authority is measured, Cohen, et al. (2009:337) called for future studies to include “...direct measures of individual workers’ managerial authority...” and Smith (2001:464) argues that we should be considering “additional dimensions of authority.” In a later paper, he suggests that future research should be “comparing minorities with whites on the degree of control each has over the full range of important decisions made within the firm” (Smith, 2012:213).

In this paper, I answer these calls for research and consider some more detailed measures of workplace authority. In particular, I introduce the use of job functions as one measure of authority among managers who graduated from LIS programs in North Carolina between 1964 and 2007 and examine the extent to which race and gender disparities exists in the duties performed by these managers. I define job functions as specific tasks and duties performed at work, consisting of the 11 categories listed in Figure 3.

## 4. Hypotheses

Based on this review of the literature, I propose six hypotheses. The first three are related to gender and the next three are related to race.

### 4.1. Gender

In terms of gender, previous research provides evidence that male and female managers have different levels of job authority. Relative to men, women have less decision-making authority (Reskin & Ross, 1992), wait longer for promotions than men (Maume, 2012), are more likely to serve as board members on nomination committees but less likely to serve on compensation committees (Peterson, et al., 2007), have lower salaries relative to their level of authority (McGuire & Reskin, 1993), primarily manage other women and non-whites (Elliott & Smith, 2001; Smith & Elliott, 2002; Stainback & Tomaskovic-Devey, 2009; Maume, 2012), and have generally made the most gains in occupations and industries that offer lower pay and fewer rewards (Cohen, et al., 2009; Stainback & Tomaskovic-Devey, 2009). Job title proliferation theorists argue that this is an employer response to pressures from antidiscrimination legislation. Bottom-up ascription attributes this to homosocial reproduction and a tendency for managers to promote others that are ascriptively similar to themselves (Elliott & Smith, 2004). I argue that job functions may be one of the mechanisms facilitating this difference in outcomes.

One way in which people invest in ascriptively similar others may be to offer them opportunities to perform job functions that will help them develop work experiences that make them more competitive for higher-level managerial positions. Since white men are more likely to be in a position to offer these opportunities (they are the largest demographic group among managers both numerically and proportionally), other white men will be the primary beneficiaries of these opportunities. Non-white men and women, on the other hand, have fewer

ascriptively similar others in positions to offer them the opportunity to perform both a broader range of job functions and those that increase the chances for career development and upward mobility. Thus, I propose the following hypotheses:

Hypothesis 1: Women will be underrepresented in managerial positions relative to their proportion in the sample.

Hypothesis 2: The probability of performing each job function will differ between male and female managers.

Hypothesis 3: Women will perform fewer job functions than male managers.

#### *4.2. Race*

In terms of race, previous research has found that non-white managers earn lower salaries and have less work authority than white managers. Black employees are less likely to advance into managerial positions, and once there, they earn less than white managers (Jacobs, 1992; McGuire & Reskin, 1993), are less likely to advance into managerial positions (Maume, 1999), wait longer for promotions (Maume, 2012), work in occupations and industries that offer lower pay and fewer rewards (Stainback & Tomaskovic-Devey, 2009), and primarily manage ascriptively similar others (Elliott & Smith, 2001; Maume, 2012). Black supervisors exercise less autonomy, feel less respected by coworkers, and perceive more job insecurity (Maume, 2012). Black executives are less likely to control monetary rewards at work (Smith, 2001), less likely to serve as board members on executive committees but more likely to serve on audit and public affairs committees (Peterson, et al., 2007), and develop a narrower range of skills (Collins, 1997). Again, I suggest that job functions may be one of the mechanisms facilitating these differences and may, at least in part, provide a more precise understanding of the processes underlying the most commonly used explanations of the persistence of racial inequality at work. Thus, I expect that:



Hypothesis 4: Non-whites will be underrepresented in managerial positions relative to their proportion in the sample.

Hypothesis 5: The probability of performing each job function will differ between non-white and white managers.

Hypothesis 6: Non-whites will perform fewer job functions than white managers.

## **5. Data**

### *5.1 WILIS study*

The Workforce Issues in Library and Information Science (WILIS) study<sup>3</sup> sought to learn more about the careers of graduates from Library and Information Science (LIS) programs (Marshall, Marshall, Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson, 2009) using the life course perspective (Marshall, Rathbun-Grubb, & Marshall (2009). The WILIS 1 Study, as supported by a grant from the Institute for Museum and Library Services, had the goal to address "...the need for a greater understanding of the long-term experiences of LIS graduates in the workforce" (Marshall, Solomon, & Rathbun-Grubb, 2009 2009:142). Data from the WILIS 1 Study were collected from a sample of 2,682 alumni from five LIS graduate programs in North Carolina. Respondents who graduated between 1964 and 2007 were sent a survey questionnaire in 2007. Contact information for alumni was acquired directly from their graduate programs and also a commercial alumni tracking program, in which case the information was subsequently verified with their program. Overall, the study had a response rate of 35.4% (n=2,653). Respondents answered questions about their experiences in selecting and attending graduate school as well as questions about a number of jobs they have held.

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<sup>3</sup> The WILIS 1 study was supported by a grant from the Institute for Museum and Library Services. The primary research team from the School of Information and Library Science at the University of North Carolina at Chapel Hill and the University of North Carolina Institute on Aging consisted of: Joanne Gard Marshall, lead principal investigator; Victor W. Marshall, co-principal investigator; Jennifer Craft Morgan, co-principal investigator; Deborah Barreau, co-investigator; Barbara Moran, co-investigator; Paul Solomon, co-investigator; Susan Rathbun-Grubb, research scientist; Cheryl A. Thompson, project manager; and Shannon Walker, graduate research assistant.

### *5.2. Outcome variables*

I use one survey question from the WILIS study in order to construct two sets of outcome variables. The survey question asked respondents to: “Please indicate which specific job functions you perform in each of the broad areas in your position. Choose as many job functions as apply” to which they could respond with a yes (coded as 1) or no (coded as 0). They could select from 11 broad areas consisting of communications and public relations, development and external relations, facilities and space planning, financial management, grants administration, human resources, management, marketing and sales, organizational evaluation and research, staff training and evaluations, and strategic planning. The first set of outcome variables I created are dichotomous with a yes (1) or no (0) response to each broad area. The second outcome variable I created is the total number job functions that each respondent reported performing as part of their job. Descriptive statistics for outcome variables are presented in Table 14 and discussed in the context of the results.

### *5.3. Control and explanatory variables*

I include demographic measures, such as of gender female (0=no, 1=yes), race non-white (0=no, 1=yes), and age. I also include some school variables, such as the year respondents graduated from their graduate program in five year cohorts (with the exception of 1954-69, which I combined due to small sample sizes in earlier cohorts, and 2005-07, in which case the date of the survey completion occurred before the end of a five year period), and which graduate program they attended. I include measures of work characteristics at their current job, such as their work setting (school library=1, public library=2, academic library=3, special library=4, non-library setting=5), managerial level (1=supervisor, 2=middle manager, 3=senior administrator), organizational size (1=1-9 employees, 2=10-24 employees, 3=25-99 employees,

4=100-499 employees, 5=500-999 employees, and 6=1000+ employees), the number of years respondents have been employed in their current job, and their current salary. Descriptive statistics for control and explanatory variables are presented in Table 15 and discussed in the context of the results.

## **6. Methods**

### *6.1. Analytic sample*

I restrict the sample to those who indicated that they were employed in an administrative role as a supervisor, middle manager, or senior administrator (N=992). Of these, 99 people had missing values on this variable and were dropped from the analyses. I end up with an analytic sample of N=893. To handle the remaining missing data in the independent variables, I use multiple imputation with chained equations (Allison, 2001). Multiple imputation calculates coefficients that are averaged over several datasets and addresses potential biases in standard errors (Rubin, 1987). The percent missing for each variable along with descriptive statistics for both the raw data and the imputed values are presented in Table 15. The first column shows the frequencies and means for the original data set, which includes only cases that had valid values on these variables, (i.e., before imputation was used). The second column includes the frequencies and means averaged over the five sets of imputed data, and the third column shows the percentage of missing data in the original data set. We can see that there is not much variation in the frequencies and means of each variable between the columns, indicating that there were not significant biases in the imputation process that resulted in significantly different imputed datasets.

## 6.2. Methodology

To test the first hypothesis (women are proportionally underrepresented in managerial positions) and fourth hypothesis (non-whites are proportionally underrepresented in managerial positions) chi-squared tests are used to see if women and non-whites are proportionally represented in managerial positions relative to their proportion in the sample. To test the second hypothesis (female managers have lower odds of performing administrative job functions than male managers) and fifth hypothesis (non-white managers have lower odds of performing administrative job functions than black managers), chi-squared tests are used to compare gender and race differences in percentages of people who perform each of the 11 administrative job functions (presented in Table 14), followed by a multivariate analysis using a series of logistic regressions for each job function including a set of control and explanatory variables (Tables 18 and 19). Logit coefficients are transformed into odds-ratios, which can have any positive value. They can be interpreted as the odds of performing any given job function relative to the odds of performing that job function in the reference group. For example, an odds-ratio value of 1.500 on female would indicate that women have, on average, 50% greater odds than men of performing that job function. An odds-ratio value of 0.750 on female would indicate that women have 25% lower odds than men of performing that job function.

To test the third hypothesis (female managers perform fewer job functions than male managers) and sixth hypothesis (non-white managers perform fewer job functions than white managers), independent sample t-tests are used to compare gender and race differences in the number of job functions performed (presented in Table 14) and Ordinary Least Squares (OLS) regression is used in multivariate analyses to estimate the number of administrative job functions performed including a set of control and explanatory variables (Tables 20 and 21). These

estimates can be interpreted as such: a one unit increase in the control variable corresponds to, on average, one additional job function performed. For example, an OLS coefficient of 2.000 on female would indicate that women perform, on average, two more job functions than men.

Specific bivariate or multivariate findings about the graduate program variable are not reported due to confidentiality agreements made with the schools, a significance test indicating whether the graduate program one attended had a statistically significant effect on each dependent variable denoted with the appropriate *F*-statistic or chi-squared value and asterisks representing p-values is provided.

## **7. Results**

### *7.1. Descriptive and bivariate results*

#### *7.1.1. OUTCOME VARIABLES*

Descriptive and bivariate statistics for the outcome variables (job functions performed by managers) are presented in Table 14. Sixty five percent reported that their duties included communications and public relations, development and external relations (37%), facilities and space planning (54%), financial management (60%), grants administration (28%), human resources (38%), management (65%), marketing and sales (20%), organizational evaluation and research (35%), staff training and evaluations (65%), and strategic planning (53%). Respondents reported performing an average of 5.2 administrative job functions.

#### *7.1.2. CONTROL AND EXPLANATORY VARIABLES*

The descriptive statistics for control and explanatory variables are presented in Table 15. *Demographics.* The sample is 84% white, 10% non-white (6% black, 1% Asian, and 3% other racial status), and has an average age of 52.9 years. *School characteristics.* Most of the sample graduated from UNC-CH (47%), followed by UNC-G (18%), NCCU (15%), ECU (11%), and

ASU (9%) with a relatively even distribution of graduation cohorts but a greater number of more recent graduates. *Work characteristics.* Most people are currently working in school libraries (33%), followed by public libraries (21%), academic libraries (21%), other library settings (14%) and non-library settings (11%). In their current position, 25% are supervisors, 40% are middle managers, and 35% are senior administrators. Three percent currently work in an organization with fewer than 10 employees, and others worked in organizations with between 10-24 employees (5%), 25-99 employees (28%), 100-499 employees (27%), 500-999 employees (10%), and over 1,000 employees (27%). Respondents have been working in their current position for an average of 9.2 years and earn an average salary of \$60,305.33.

## *7.2. Gender and racial differences in job functions performed*

There are several racial differences but only one gender difference for job functions (see Table 14). I constructed gender as a binary category (male and female) and race as a binary category (white and non-white) because the sample size for each of the four gender and racial categories becomes too small to use in multivariate analyses. Similar percentages of male and female managers report performing each job function with the exception of human resources. A larger percentage of male managers (51%) than female managers (35%) report performing this job function ( $p < 0.001$ ). In terms of race, we see more differences between white and non-white managers. A larger percentage of whites perform communications and public relations functions (66%) than non-whites (53%), as well as facilities and space planning (55% vs. 37%), financial management (61% vs. 50%), management (67% vs. 52%), staff training and evaluation (67% vs. 53%), and strategic planning (54% vs. 42%). White managers also perform more job functions, on average, than non-white managers (5.3 v. 4.2 functions).

### *7.3. Proportional representation of women and non-whites in managerial positions (Hypotheses 1 & 3)*

Table 16 compares the racial and gender composition of the manager-only sample and the entire sample in order to test whether each group is proportionally represented in managerial positions. White men represent 15% of the entire sample and 39% are managers, white women represent 73% of the entire sample and 41% are managers, non-white men represent 3% of the entire sample and 32% are managers, and non-white women represent 9% of the sample and 37% are managers. All of the groups have a similar proportion in managerial positions.

Table 17 compares the race and gender composition of each level of managerial status. Among the 14% of white men who are managers, 34% are supervisors, 22% are middle managers, and 45% are senior administrators. Among the 76% of white women who are managers, 24% are supervisors, 43% are middle managers, and 33% are senior administrators. Among the 2% of non-white men who are managers, 26% are supervisors, 32% are middle managers, and 42% are senior administrators. Among the 8% of non-white women who are managers, 24% are supervisors, 44% are middle managers, and 32% are senior administrators. The gender and racial differences are statistically significant and show that a larger proportion of men, especially white men are in supervisor positions, a larger proportion of both white and non-white men are in senior administrator positions, and a larger proportion of women (and to some extent non-white men) are in middle manager positions. This is consistent with previous research that finds that women tend to get stuck in middle manager positions (Moran, Leonard, & Zellers, 2009; Sivak & DeLong, 2009).

### *7.4. Multivariate results: Job functions*

The multivariate results are discussed in the order and context of each remaining hypothesis. Table 18 presents the results for three sets of models predicting each job function,

but only the odds-ratios for gender and race are shown in order to show how these coefficients change as sets of variables are added to the models. Table 19 presents the results of the full models for each of the job functions with the estimates of all variables shown. In addition to the primary explanatory variables (gender and race), the first model includes only demographic variables (age, age-squared). The second model adds school variables (graduate program, graduation cohort). The full model adds current work variables (managerial status, work setting, number of years in current job, salary, and organizational size. Table 20 presents the OLS estimates for three sets of models (as described above for Table 18) predicting the number of job functions performed with only gender and race variables included. Table 21 presents OLS estimates for the full model predicting the number of job functions performed with the estimates of all variables shown.

#### *7.4.1. GENDER DIFFERENCES IN PERFORMING INDIVIDUAL JOB FUNCTIONS (HYPOTHESIS 2)*

There is very little evidence in these analyses to suggest that there is a significant difference in the job functions performed by male and female managers. The only function for which the gender difference remains significant in the full model is human resources. In Table 18, we see that women have 53% lower odds than men of performing human resources job functions in the demographics only model, which is reduced to 47% lower odds when we add school variables, and 39% lower odds when the work variables are added to the full model. Women are overrepresented in school libraries ( $\chi^2=56.9455$ ,  $p<0.001$ ), which are often much smaller and there is, perhaps, less need for human resources functions in that setting due to fewer library employees. Or, it could be that, because women are more likely to work in small, school libraries ( $\chi^2=35.5635$ ,  $p<0.001$ ), that they perform most of the job functions but spend very little time on each and develop only a minimal level of proficiency for each. Given the size and type



of library in which women are working, it is not be surprising that there were no significant gender effect in these analyses.

The other job functions show some gender differences, but they disappear once school and work variables are added to the model. For example, women have 32% lower odds of performing development and external relations in the demographics only model, which is increased to about 37% lower odds in the demographics + school model, but that the effect becomes non-significant in the full model.

#### *7.4.2. RACIAL DIFFERENCES IN PERFORMING INDIVIDUAL JOB FUNCTIONS (HYPOTHESIS 4)*

There is evidence of a significant difference in the job functions performed between white and non-white managers and these differences persist even in the full models for five of the 11 job functions. In Table 19, we see that non-whites have about 39-41% lower odds of performing communications and public relations functions, about 51-52% lower odds of performing facilities and space planning functions, about 44-47% lower odds of performing management functions, and about 41-43% lower odds of performing staff training and evaluation functions in all three models. Non-whites do not have lower odds of performing financial management functions in the demographics only model, but they do have about 42% lower odds when school variables are included and 43% lower odds after the work variables are included. Non-whites have 39% lower odds of performing strategic planning in the demographics only model, but the effect becomes non-significant after school variables are included and becomes significant again with non-whites having 45% lower odds in the full model.

These findings support the fourth hypothesis and are consistent with previous research. For example, Collins (1997) argued that black corporate executive's presence in racialized jobs limited their chances of developing skills that were important for employment in mainstream

positions, including general management and finance. Similarly, Smith (2001) finds that black men are about half as likely to control monetary rewards at work. These results suggest that non-white managers in the LIS field are, in fact, developing different work skills than their white counterparts.

Another possibility exists to explain these racial differences. It could be that, since non-whites are newer entrants to the field, they are likely younger and have less work experience, in which case I would expect to see significant effects for age and tenure in one's current job to be significantly associated with the odds of performing job functions. Current job tenure is not associated with the job function measures, but age is significantly associated with many of the job functions for which non-whites have lower odds of performing. However, the race effect remains even after controlling for age, which indicates that age (as a proxy measure of years in the labor force) does not explain all of this association between race and odds of performing administrative job functions.

Before turning to hypotheses five and six, it is important to note that work variables often had stronger effects than gender and race variables. For example, supervisors ranged from having between 65-81% lower odds and middle managers ranged from having between 43-69% lower odds than senior administrators of performing many of the job functions (see Table 19). The significance of work setting varied dramatically across each job function, but the magnitude of the effect was generally much larger than the effects of either gender or race. Current salary was significantly associated with all job functions, and the number of years in current job had no significant effect in any of the models. Organization size had a significant effect with those in smaller organizations having greater odds of performing development and external relations and

grants administration function. Graduate program also had a significant effect on these two job functions.

#### *7.4.3. GENDER AND RACIAL DIFFERENCES IN THE NUMBER OF JOB FUNCTIONS PERFORMED (HYPOTHESES 5 & 6)*

Female managers do not appear to be performing fewer job functions than male managers, but non-white managers are performing, on average, about one fewer job function than white managers across all three models (see Tables 20 and 21). However, again, managerial status had a much larger effect on the number of job functions performed, such that supervisors performed, on average, three fewer job functions and middle managers performed, on average, two fewer job functions than senior administrators. Those working in school libraries performed, on average, about 1 more job function than those in non-library settings, and current salary had a small, but significant, positive effect on the number of job functions performed.

### **8. Discussion**

In this paper I propose that examining differences in the job functions performed by managers may reveal significant gender and racial disparities, help to explain how job titles can obscure gender and racial inequality within managerial positions (job title proliferation), and explain why we see more female and non-white managers in industries highly segregated by gender and race (bottom-up ascription). The findings reported here are consistent with previous research on workplace authority and provide evidence that the extent to which job functions are performed by managers is significantly associated with race and, to a much lesser degree, gender. Non-white managers have significantly lower odds than white managers of performing communications and public relations, facilities and space planning, financial management, general management, staff training and evaluation, and strategic planning functions. Female

managers have significantly lower odds than male managers of performing human resources job functions.

These findings have important implications for some of the most prominent explanations for gender and racial inequality in managerial positions, especially in terms of indicating a potential mechanism that would make the processes outlined in these explanations more explicit. I will discuss the implications for each theoretical perspective separately.

### *8.1. Job title proliferation*

The argument that gender and racial inequality among managers exists as the result of job title proliferation rests on the proposal that women and non-whites are being promoted to positions with managerial titles, but without the authority typically associated with these roles. The finding that male and female managers perform a similar number and range of job functions, with the exception of human resources, does not support this argument. On the other hand, the finding that non-white managers perform fewer job functions and have lower odds of performing five of the 11 job functions relative to white managers provides support for the job title proliferation hypothesis with respect to race.

This is similar to Collins' (1997) findings that the career advancement of black corporate executives is limited to a smaller range of skill development opportunities than their white counterparts. Similarly, these results are consistent with Smith's (2001) finding that black men are about half as likely as white men to control monetary rewards at work. These results confirm prior research and demonstrate evidence of racial disparities in authority attainment along a broader range of dimensions than has been available in the past. Even when non-whites, and women to a lesser degree, occupy the same managerial level and work in the same settings, they

are performing different job functions; their work is qualitatively different. It is, then, no surprise that they have trouble reaching the highest ranks of the managerial hierarchy.

### *8.2. Bottom-up ascription*

These findings also provide some evidence that measuring gender and racial differences in job functions could help to make the process of bottom-up ascription more explicit. Scholars using this approach argue that we see more women and minorities in managerial positions when they are employed in industries where they are overrepresented and that are highly segregated by gender and race (e.g., social services and the service sector). While this trend has been widely documented, it is less clear how this happens. Many argue it could be that female and non-white managers are helping other women and non-whites to develop better networks or human capital (in this study, it is measured as experience performing job functions), which will help them to become more competitive for promotion into managerial positions.

In this study, we see that, in a predominately white organization, non-whites are at a significant disadvantage in terms of performing some job functions but that gender plays a minimal role. White managers are gaining advantages in the form of opportunities to develop work experience while non-white managers are largely excluded (inadvertently or otherwise) from these opportunities. If this is part of the process through which gender and racial disparities are created and reproduced then it is beyond the purview of antidiscrimination legislation. If we measure discrimination primarily in terms of proportional representation of different subgroups of people, this difference in the job functions performed and any subsequent, disparate effects on opportunities for career development would be unlikely to appear in a review of discrimination cases.

## 9. Conclusion

Racial and gender disparities in managerial representation have clearly declined since the passing of the Civil Rights Act of 1964. However, these results should give us pause before concluding that parity has been reached. The managerial positions held by non-whites and, to a lesser degree, women, are qualitatively different than those held by white men. These differences could have significant impacts on the careers of these managers to the extent that work experiences translate into opportunities for career advancement. If women and non-whites are performing different job functions than their white, male counterparts, why would we expect that their career trajectories would not also differ? If preferential treatment of ascriptively similar others is occurring in the form of assigning different job functions to different managers, then non-whites and, to a lesser degree, women are left out of some of the most consequential decisions affecting hiring, firing, and promotion. If non-whites and women are less likely to be performing those roles, it would make sense that having fewer non-whites and women in the position to make these decisions would result in fewer non-whites and women being promoted into managerial roles.

These findings could also have implications for increasing diversity in the LIS field. The diversity programs supported by the ALA, such as the Spectrum Scholarship program, would benefit from focusing on what happens once graduates enter into LIS positions. It is important to provide resources to help people from underrepresented groups attain graduate degrees in the field, but entry into managerial positions depends on more than just the ability to finish the graduate program. Without providing assistance to graduates once they enter the labor market (perhaps in the form of mentoring and leadership development programs; see Sivak & DeLong, 2009 for a discussion of the need for these programs), the goal of increasing diversity in the LIS

profession will be difficult to meet. For LIS graduates that wish to pursue careers in management, it is important to ensure that they are able to develop the skills necessary to make them competitive.

## **10. Limitations and Directions for Future Research**

These findings suggest several avenues for future research that would increase our understanding of the ways in which job functions performed by managers are associated with racial (and gender) disparities in managerial promotions and address some of the limitations of this study. First, future research on gender and racial disparities with respect to authority attainment should consider including job functions as a way in which gender and racial differences can be obscured. Second, the WILIS data do not include information about how job functions are assigned or who assigns them; it would be important to know more about respondents' supervisors, who is responsible for assigning tasks to these workers, and if they are ascriptively similar. Since previous research shows that people tend to promote others like themselves (homosocial reproduction) it would be useful to have this information so we could look at how this process unfolds over time. Third, the WILIS data document only the job functions performed in one's current job; longitudinal research to document changes in job functions over one's career would enable us to see if the acquisition of human capital (in the form of job functions) changes over time, if the acquisition of one skill easily translates into the acquisition of others, and if having these skills leads to better career development. Finally, future research would benefit from looking at specific job functions like these across a broader set of occupations in order to see if this pattern is consistent beyond the LIS profession.

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## **CHAPTER 4: INVOLUNTARY JOB LOSS: AN EXAMINATION OF THE RELATIONSHIP BETWEEN CHANCE EVENTS AND SUBSEQUENT JOB QUALITY IN A SAMPLE OF LIBRARY AND INFORMATION SCIENCE GRADUATES.**

### **1. Summary**

A significant body of literature documents the effects of involuntary job loss on earnings, but little attention has been paid to the effects it has on non-monetary features of work. Even less research has examined the concept of chance events or even linked it to involuntary job loss. Using a sample of alumni of Library and Information Science (LIS) graduate programs in North Carolina from the WILIS 1 study (N=1,763), I frame involuntary job loss as a chance event and test whether monetary work rewards (salary) and non-monetary work rewards (autonomy, satisfaction, security, opportunities for growth and promotion) are associated with involuntary job loss. I also examine the extent to which this relationship is conditional on race, gender, and the timing of the job loss (whether it happened in the job held before they entered their LIS program, their first post-graduation job, their longest held job, or their highest achieving job). I find that 8.7% of respondents experienced an involuntary job loss and that it is significantly associated with lower scores on measures of autonomy, job satisfaction, job security, and opportunities for growth and promotion, but is not associated with earnings. Timing of the involuntary job loss has the strongest association with the job security measure (compared to other job quality measures) and having experienced multiple involuntary job losses is significantly associated with lower scores on all measures of non-monetary job quality. Race and gender are significantly, but inconsistently, associated with the relationship between involuntary job loss and job quality.

## **2. Introduction**

Scholars have documented an increase in organizational restructuring (Osterman, 2000) and greater job insecurity in the U.S. (Kalleberg, 2009). Cappelli (1999) uses the phrase “The New Deal” to contrast jobs in the past, which were characterized by long-term tenure with a single employer who provided health insurance and pension benefits, with jobs we often see today that are part-time, temporary, and contract-based. Hacker (2006) uses the term “The Great Risk Shift” to describe this trend emphasizing that, by removing the features of jobs that insure against unexpected hardship, employers have shifted the risk of market volatility from themselves to individual workers. Empirical evidence confirms this trend, as demonstrated in Kalleberg, Reskin, & Hudson’s (2000) well-cited research on job quality. Using data from the Current Population Survey (CPS), they found that, among working adults in the U.S., 31% were employed in jobs they define as “bad” (low pay, no access to health insurance, and no pension) and about one in seven jobs in the U.S. had all three features.

It is surprising, then, that empirical analyses testing the impact of chance on career trajectories is so limited (although, it has been widely theorized) and we know little about the effect that these types of job losses have on the lives of U.S. workers (Shanahan & Porfeli, 2007). In this paper, I use a sample of library and information science (LIS) graduates in North Carolina to examine the relationship between involuntary job loss and subsequent job quality (autonomy, satisfaction, security, opportunities for growth and promotion, and salary) with a focus on how these relationships are conditional on race and gender. I also draw on the life course perspective and its focus on timing, trajectories, and cumulative inequality to better understand this relationship.

### 3. Background

In this review of the literature I discuss the relationship between involuntary job loss and subsequent career trajectories in the context of chance events with a focus on how this association is conditional on race and gender. First, I discuss the ways in which researchers have conceptualized and measured chance events and in which ways employment exits due to downsizing and layoffs constitute chance. Next, I discuss the prevalence of involuntary job loss as well as how these experiences are associated with socio-demographic factors. I finish this review with a discussion of the relationship between involuntary job loss and job quality.

#### *3.1. Chance events in the context of career trajectories*

While the role of chance in affecting career outcomes has been widely theorized, it has received significantly less empirical attention (Bright, Pryor, Harpham, 2005; Shanahan & Porfeli, 2007). Pearlin (1982:71) called attention to this lack of knowledge and argued that

“... [i]t is rather urgent that as we continue to research the processes of aging and adult development, we try at the same time to come to grips with the ways people cope with different types of problems. We need a view of the interplay across the life course of the demands that impinge on people and their attempts to deal with these demands.”

Twenty years later, this gap in the literature still remained. One of the few sociological projects to answer Pearlin's call was DiPrete (2002), who compared life course risks (e.g., job loss or divorce) across the United States, Sweden, and Germany. He found that no country was immune to these risks or their associations with poorer life conditions and that the state, through institutional mechanisms, can contribute to both the encouragement of and insurance against risk and its relationship with life course trajectories. DiPrete (2002) extended Pearlin's (1982) call for future research on chance events by also suggesting that we collect more data on women's mobility and place a greater focus on international comparisons. However, despite these calls for

research, we have seen little empirical, sociological research on the role of chance in career trajectories.

Most of the literature on the concept of chance appears in psychology literature and focuses on its benefits and how these events can lead to opportunities for career development (Salomone & Slaney, 1981; Bandura, 1982; Cabral & Salomone, 1990; Scott & Hatalla, 1990; Betsworth & Hansen, 1996; Williams, Soeprapto, Like, Touradji, Hess, & Hill, 1998; Mitchell, Levin, & Krumboltz, 1999; Bright, Pryor, Chan, Rijanto, 2009; Krumboltz, Foley, & Cotter, 2013), which is reflected in the definitions used by scholars. Bandura (1982:748) defined chance encounters as “an unintended meeting of persons unfamiliar to each other.” Betsworth & Hansen (1996:95) defined serendipitous events as “events that are not planned or predictable but have a significant influence on an individual’s career” and focused on career development opportunities. Within sociology, McDonald (2010:308) adopted the term serendipity to frame the study of job leads within “a theory of serendipitous job matching” defining chance events as “those situations where routine social interaction unexpectedly leads to opportunities in the labour market.” Rojewski (1999:269) explicitly acknowledged the potential for positive or negative events and argued that “chance generally denotes unplanned, accidental, or otherwise situational, unpredictable, or unintentional events or encounters that have an impact on career development and behavior.”

Perhaps one reason for the lack of empirical research on chance is that it is difficult to measure. Shanahan & Porfeli (2007) argue that measuring what constitutes a chance event is difficult because it is very subjective and the likelihood of alternate scenarios is impossible to calculate. They propose a comprehensive set of guidelines to define and measure the occurrence of chance events, detailing four criteria that must be met. It must be an unintended and unlikely

event (to the extent that we can reasonably consider something as such) and it must presume causality between the event and the measured outcome. It must also be “socially or personally significant” (Shanahan & Porfeli, 2007:108) to the person experiencing the event. They also call for future research to examine the mechanisms through which chance events happen and are interpreted, to identify the “qualitative features” of these events, and explore how their occurrence and one’s ability to take advantage of them might be related to social and contextual factors (Shanahan & Porfeli, 2007:116).

### *3.2. Job separation as a chance event*

Given the trend toward greater job insecurity in the U.S., and the importance of work in most people’s lives, I argue that involuntary job loss (due to downsizing or layoffs) in the LIS field constitutes a chance event as defined by Shanahan & Porfeli (2007). These types of job separation (also referred to as job displacement) are used to describe employer-initiated job exits that result from economic decline and work shortages, rather than anything attributed to individual workers (Brand, 2015). White collar workers have been relatively protected from the waves of layoffs and downsizing in the 1970s and 1980s because they were largely the result of technological advances in production methods and the availability of cheaper labor in other countries, which decreased the need for manufacturing labor performed primarily by blue collar workers. (Kletzer, 1998). However, white collar workers have become increasingly more vulnerable to downsizing and layoffs due to organizational restructuring that became popular in the 1990s (Cappelli, 1999; Osterman, 2000; Elvira & Zatzick, 2002). In the remainder of this section, I discuss how involuntary job loss constitutes a chance event according to Shanahan & Porfeli’s (2007) criteria.



### *3.2.1. UNLIKELY AND UNINTENDED*

Despite an increasing trend toward downsizing (Osterman, 2000) and greater job insecurity in the U.S. (Cappelli, 1999; Kalleberg, Reskin & Hudson, 2000; Hacker, 2006; Kalleberg, 2009), involuntary job loss is an uncommon event in the lives of most people. According to the Displaced Worker Survey, which is conducted by the Bureau of Labor Statistics and is one of the most frequently used data sets in job displacement research, trends in the rate of involuntary job loss is cyclical and has followed economic cycles since the 1980s ranging from a low of about 9% to a high of about 13% (Farber, 2005). Other studies have found this number to range from between 1% and 18%, with higher rates of displacement in manufacturing and construction industries (Elvira & Zatzick, 2002; Cha & Morgan, 2010; Couch, Jolly, & Placzek, 2011). Given LIS professionals' apparent resistance to economic swings (Morgan & Morgan, 2009), it is likely that involuntary job loss is an even less likely event for them. In terms of intentionality, it is also unlikely that prospective LIS professionals would purposefully apply for a permanent position expecting to experience downsizing or layoffs because the credentials needed to pursue a professional career in the LIS field require a significant investment of time and money. In fact, there is very little turnover in this field and, as Rathbun-Grubb (2009) found, using the same data used for this paper, that only 13% of people who worked as librarians or archivists had left the profession between 1964 and 2007 for reasons other than retirement.

### *3.2.2. CAUSAL AND PERSONALLY/SOCIALLY SIGNIFICANT*

Work is one of the central features of modern life and one's identity and this is especially likely to be true for those who work in professions that require significant training and advanced degrees, such as librarianship. Experiencing an unexpected loss in an important part of one's life

may have significant personal and social implications and could plausibly lead to poorer job quality. For example, involuntary job loss is associated with poorer self-reported physical health (Strully, 2009) and mental health (Eliason & Storrie, 2009), which could inhibit one's ability to prepare well for a job search and interview process or the find the motivation to acquire additional training or education required to make one a more competitive job candidate. In the case of long-term unemployment, work skills can become obsolete, causing displaced workers to lag even further behind their continuously employed counterparts. Finally, the financial loss could limit one's ability to meet their food, housing, and healthcare needs, leading to additional stress. Even when one does find a job, it could lead them to place greater value on monetary features at the expense of intrinsic rewards in order to catch up on bills.

### *3.3. Socio-demographic characteristics and the distribution of involuntary job loss*

In this section I discuss the ways in which socio-demographic characteristics are related to the risk of exposure to an involuntary job loss. Considering the well-documented patterns of occupational segregation (especially by race and gender; for a review, Reskin & Roos, 1990; Strang & Baron, 1990; Tomaskovic-Devey, Zimmer, Stainback, Robinson, Taylor, & McTague, 2006; Stainback & Tomaskovic-Devey, 2009; Cohen, Huffman, & Knauer, 2009), it is possible that risk of job displacement is also associated with the socio-demographic characteristics of workers. In terms of the role of chance, Pearlin (1982:63) argued that "...adults of the same age but differing in other social and economic characteristics will be exposed to very different conditions of life that lead, in turn, to different patterns of change and development." It follows, then, that while chance implies randomness, there can also be systematic features of chance events that leave some groups more vulnerable to encountering these types of events. Overall, men, non-whites, younger, less-educated, and part-time workers with less tenure are at higher

risk of involuntary job loss (Farber, 1993; Kletzer, 1998; Elvira & Zatzick, 2002; Park & Sandefur, 2003; Farber, 2005; Wilson & McBrier, 2005; Chan & Stevens, 2010; Farber, 2010). Evidence also suggests that the rate of involuntary job loss has been increasing; Monks & Pizer, using a nationally representative sample of U.S. men, found that rates of involuntary job loss increased between 1971 to 1990 ranging from an increase of 1.2% for college graduates to 6.8% for high school drop outs, among whites, and 2.6% for college graduates to 5.8% for high school drop outs, among non-whites. Although there are many factors associated with the risk of involuntary job loss, I focus this discussion on the role of gender and race.

### *3.3.1. GENDER*

Men are more likely to experience an involuntary job loss (Kletzer, 1998; Elvira & Zatzick, 2002; Farber, 2005; Chan & Stevens, 2010), but it is interesting to note that the gender difference in the rate of involuntary job loss has declined from 28 percent in the 1980s to 17 percent in the 2000s (Farber, 2010). One explanation for the gender disparity in the risk of involuntary job loss is that women are less likely to be employed in industries that are most affected by downsizing and layoffs (e.g., manufacturing). It may also be that women have more socially accepted alternatives to labor market reentry after displacement than men (e.g., bearing and raising children) and, therefore, feel less pressure to return to work after being laid off. Farber (2005) argued that his finding that women are less likely to return to work after displacement, even after controlling for whether that reemployment is on a part-time basis provides evidence for this explanation.

### *3.3.2. RACE*

Research on racial disparities in the risk of involuntary job loss has generally found that the largest differences are found between whites and non-whites, with the exception of Asians,

whose risk more closely resembles that of whites. Using three years of personnel data (1990-1993) from full-time employees in a large financial firm that acquired several companies over that time period (N=8,918), Elvira & Zatzick (2002) found that 8% of whites, 8% of Asians, 15% of blacks, and 12% of Hispanics were laid off. These differences persisted in multivariate analyses controlling for occupation, managerial status, business unit, job title, performance ratings, firm tenure, gender, marital status, pay grade, and bonus amounts. Whites had 16% lower odds of being laid off than non-whites and further division of race revealed that Asians were not at greater risk for layoffs but blacks had twice the odds and Hispanics had 1.5 times greater odds than whites of being laid off.

Park & Sandefur (2003), using a longitudinal and nationally representative sample of 3,899 men collected between 1979 and 1994, found that race played no significant role in voluntary employment exits but that involuntary exits occurred sooner for non-whites. Fifty percent of white men did not experience an involuntary job exit for over 16 years of employment, but 50% of black and Hispanic men experienced a job exit before they reached 4-6 years of employment. Multivariate analyses reveal a similar pattern; compared to whites, blacks have a 68% greater risk of involuntary exit and Mexicans have a 22% greater risk. Similarly, Couch & Fairlie (2010) found, using CPS data from 1989 to 2004, that black men were more likely to be among the first fired during weak business cycles; this effect appears to be closely related to education and occupation.

Explanations for racial disparities focus on the methods of downsizing and the types of jobs held by racial minorities. For example, Kalev (2014) examined how the method of downsizing is associated with subsequent measures of racial diversity among managers. Using a national random sample of 327 private establishments that both reported downsizing and filed

EEO-1 reports in 1999, she found that structural (e.g., across positions and tenure) but not individualized (e.g., performance evaluations) forms of downsizing were significantly associated with fewer female and black managers. In fact, racial diversity among managers was not associated with tenure-based downsizing, but it increased if legal teams were hired and determined who was laid off based on positions or performance evaluations. She concludes that formalization of downsizing results in more inequality because the natural tendency is for managers to avoid discrimination, but when positions are cut across the board or tenure is the mechanism for downsize, they have less room to exercise their own judgement.

Another explanation was provided by Wilson & McBrier (2005), who argue that the non-centrality of the functions performed by non-whites and the composition of their peer networks accounts for racial disparities in layoff risk. Using a nationally representative sample of upper-middle class workers in the U.S., they found that a larger proportion of black than white workers were laid off over a five-year period (4.6% compared to 1.5%) and that there were fewer significant predictors of layoffs for blacks (compared to whites) among a set of background, educational, and labor market variables. If race played no role in risk of layoff, the determinants of layoffs should be similar for all workers regardless of race; instead, their results indicated that the career paths for blacks were less structured (or predictable) than they were for whites. They argue that this supports the minority vulnerability thesis, which states that racial minorities are more vulnerable to adverse labor market outcomes, especially in higher status occupations. This, they argue, is primarily the result of two factors: 1) racial minorities are often placed in racialized jobs that are not central to the functioning of the organization (Collins, 1997), such as those related to diversity issues, which are among the first cut during times of financial strain and 2) racial minorities have difficulty demonstrating positive attributes and abilities because they

have fewer interactions with those in supervisory positions (often, white men) that conduct their performance evaluations due to people's tendency to form social networks with people similar to themselves (Kanter, 1997; Elliott & Smith, 2004).

Wilson & McBrier (2005) conclude by suggesting that future research should explore racial differences in higher status occupations. They argue that

“[s]ociological research on racial stratification at privileged locations in the American occupational structure has paid scant attention to the way job dismissals unfold” and that “...more refined analyses of layoffs should be undertaken. For example, intergroup comparisons should focus on individuals who work in similar upper-tier jobs such as lawyers, medical doctors, accountants, and so forth” (Wilson & McBrier, 2005:315-16).

### *3.4. Associations between involuntary job loss and subsequent job quality*

Research comparing the job quality of those who have and have not been displaced is largely focused on monetary indicators and only a few studies consider non-monetary measures, including the probability of reemployment, job authority, and employer-offered health and pension benefits. A focus on intrinsic rewards is especially important for any study of job quality in the LIS field given their high levels of intrinsic motivation (Sivak & DeLong; Steffen & Lietzau, 2009). In this section I review literature on the relationship between involuntary job loss and post-displacement earnings and other non-monetary indicators of job quality. I also make note of socio-demographic differences in this relationship, where available, as urged by Pearlin (1982), who stresses that the process of aging is dynamic and the ways in which unexpected hardship impacts people's lives can vary based on social and economic conditions; he says: “Not only is a cohort likely to be divided by different conditions of life, but even when conditions are similar their impact may differ because of variations in coping responses” (Pearlin, 1982:71).

### *3.4.1. POST-DISPLACEMENT EARNINGS*

Most research on the effects of involuntary job loss focus on post-displacement earnings losses, but the magnitude differs depending on the sample used (Couch & Placzek, 2010). Generally, these losses are reported to range between 5% and 39% and are contingent on a number of individual and organizational characteristics, including industry, education, income-level, gender, and race (Jacobson, LaLonde, & Sullivan, 1993; Keith & McWilliams, 1995; Farber, 2005; Brand, 2006; Cha & Morgan, 2010; Couch & Placzek, 2010; Couch, Jolly & Placzek, 2011). In some cases, earnings losses appear to persist even six years after the job loss (Jacobson, et al., 1993; Couch & Placzek, 2010). Again, as this paper is focused on gender and racial differences in the experience of involuntary job loss, this discussion focuses on those two demographic categories.

#### *3.4.1.1. Gender*

Among displaced workers, men generally suffer larger income losses than women and this difference also appears to be related to class. Brand (2006), using a random sample of 1957 Wisconsin high school graduates (N=7,878), found that displaced men, but not displaced women suffered income losses in their reemployed jobs. Jacobson, et al. (1993), in their analysis of Pennsylvania administrative data, also found that women reported slightly smaller initial post-displacement losses than men (\$453 per quarter) but that their earnings recovered more slowly (\$20 per quarter more slowly).

Ehlert (2013) found that the relationship between gender and class is complicated. Using a nationally representative sample of employed Americans and Germans, he found that American men in the lowest income quartiles (both in terms of individual and household incomes) suffer the largest wage losses due to involuntary job loss in the year of the job loss, two

years later, and four years later. However, men in the two upper quartiles experience greater loss than those in the second quartile (but not the first) both two years and four years after their job loss. Financial support from family given to men in lower income quartiles provides a smaller buffer from the effects of the job loss than for men in the upper income quartiles.

For American women, income trajectories are even more complex. In terms of individual income, poorer women generally experience proportionally larger income losses in both the short and long term; higher income women recover more quickly and those in the highest quartile experience a positive increase in income four years after the job loss. In terms of household income, there is a less consistent pattern for women than for men but, in general, poorer women experience proportionally larger household income losses during the year of the job loss with that losses becoming more evenly distributed across income-levels four years after the job loss. Financial support from family given to women in the lower income quartiles provides a smaller buffer during the year of the job loss, but a much larger buffer four years after the job loss.

Ehlert (2013:99) concludes by saying that, for American men and women, "...access to the income buffering mechanisms that the market, the family, and the welfare state provide depends on the individuals' positions within social stratification." In other words, "American women and men who are already deprived lose more of their former income through job loss than those in the upper strata. Therefore, job loss adds to the accumulation of disadvantages for them" (Ehlert, 2013:101).

#### ***3.4.1.2. Race***

Research on racial differences in post-displacement earnings is scarce and likely due, in part, to small sample sizes of non-white respondents in many surveys, which, when further divided by something as rare as job displacement, make it difficult to conduct reliable analyses



by race. Among those studies that did include race as a predictor of post-displacement earnings, they either found no evidence of racial disparities (Keith & McWilliams, 1995) or did not present estimates for race variables (Couch & Placzek, 2010; Cha & Morgan, 2010). However, given Wilson & McBrier's (2005) call for research on racial differences in higher status occupations and the fact that several other papers include race in their models, I include it as well.

#### *3.4.2. OTHER INDICATORS OF JOB QUALITY*

Significantly fewer studies focus on non-monetary features of job quality, including the probability of reemployment, authority, and employer-offered benefits. For example, Chan & Stevens (2010) found, in a sample of older workers (over 50) from the Health and Retirement study, that 62% of displaced men but only 57% of displaced women had returned to work two years after their job loss.

Brand (2006) used a wider range of job quality indicators to compare the experiences of displaced and non-displaced workers upon reemployment. Using a random sample of 1957 Wisconsin high school graduates (N=7,878), she found that previously displaced workers (due to downsizing or restructuring, but not layoffs) reported lower measures of job quality in their current job upon reemployment. Previously displaced workers reported having less authority, were less likely to be working in jobs that offered a pension or health insurance, and were more likely to be working in occupations with low incomes. There were few significant differences in risk of job displacement by gender or educational attainment but she did find that upper white collar and non-manufacturing workers reported greater losses in occupational status, autonomy, and authority while blue collar and manufacturing workers reported greater losses in employer-offered benefits (pensions and health insurance). She argues that these findings suggest that

research on job displacement should place a greater focus on the non-economic properties of jobs (Brand, 2006:275).

Although there are no published studies that compare displaced and non-displaced workers on measures of job quality in the LIS field, specifically, Morgan & Morgan's (2009:299) findings suggest that "...the labor market for LIS graduates appears to be relatively 'recession proof'." Using a sample of over 2,500 alumni of Library and Information Science programs in North Carolina, they found that those who graduated during a recession year did not report poorer work outcomes than those who graduated during non-recession years in terms of earnings or finding a full-time position, but they did remain in their first post-graduation job longer. Using a sub-sample of this group, which included recent alumni who graduated between 2001 and 2005 (N=537) who were asked an additional set of questions, the authors found no significant cohort differences among these graduates in terms of the duration of their first post-graduation job search, total number of career breaks reported, or career satisfaction.

### *3.5. Life course research and career trajectories*

Life course research adds to this literature on job instability by highlighting the importance of the timing of life-altering events (Elder, 1985; 1994), its impact on life course trajectories (Elder, 1985; George, 1993; 2009), and the extent to which small differences in initial conditions can accumulate over time and produce much larger differences (DiPrete & Eirich, 2006; O'Rand, 2009). Cain (1964:278) introduced the first systematic use of the term life course and it defined it as "...those successive statuses individuals are called upon to occupy in various cultures and walks of life as a result of aging, and 'age status' refers to the system developed by a culture to give order and predictability to the course followed by individuals." As life course research became a more formalized field, attempts to clarify its focus emerged

and, as Elder & Shanahan (2005:667) state, life course research “...refers most broadly to a theoretical orientation (or paradigm) that encourages the study of changing lives in changing contexts.” The benefit of sociologically-based life course research is that it views aging as a process which is underscored by how age, history, and social context interact across the entirety of people’s lives (Shanahan, 2008).

Empirical examples of these life course concepts as they relate to career experiences often focus on economic recessions and periods of war. One of the most prominent works illustrating these concepts was provided by Elder’s (1999) study, which examined how the timing of birth relative to The Great Depression was associated with different occupational and educational trajectories. Frank (2012) examined the impact of the risk of being drafted for military service during the Vietnam War and subsequent career trajectories among 1,967 male executives. He found that men who had a higher risk of being drafted (based on their age at the time of the war) were underrepresented among top U.S. executives in the 1990s but earned more and reached executive ranks more quickly than those who were not at high risk of being drafted. He suggests that, perhaps these men invested more heavily in human capital in order to avoid being drafted, which afforded them some relative advantage. In terms of chance, he argues that this provides evidence that random events (risk of being drafted) can have long-term consequences for one’s career.

An analysis of more recent economic changes (globalization), Bucholz, Horfacker, Mills, Blossfeld, Kurz, & Hofmeister (2009) found, in a comparison of 17 countries in Europe and North America, that the timing of one’s entrance into the labor market, relative to the timing of the impacts of globalization, was significantly associated with career quality. Specifically, those who were in the middle of their careers when the impacts of globalization were felt were

relatively shielded from these economic impacts. Those who were younger, less educated, working in less skilled occupations, and female suffered income losses and longer spells of unemployment.

Adversity, however, is not entirely deterministic; Clausen (1991) emphasizes the role of planfulness in navigating one's circumstances and, while it can mediate the effects of economic insecurity on career and educational trajectories, it does not eliminate them entirely. For example, Shanahan, Elder, & Miech (1997) compared the career experiences of a sample of 419 white men born between 1904 and 1917 (before and during World War I) who attended public high schools California in order to assess the extent to which planfulness, history, and social context intersect to produce educational and occupational attainment. Their results show that, despite greater planfulness among the earlier cohort (born between 1904 and 1910), they had lower levels of lifetime educational attainment and occupational attainment (by age 30) than the later cohort (born between 1911 and 1917). After controlling for family SES, intelligence, and educational attainment, they found that planfulness at age 14 was significantly associated with higher educational attainment and occupational prestige at age 30 for the younger cohort only, but the relationship was significant for both cohorts at age 40. The authors argue that these cohort differences are likely due to the fact that while "...a poor prewar economy kept the older cohort in the educational system, the healthy postwar economy tended to truncate the educational trajectories in the younger cohort" (65). They conclude that, while planfulness may be linked to educational and occupational outcomes, "...the link between adolescent planfulness and educational attainment decoupled in the wake of this economic collapse, war, and then a booming economy" (66).

Together, these studies demonstrate that career outcomes are associated with the timing of life course events relative to one's biological age, their class position, and socioeconomic status and that initial differences in exposure adversity can accumulate over time.

### *3.6. Job insecurity in the LIS field.*

As noted by Morgan & Morgan (2009), there has not been a systematic review of LIS employment trends during recessions, but it seems that library jobs have been relatively secure in terms of prospective workers' ability to find a job quickly, unemployment rates, and salaries, even during recession periods (Davis, 2009; Morgan & Morgan, 2009) and the profession even projects a coming labor shortage as the baby boomers retire (Dohm, 2000; ACRL, 2002). However, as many have pointed out, technology (e.g., internet and digital storage of information) has changed the role of librarians and other information professionals (Abbott, 1988; Dolan & Schumacher, 1997; Goetsch, 1997; Goetsch, 2008; Plutchak, 2012); those in the LIS labor market now see job advertisements asking for a broader range of skills, including greater knowledge of more highly specialized technologies (Kennan, Willard, & Wilson, 2006). This change in what LIS professionals do at work may lead to an expansion of roles across a wider range of industries (Plutchak, 2012; Funk, 2013) and it is unclear what this means for job quality in the LIS field. If these jobs are increasingly found in the private sector, perhaps LIS professionals will be subject to the same job insecurity experienced by other U.S. workers (Cappelli, 1999; Hacker, 2006; Kalleberg, 2009).

They also have increasingly greater risk of downsizing and layoffs as do other white collar workers in the U.S. due to growing use of organizational restructuring (Osterman, 2000). As organizations (both public and private) struggle to compete in a global market, those in information professions will likely find themselves needing to quantify the ways in which their

unique skills help the bottom line (Corcoran, 2002), of which there, arguably, are many (Morrison, 2007; Plutchak, 2012).

A recent study aimed to do this in the healthcare setting. The Value of Library and Information Services in Patient Care Study, launched between 2010 and 2011, was designed to measure "... the value and impact of library and information services on patient care" (Marshall, Sollenberger, Easterby-Gannett, Morgan, Klem, Cavanaugh, Oliver, Thompson, Romanosky, & Hunter, 2013:38) and collected both quantitative and qualitative data from healthcare professionals in 56 hospitals in the U.S. and Canada. Evidence from a series of papers using survey data from this study suggest that librarians provide a valuable resource to hospitals. First, Marshall, et al., (2013) found that 50% of health care professionals reported using their institution's library website for information searches and 14% asked a librarian or library staff for help. Second, in a follow-up paper, Marshall, Morgan, Thompson & Wells (2014) found that the number of resources available to physicians and residents at an institution's library and the number of librarians on staff were associated with improved patient care outcomes and that the information they obtained in their search saved them, on average, 2.6 hours. Third, in an additional follow-up paper, Marshall, Morgan, Klem, Thompson, & Wells (2014) found that the number of resources available to nurses, asking a librarian for help, searching for information in a library, and having more librarians and library staff was significantly associated with better patient care outcomes and time saved; the information they obtained in their search saved them, on average, 2.3 hours. The results from this study provide strong evidence that libraries and librarians are important resources in clinical settings.

Aside from quantifying their value, others have suggestions for ways to highlight the importance of LIS work in the business and public sectors. Goetsch (2008:167) suggests that

librarians should focus on an “...interrelated set of four new core responsibilities...[including]... consulting services, information lifecycle management, collaborative print, and electronic collection building, and information mediation and interpretation.” Miller (2009) argues that a new brand of advocacy for the funding of library services is needed. She calls on library professionals to seek out leadership positions within political and municipal organizations in order to more prominently demonstrate the value of libraries. For example, even during recessions people can use library computers to search and apply for jobs and apply for unemployment benefits. Since many libraries receive significant funding from tax dollars, having a voice in tax budgets decisions will increase the chances that libraries will not be cut during periods of economic decline.

#### **4. Hypotheses**

To summarize this review of the literature, there is a lack of research on how chance impacts career trajectories; involuntary job loss could fill that gap as it is a rare and unexpected event for most people. Men, non-whites, less educated, part-time workers, with less tenure have the greatest risk for job separation. Post-displacement earnings are generally lower than those in pre-displacement jobs, and there is very little research examining non-monetary indicators of post-displacement job quality among displaced workers. Given this review, I propose the following hypotheses:

- Hypothesis 1: Men and non-whites will be more likely to experience an involuntary job loss.
- Hypothesis 2: Involuntary job loss will be associated with lower subsequent job quality in one’s current job.
- Hypothesis 3: The timing of the involuntary job loss will be associated with subsequent job quality in one’s current job.

- Hypothesis 4: Men and non-whites will report lower post-displacement salaries and lower scores on non-monetary work rewards in their post-displacement jobs.

## 5. Data

### 5.1 WILIS study

The Workforce Issues in Library and Information Science (WILIS) study<sup>1</sup> sought to learn more about the careers of graduates from Library and Information Science (LIS) programs (Marshall, Marshall, Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson, 2009) using the life course perspective (Marshall, Rathbun-Grubb, & Marshall (2009). The WILIS 1 Study, as supported by a grant from the Institute for Museum and Library Services, had the goal to address “...the need for a greater understanding of the long-term experiences of LIS graduates in the workforce” (Marshall, Solomon, & Rathbun-Grubb, 2009 2009:142). Data from the WILIS 1 Study were collected from a sample of 2,682 alumni from five LIS graduate programs in North Carolina. Respondents who graduated between 1964 and 2007 were sent a survey questionnaire in 2007. Contact information for alumni was acquired directly from their graduate programs and also a commercial alumni tracking program, in which case the information was subsequently verified with their program. Overall, the study had a response rate of 35.4% (n=2,653). Respondents answered questions about their experiences in selecting and attending graduate school as well as questions about a number of jobs they have held.

In the analyses used in this paper, it is important to understand the particular jobs for which the respondents provided detailed information as there was a complex skip pattern used in the survey. Respondents were asked to report on five specific jobs: Their job before they entered

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their LIS program, their first post-graduation job, current job, highest achieving job, and their longest job. For some people these jobs may fall into the same category. For example, someone may report that their “current” job is also their “highest achieving” job. In these cases they completed only one set of responses (in this case the “current” job section) and all questions about the other job (“highest achieving” job) were skipped and recorded as missing values.

## *5.2. Outcome Variables*

I use five measures of job quality in these analyses. The first four outcome variables measure job satisfaction, autonomy, opportunities for growth and promotion, and job security in one’s current job. The last outcome variable measures annual salary. The frequencies, means, and standard deviations for these variables are reported in Table 23 and are discussed in the context of the results section of this paper.

### *5.2.1. SALARY & JOB SECURITY*

Current salary is measured as an annual value, which was converted into 2007 dollars using the average Consumer Price Index (CPI) for each year; for cases in which respondents reported hourly wages, this value was calculated by multiplying the number of weekly hours worked by the hourly wage reported, which was then multiplied by 52 weeks. Job security was measured using a survey question that asked respondents to indicate the extent to which they agreed with the following statement: “Compared to five years ago, I am more concerned about my job security” (1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly Agree). I reverse-code this variable and frame the discussion in terms of perceived job *security* rather than *lack of* perceived job security.

### *5.2.2. AUTONOMY, JOB SATISFACTION, AND OPPORTUNITIES FOR GROWTH AND PROMOTION*

Measures of autonomy, job satisfaction, and opportunities for growth and promotion were created using four survey questions each, which asked respondents to indicate the extent to which they agreed with each statement based on a four item Likert scale (1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly Agree). The sum of the four survey responses is divided by four to create an average value for autonomy, job satisfaction, and opportunities for growth and promotion; values can range from one to four.

#### *5.2.2.1. Autonomy*

The Cronbach's alpha for the autonomy items is 0.7330. The survey questions included are:

- I have a lot of say about what happens on my job.
- I decide when I take breaks.
- It is basically my responsibility to decide how my job gets done.
- I generally have opportunities for creative input and innovation in my work.

#### *5.2.2.2. Job satisfaction*

The Cronbach's alpha for the satisfaction items is 0.8499. The survey questions included are:

- Overall I am satisfied with what I do in my job.
- I am generally happy with my current work environment.
- I still like my job.
- Knowing what I know now, if I had to decide all over again, I would still decide to take the job I now have.

#### *5.2.2.3. Opportunities for growth and promotion*

The Cronbach's alpha for the opportunities for growth and promotion items is 0.8233. The survey questions included are:

- I have the opportunity to develop and apply the skills I need to enhance my career.

- My employer does a good job of helping develop my career.
- I believe that I have opportunities for promotion within the field given my education, skills, and experience.
- I have opportunities to develop leadership skills.

### *5.3 Control and explanatory variables*

The main explanatory variables used in these analyses are whether one left their job due to downsizing or a layoff and the timing of that job loss; descriptive statistics are presented in Table 24 and are discussed in the results section. The first variable is dichotomous and is created using a survey question that asked respondents: “How important was each of the following in influencing you to leave this job?” with a list including both “Downsizing or company closing” and “Lay-off.” For each job they report having left, they could have responded with “Not a reason,” “Minor reason,” or “Major reason.” For this variable, I give a value of 0 to respondents who report that downsizing or layoff was not a reason for leaving this job and I give a value of 1 to respondents who report that downsizing or layoff was a minor or major reason for leaving this job. The second set of variables are dichotomous and indicate the timing of the job loss, which could have occurred in the job they held before entering their LIS graduate program, the job they held immediately after graduation, their longest held job, and the job they consider to be their highest achieving. For each of these variables, a value of 0 indicates that they did not leave their job due to a downsizing or layoff at that time and a value of 1 indicates that they did.

Control variables used in these analyses are presented in Table 22 and discussed in the results section; they include gender (0=male, 1=female), race (0=white, 1=non-white), age, age<sup>2</sup>, and the five-year cohort in which they graduated from their LIS program (with the exception of 1954-69, which I combined due to small sample sizes in earlier cohorts, and 2005-07, in which case the date of the survey completion occurred before the end of a five-year period). I include a

categorical variable to indicate the work setting in which the respondent is currently employed (1=school library, 2=public library, 3=academic library, 4=other library, 5=non-library), managerial status for one's current job (1=supervisor, 2=middle manager, 3=senior administrator, 4=non-manager), organizational size in one's current position (1=1-9 employees, 2=10-24 employees, 3=25-99 employees, 4=100-499 employees, 5=500-999 employees, and 6=1000+ employees), the number of years respondents have been employed in their current job (tenure) , whether respondent is currently employed full-time, the number of hours worked per week in their current job, and current salary. Finally, I include a variable indicating from which of the five LIS programs the respondent graduated: The University of North Carolina at Chapel Hill (UNC-CH), Appalachian State University (ASU), East Carolina University, The University of North Carolina at Greensboro (UNC-G), and North Carolina Central University (NCCU).

## **6. Methods**

### *6.1. Analytic sample*

The sample is restricted to those who were employed at the time of the survey (N=2,046). Of these, 283 people had missing values on at least one outcome variable and were also dropped from the analyses; I end up with an analytic sample of N=1,763. To handle the remaining missing data in the independent variables I use multiple imputation with chained equations (Allison, 2001) for the multivariate analyses. Multiple imputation calculates coefficients that are averaged over several datasets and addresses potential biases in standard errors (Rubin, 1987). The percent missing for each variable are presented along with descriptive statistics for both the raw data and the imputed values in Table 22. The first column shows the frequencies and means for the original data set, which includes only cases that had valid values on these variables, (i.e., before imputation was used). The second column includes the frequencies and means averaged

over the five sets of imputed data, and the third column shows the percentage of missing data in the original data set. We can see that there is not much variation in the frequencies and means of each variable between the columns, with the exception of small differences for tenure in the job held before entering the LIS program and tenure in the first post-graduation job. Overall, this indicates that there were not significant biases in the imputation process that resulted in significantly different imputed datasets.

## *6.2. Methodology*

In the bivariate analyses, independent samples t-tests and chi-squared tests are used to examine differences in the outcome variables by gender, race, and whether one experienced an involuntary job loss. Logistic regression is used to estimate hypothesis one and Ordinary Least Squares (OLS) regression is used to test hypotheses two through four. Specific bivariate or multivariate findings about the graduate program variable are not reported due to confidentiality agreements made with the schools, but I do provide a significance test indicating whether the graduate program one attended had a statistically significant effect on each dependent variable denoted with a  $\chi^2$  value or *F*-statistic and asterisks representing p-values.  $R^2$  values are also presented to measure increases in the amount of variance explained by the graduate program variable as it is included across models.

## **7. Results**

### *7.1. Descriptive results*

The descriptive statistics for control and explanatory variables are presented in Table 22.

*Demographics.* The sample is 80% female, 89% white, and has an average age of 47.6 years

*School characteristics.* Most of the sample graduated from UNC-CH (51%), followed by UNC-G (21%), NCCU (14%), ECU (8%), and ASU (6%) with a relatively even distribution of

graduation cohorts but a greater number of more recent graduates. *Work characteristics.* Most people are currently working in school libraries (24%) and non-library settings (24%) followed by those working in academic libraries (21%), public libraries (16%), and other library settings (15%). In their current position, 60% are non-managers, 11% are supervisors, 16% are middle managers, and 13% are senior administrators. Four percent currently work in organizations with fewer than 10 employees and others worked in organizations with between 10-24 employees (5%), 25-99 employees (20%), 100-499 employees (25%), 500-999 employees (12%), and over 1,000 employees (34%). Ninety-one percent of respondents are employed full-time and have been employed in their current position for an average of 6.9 years. In terms of tenure in previous positions, respondents reported being employed for an average of 5.0 years in the job held before entering their LIS program, 4.3 years in their first post-graduation job, 9.8 years in their longest held job, and 6.8 years in their highest achieving job.

## *7.2. Bivariate results*

The descriptive statistics for outcome variables are presented in Table 23 with bivariate analyses for race, gender, and whether respondents experienced an involuntary job loss. In this sample of LIS graduates, the mean value for each non-monetary measure of job quality are as follows: autonomy (3.24), job satisfaction (3.22), opportunities for growth and promotion (3.00), and job security (2.85) and respondents earned an average salary of \$54,781.10 in their current position. Women have lower scores than men on both autonomy and opportunities for growth and promotion and earn lower salaries. Non-whites have lower scores than whites on measures of job satisfaction and job security. Those who experienced an involuntary job loss report lower scores than those who did not on autonomy, job satisfaction, opportunities for growth and promotion, and job security.

The descriptive statistics for the experience of involuntary job loss are presented in Table 24 with bivariate analyses for race and gender. In this sample, 8.7% of respondents report having left a job due to downsizing or layoffs and a larger portion of men than women report this loss (12.5% v. 8.0%). Within this group, 31% lost this job in the position they had before entering their LIS program, followed by 32% losing their job in the position held after graduation from their LIS program, 28% losing their position in their longest held position, and 12% losing their job in the position they consider to have been their highest achieving. There are no gender differences in timing but there is one significant racial difference with 28% of whites and 58% of non-whites reporting that their job loss occurred in the job held immediately after graduation from their LIS program. Ninety-three percent of respondents were working full-time during the time of their job loss with slightly higher (but not statistically significant different) rates of full-time status for men and whites. The average tenure in the lost job was 6.03 years and, again there were no statistically significant gender differences, but whites had been working in their lost job for more years (6.41 v. 3.37 years). Thirty-six people reported more than one involuntary job loss.

### *7.3. Multivariate results*

The multivariate results are discussed in the order and context of each hypothesis. Table 25 presents the results for five sets of models predicting involuntary job loss. Table 26 presents the results for four sets of models predicting each job quality measure, but presents only the coefficients for the involuntary job loss variables. The presentation of the results in this way allows for a clearer picture of how the effect sizes of job loss variables change when demographic, school, and work characteristics are added to the models. The first model includes only the primary explanatory variable (whether respondents experienced a downsizing or layoff).

The second model adds demographic characteristics (gender, race, age, and age-squared). The third model adds school variables (graduation cohort and graduate program). The full model adds work variables (work setting, managerial status, organizational size, full-time status, and number of years in current job). Table 27 presents the full models for each of the job quality measures with the estimates of all control and explanatory variables shown. Table 28 presents the full models for each of the job quality indicators with a measure of the timing of the involuntary job loss. Table 29 presents the full models for each of the job quality indicators with a measure of the interaction between race and involuntary job loss. Table 30 presents the full models for each of the job quality indicators with a measure of the interaction between gender and involuntary job loss.

The reference categories for all models are: Gender (male), race (white), graduation cohort (2005-07), work setting (non-library), managerial status (non-manager), full-time status (part-time) and organization size (1,000+ employees). Due to a confidentiality agreement made with the participating universities I cannot disclose information that would identify specific results associated with any of the programs. Therefore, I do not include regression coefficients in the regression models for the graduate program variable, but I do indicate whether the categorical variable as a whole is statistically significant with a  $\chi^2$  value or an  $F$ -statistic.

### *7.3.1. HYPOTHESIS 1: MEN AND NON-WHITES ARE MORE LIKELY TO EXPERIENCE DOWNSIZING AND LAYOFFS.*

Analyses for the first hypothesis are presented in Table 23. In models one through four, women have about 38% lower odds than men of having experienced an involuntary job loss, but there are no significant racial differences. Those who graduated from their LIS program between 1954 and 1969 had 93% lower odds than recent graduates (2005-2007) of reporting that they left their job due to downsizing or layoffs. The number of years one has worked in their highest



achieving job appears to be driving the odds of having experienced an involuntary job loss as it is the only variable in the model with a significant effect; each additional year worked in one's highest achieving job is associated with 7% lower odds of having experienced an involuntary job loss. Race, age, and graduate program are not significantly associated with involuntary job loss. These results provide mixed support for hypothesis one as gender, but not race, is significantly associated with having experienced an involuntary job loss.

**7.3.2. HYPOTHESIS 2: INVOLUNTARY JOB LOSS WILL BE ASSOCIATED WITH LOWER JOB QUALITY IN ONE'S CURRENT JOB.**

Analyses for the second hypothesis are presented in Table 26 and we see that, across all models, job loss due to downsizing or layoff is significantly associated with lower scores on autonomy, job satisfaction, opportunities for growth and promotion, and job security, but is not associated with current salary. Multivariate results for each measure of job quality are discussed using both Table 26 (to assess changes in effect sizes of the involuntary job loss measure across models) and Table 27 (full models for each outcome variable).

**7.3.2.1. Autonomy**

The first model in Table 27 presents estimates for the autonomy measure with all control and explanatory variables included and shows that involuntary job loss is significantly associated with lower scores on autonomy ( $b=-0.119$ ,  $p<.01$ ). Non-whites report lower scores than whites and those working in school libraries report lower scores than those working in non-library settings. Supervisors and senior administrators report higher scores on autonomy than non-managers, those working in smaller organizations report higher scores than those working in larger organizations, and full-time employees report higher scores than part-time employees.

The graduate program one attended is also significantly associated with scores on autonomy ( $F=4.04$ ,  $p<.01$ ), but due to a confidentiality agreement with the participating

programs, we cannot report details about each school. However, a review of the  $R^2$  values presented in Table 26 shows that, while the association between autonomy and graduate program is statistically significant, the magnitude of the increase in variance explained is larger between the school and full models ( $R^2=0.036$  vs.  $0.099$ ) than between the demographic and school models ( $R^2=0.009$  v.  $0.036$ ). The graduate program one attended is strongly associated with autonomy in one's current position, but it only explains part of the relationship; the variables in the work models explain a larger portion of the variance than the school variables (graduation cohort and graduate program).

#### **7.3.2.2. *Job satisfaction***

The second model in Table 27 presents estimates for the job satisfaction measure with all control and explanatory variables included and shows that involuntary job loss is significantly associated with lower scores on job satisfaction ( $b=-0.116$ ,  $p<.01$ ); the magnitude of this effect decreases slightly from the baseline model but remains significant in the full model (see Table 26). Non-whites report lower scores on job satisfaction than whites and senior administrators report higher scores than non-managers. None of the other variables in this model are significantly associated with this measure of job satisfaction.

#### **7.3.2.3. *Opportunities for growth and promotion***

The third model in Table 27 presents estimates for the job quality measure indicating opportunities for growth and promotion and shows that involuntary job loss is significantly associated with lower scores on this measure ( $b=-0.181$ ,  $p<.001$ ); the magnitude of this effect remains stable across all models in Table 26. Non-whites report lower scores than whites, many of those in various graduation cohorts report lower scores than those who graduated between 2005 and 2007, and those who work in organizations with between 500 and 999 employees

report lower scores than those who work in organizations with 1,000 or more employees. Middle managers and senior administrators report higher scores on this measure than non-managers as do those who work full-time.

#### **7.3.2.4. *Job security***

The fourth model in Table 27 presents estimates for the job security measure and shows that involuntary job loss is significantly associated with lower scores on this measure ( $b=-0.317$ ,  $p<.001$ ); The magnitude of this effect decreases slightly after the addition of the work variables but still remains statistically significant (see Table 26). Non-whites report less job security than whites, age has a negative and significant linear and non-linear effect, those working in an organization with 500-999 employees report less job security than those working in an organization with 1,000 or more employees, and full-time employees report less job security than part-time employees. Those working in school libraries report greater job security than those in non-library settings and, relative to non-managers, middle managers and senior administrators report more job security.

#### **7.3.2.5. *Current salary***

The fifth model in Table 27 presents estimates for the salary measure and shows that involuntary job loss is not significantly associated with current salary, but most of the other variables in the model are. Women earn, on average, \$11,179 less than men, those in older graduation cohorts generally earn more than more recent graduates (this is likely due to having spent more time in the labor market), and those in library settings earn less than those in non-library settings. Supervisors and senior administrators earn more than non-managers, those who work in organizations with fewer than 1,000 employees earn less, on average, and full-time employees earn more than part-time employees.

The graduate program one attended is also significantly associated with scores on autonomy ( $F=17.71$ ,  $p<.001$ ), but due to a confidentiality agreement with the participating programs, we cannot report details about each school. However, a review of the  $R^2$  values presented in Table 26 shows that, while the association between autonomy and graduate program value is statistically significant, the magnitude of the increase in variance explained is larger between the school and full models ( $R^2=0.148$  vs.  $0.394$ ) than between the demographic and school models ( $R^2=0.077$  vs.  $0.148$ ). The graduate program one attended explains some of the difference in salaries between respondents, but the variables in the work models explain a larger portion of this variance.

*7.3.3. HYPOTHESIS 3: THE TIMING OF THE INVOLUNTARY JOB LOSS WILL BE ASSOCIATED WITH JOB QUALITY IN ONE'S CURRENT JOB.*

Results for OLS estimates for the timing of involuntary job loss predicting job quality are presented in Table 28. The timing of the job loss has the strongest association with job security; involuntary job loss from one's job held before entering their LIS program, their first job after graduation from their LIS program, and their longest held job are all significantly associated with lower scores on job security. In terms of the other timing variables, involuntary job loss during one's longest held job is associated with lower scores on both opportunities for growth and promotion and job security. Involuntary job loss during one's first job after graduation from their LIS program is associated with lower scores on job security. Having had multiple involuntary job losses is adversely associated with all non-salary measures of job quality. These results provide moderate support for hypothesis three.

*7.3.4. HYPOTHESIS 4: MEN AND NON-WHITES WILL REPORT LOWER POST-DISPLACEMENT SALARIES AND LOWER SCORES ON NON-MONETARY WORK REWARDS IN THEIR POST-DISPLACEMENT JOBS.*

Results for OLS estimates of race and gender interactions with involuntary job loss predicting job quality are presented in Tables 29 and 30, respectively. In Table 29 we see that

white respondents who experienced an involuntary job loss report lower scores on all non-salary measures of job quality. Relative to white respondents who did not report an involuntary job loss, white respondents who did report lower scores on all non-monetary measures of job quality. Non-white respondents who experienced involuntary job loss, report lower scores on only the autonomy and job security measures, but these associations are stronger (in terms of the magnitude of the coefficients) for non-whites. Non-whites who did not experience involuntary job loss report lower scores on job satisfaction, opportunities for growth and promotion, and job security. In Table 30 we see that, relative to men who did not experience an involuntary job loss, men who did report lower scores on job satisfaction and job security and women who experienced an involuntary job loss report lower scores on autonomy, opportunities for growth and promotion, job security and earn, on average, \$11,967 less in their current position. Women who did not experience involuntary job loss also report lower salaries, but do not report significantly different scores on other measures of job quality compared to men who did not experience an involuntary job loss. These results provide mixed support for hypothesis five.

## **8. Discussion**

### *8.1. Academic literature*

This paper addresses the need for empirical research on the role of chance in explaining career trajectories (Pearlin, 1982; DiPrete, 2002) and a better understanding of the extent to which they are related to social and contextual factors (Shanahan & Porfeli, 2007). I find that involuntary job loss is a rare event for LIS graduates in this sample; only 8.7% of respondents report having left their job due to a downsizing or layoff. However, the risk of job displacement is not the same for all workers; women are at lower risk than men, which is consistent with previous research (Kletzer, 1998; Elvira & Zatzick, 2002; Farber, 2005; Chan & Stevens, 2010;

Farber, 2010) and I do not find any significant racial differences in the risk of involuntary job loss.

In terms of the association between involuntary job loss and subsequent job quality, these results do not confirm previous studies that found earnings losses among displaced workers (Jacobson, LaLonde, et al., 1993; Keith & McWilliams, 1995; Farber, 2005; Brand, 2006; Cha & Morgan, 2010; Couch & Placzek, 2010; Couch, et al., 2011). It could be that LIS skills are easily transferable to multiple settings, in which case, workers would remain competitive even if they switch jobs and would be able to demand a job with similarly high salaries as those who were not displaced. The finding that this relationship is conditional on race (and to some extent gender) does, however, provide evidence justifying Wilson & McBrier's (2005) call for research on racial differences in high status occupations.

Results estimating the association between job loss and non-monetary work rewards fills an important gap in the literature, as noted by Brand (2006), and I find that having experienced an involuntary job loss is associated with lower scores on measures of autonomy, job satisfaction, job security, and opportunities for growth and promotion. This further extends the argument that the impact of involuntary job loss is far-reaching (Brand, 2015) even beyond earnings losses. The finding that the timing of the job loss is associated with job quality is consistent with life course research principles of timing and trajectories (Elder, 1985; 1994; George, 1993; George, 2009) and it would be useful to consider this in future studies of job displacement. The racial differences found address Wilson & McBrier's (2005) call for research on higher status occupations and provide support for their proposal that, to the extent that layoffs are causally associated with job quality, perhaps the effects of social closure on occupational attainment are even stronger in more prestigious occupations.

## 8.2. *LIS field*

These findings also address the need for understanding the long-term career experiences of LIS graduates (Marshall, et al., 2009). The focus on non-monetary measures of job quality is especially important for LIS professionals as they have high levels of intrinsic motivation (Rathbun-Grubb, 2009; Sivak & DeLong, 2009; Stefen & Lietzau, 2009). However, these analyses do not allow for a direct measurement of a causal relationship between involuntary job loss and job quality, so this would be a useful avenue for future research. Finally, given the American Library Association's focus on recruiting and retaining a diverse workforce (ALA, 2016), and their concern about recruiting more racial minorities, it will be important to those involved in workforce planning to carefully track the types of jobs held by racial minorities (and women) that may leave them more vulnerable to lower job quality after experiencing an involuntary job loss.

## **9. Limitations and Directions for Future Research**

These findings suggest several avenues for future research that would both increase our understanding of the relationship between involuntary job loss and subsequent job quality and address some of the limitations of this study. First, future research on involuntary job loss should incorporate non-monetary measures of job quality, especially when studying workers who have high intrinsic motivations, and also the timing of the displacement. Second, the WILIS a data do not include detailed measures of non-monetary job quality for all jobs listed in respondents' career histories. It would be useful to track changes in job quality both before and after displacement. Third, there is little racial diversity in the WILIS 1 data as the LIS field is mostly white. Focusing on specific occupations with more racial diversity would allow for greater precision in subgroup analyses. Finally, future work should focus on the processes used by

workers to find employment after an involuntary job loss in order to identify explanations for the gender and racial differences in this relationship between displacement and job quality.



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## CHAPTER 5. CONCLUSION: A PIPELINE PROBLEM?

### 1. Introduction

In this dissertation I analyzed socio-demographic differences in the career experiences of library and information science (LIS) graduates from the WILIS 1 study<sup>2</sup> (Marshall, J., Marshall, V., Morgan, Barreau, Moran, Solomon, Rathbun-Grubb, & Thompson, 2009). This chapter summarizes the main findings from these analyses and discusses implications for both the sociological literature and the LIS field, specifically. The final section provides some general conclusions and directions for future research.

### 2. Summary of Findings

The primary results of this study are:

#### *2.1. Student loan use and subsequent job quality*

1. Using student loans to fund one's LIS degree is associated with lower salaries and less job security.
2. Using scholarships to fund one's LIS degree is associated with greater autonomy, job satisfaction, and more opportunities for growth and promotion.

#### *2.2. Administrative job functions*

3. Non-white managers are performing fewer administrative job functions and these functions are different from those performed than their white counterparts. Non-white managers have lower odds of performing functions related to communications and public relations, facilities and space planning, financial management, general management, staff training and evaluation, and strategic planning.

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<sup>2</sup> The WILIS 1 study was supported by a grant from the Institute for Museum and Library Services. The primary research team from the School of Information and Library Science at the University of North Carolina at Chapel Hill and the University of North Carolina Institute on Aging consisted of: Joanne Gard Marshall, lead principal investigator; Victor W. Marshall, co-principal investigator; Jennifer Craft Morgan, co-principal investigator; Deborah Barreau, co-investigator; Barbara Moran, co-investigator; Paul Solomon, co-investigator; Susan Rathbun-Grubb, research scientist; Cheryl A. Thompson, project manager; and Shannon Walker, graduate research assistant.



4. Male and female managers perform similar job functions, with the exception of human resources; women have 38% lower odds of performing this job function.

### *2.3. Involuntary job loss and subsequent job quality*

5. Involuntary job loss is not common among LIS graduates in this sample and only 8.7% report having left a previous job due to downsizing or a layoff.
6. Involuntary job loss is associated with lower scores on autonomy, job satisfaction, opportunities for growth and promotion, and job security, but is not associated with current salary.
7. Men have 38% greater odds of reporting a previous involuntary job loss than women, but there is no significant racial difference.
8. The timing of one's involuntary job loss is associated with subsequent measures of job security.
  - a. Involuntary job loss during the job held before entering the LIS program, the first post-graduation job, or the longest held job is associated with lower scores on job security.
  - b. Involuntary loss during the longest held job is associated with lower scores on both opportunities for growth and promotion and job security.
  - c. Involuntary job loss during the first post-graduation job is associated with lower scores on job security.
  - d. Multiple involuntary job losses are adversely associated with all non-salary measures of job quality.
9. The association between involuntary job loss and subsequent job quality differs by race. Relative to white respondents who did not report an involuntary job loss, white respondents who did report lower scores on all non-monetary measures of job quality. Non-white respondents who experienced involuntary job loss, report lower scores on only the autonomy and job security measures, but these associations are stronger for non-whites (in terms of the magnitude of the coefficients).
10. There are more associations between involuntary job loss and job quality for women than for men. Relative to men who do not report an involuntary job loss, men who do report lower scores on job satisfaction and job security. Women who report involuntary job loss report lower scores on autonomy, opportunities for growth and promotion, and job security and also earn, on average, \$11,967 less in their current position.

### **3. Discussion**

The discussion of the primary findings of the dissertation focuses on three trends that emerged from the analyses: 1) racial disparities in career experiences, 2) gender disparities in career experiences, and 3) the importance of intrinsic rewards in the LIS field.

#### *3.1. Diversity in the LIS field*

Racial and gender disparities in labor market outcomes of U.S. workers as well as a lack of racial diversity and gender diversity in managerial positions have been widely discussed among both academics and those responsible for workforce planning in the LIS field. The ALA has designated one of its key action areas to increase diversity within the profession (ALA, 2016) and produced a report titled “Diversity Counts” (Davis & Hall, 2007) to examine demographic trends within librarianship. The IMLS provided numerous grants to increase racial diversity within the profession, including the well-known Spectrum Scholarship program, which provides financial assistance for tuition, travel to the ALA’s annual conferences, and ALA membership (Roy, Johnson-Cooper, Tysick, & Waters, 2006). In terms of gender, it has also been demonstrated that women earn less and occupy positions lower in the managerial hierarchy (Lynch, 1999; Beveridge, Weber, & Beveridge, 2011), although that has been changing (Moran, Leonard, & Zellers, 2009). Given this significant amount of interest in diversity, the findings of this dissertation are especially relevant for workplace planning in the LIS field.

#### *3.2. Race*

##### *3.2.1. RACE AND MANAGERIAL EXPERIENCES*

The most significant socio-demographic differences in career experiences pertain to race. The finding that administrative job functions differ by race provides support for sociological explanations about racial differences in occupational mobility. First, as suggested by some

(Jacobs, 1992; Strang & Baron, 1990), it could be that women and non-whites are given administrative titles without the level of responsibility typically associated with that position. This may be due to antidiscrimination pressures introduced by the Civil Rights Act of 1964, which made employment discrimination based on race and gender (as well as other statuses) illegal (Tomaskovic-Devey & Stainback, 2007). It would be important to know if the job functions that non-white managers are less likely to perform are also those that are considered to be higher-level managerial responsibilities because, to the extent that this is the case, it would provide support for the job title proliferation hypothesis.

Second, it could be that non-white managers are placed into, what Collins (1997) calls, “racialized” jobs in which their primary responsibilities are focused on diversity, community outreach, affirmative action, or other race-related issues. These jobs foster the development of a very specific skill set rather than the general managerial skills that would make one a more competitive candidate for higher-level executive positions, which could explain the underrepresentation of non-whites in higher-level managerial positions.

### *3.2.2. RACE AND INVOLUNTARY JOB LOSS*

In terms of monetary measures of job quality, there is very little empirical research examining racial differences in post-displacement earnings and, among those who have done this research, they either did not present estimates for race variables used in their analyses (Couch & Placzek, 2010; Cha & Morgan, 2010) or did not test interactions between race and displacement (Keith & McWilliams, 1995). So, the finding that the relationship between involuntary job loss and subsequent job quality is conditional on race does not speak to a specific segment of the literature on this topic, but it is consistent with the idea that racial status is often associated with poorer labor market outcomes and is a fertile area for future research. It also answers Wilson &

McBrier's (2005) call for research on the experiences of job displacement among non-white workers in higher status occupations in order to understand the extent to which they experience even greater marginalization in these settings.

### *3.2.3. RACE AND STUDENT LOAN USE*

The finding that student loan use is associated with lower salaries and less job security could have implications for racial diversity in the LIS field since loan use is more concentrated among non-white students (and those with fewer economic resources). For example, the results in Chapter 2 show that that using loans to fund one's LIS graduate education is associated with lower measures of job quality (job security and salary) and using scholarships is associated with higher scores of job quality (autonomy, job satisfaction, and more opportunities for growth and promotion). It is possible that loans and subsequent job quality are causally related and that the burden of student debt limits the extent to which graduates can sacrifice salaries for intrinsic rewards. However, it is impossible to establish a causal relationship between these two factors due to the nature of these data. An alternative explanation could be that students who use loans to fund their education are less prepared or not as strong academically, which is causing both their need to take out loans and the absence of other funding resources available to them (e.g., scholarships). Although the graduate program one attended provides some measure of ability, to the extent that it is related to the prestige of the program, it is not a strong measure of ability and cannot rule out this possibility.

## *3.3. Gender*

### *3.3.1. GENDER AND MANAGERIAL EXPERIENCES*

There are fewer gender than racial differences in the career experiences of LIS graduates in this sample. First, the finding that male and female managers perform similar administrative

job functions does not provide support for the job title proliferation hypothesis (Jacobs, 1992; Strang & Baron, 1990) as it relates to gender. The only significant gender difference is that female managers have 38% lower odds of reporting that they perform job functions related to human resources. The women in this sample are not receiving administrative titles without commensurate responsibilities.

### 3.3.2. *GENDER AND INVOLUNTARY JOB LOSS*

The rate of involuntary job loss is smaller for women than men (8.0% v. 12.5%), which is consistent with previous research, but seems inconsistent with arguments that this is due to women's weaker labor force attachments (Farber, 2005; Farber, 2010). Given the time, energy, and money invested in acquiring an advanced degree by these LIS graduates, I would expect these women to have a stronger attachment to the labor force than women in other occupations, especially given the older age of librarians (who would likely have older children, on average). However, speaking in relative terms, it could be that women have a weaker attachment to the labor force than men *within* this profession.

These findings also indicate that the relationship between involuntary job loss and job quality is conditional on gender. Women who experienced involuntary job loss report lower scores across a wider range of job quality measures than men who experienced involuntary job loss. The only measures of job quality that these analyses have in common with previous research is salary and are inconsistent with both Brand's (2006) and Jacobson, et al.'s (1993) findings that displaced men experienced larger income losses than displaced women. Perhaps this is because the present sample is homogeneous in that all respondents are professionals, while previous research includes people across various occupations.

### *3.4. The importance of intrinsic rewards*

Earnings are an important feature of one's job, but it is not the only measure of job quality. Studies generally report that non-monetary features of work are more important in determining overall job quality and recommend that scholars take a more multidimensional approach incorporating both intrinsic and extrinsic rewards (Jencks, Perman, & Rainwater, 1988; Kalleberg & Vaisey, 2005; Osterman, 2013). This is especially true for professions that attract workers who have high intrinsic motivations, such as those in the LIS field. Some have argued that low salaries may act as a deterrent for prospective librarians (Matarazzo, 1989; 2003), so it is important that they at least get the intrinsic rewards they seek. The LIS graduates in these analyses generally report high levels of intrinsic job quality, but gender and racial disparities exist in the relationships between 1) student loan use and job quality and 2) involuntary job loss and job quality, which may have important implications for occupations that value diversity and employ workers who are highly motivated by intrinsic work rewards (to these extent that these relationships are causal).

## **4. Limitations and Directions for Future Research**

The results of these analyses on their own do not offer conclusive evidence that using loans or experiencing an involuntary job loss causes poorer job quality, nor do they confirm that women and non-whites are being denied the opportunity for upward mobility because their superiors are assigning them less managerial tasks that make them less competitive than their white, male counterparts. Despite the limitations of this study, the results do, however, provide fruitful avenues for future research and clues about how to better identify and understand mechanisms that contribute to racial and gender disparities in the labor market. For those involved in workforce planning in the LIS field, these results may suggest taking a closer look at

employment policies and structures to see if they may be, unknowingly, contributing to employment practices that are adversely impacting their recruitment and retention efforts in terms of both trying to attract a highly educated population without salaries comparable to those found in other professional fields as well as meeting its diversity goals.

First, it is important to understand why the link exists between student loan use and subsequent measures of intrinsic job quality in order to understand if this is a spurious relationship that is better explained by student ability. The WILIS 1 data are limited in the extent to which they can rule out this possibility, but future work should consider controlling for background factors that could confound this relationship with student loans and also differentiate between scholarships that are available only to members of particular demographic groups and those that are awarded purely on the basis of academic merit (regardless of other demographic characteristics). To the extent that there is a causal relationship between using student loans and subsequent job quality, the LIS field should also continue to fund programs, like the Spectrum Scholarship Program, order to control for the fact that minorities are more likely to rely on loans and will, therefore, likely have greater need to balance their aspirations for a career in librarianship with the ability to pay off their student debt.

Second, the WILIS 1 data are racially homogenous and predominantly female. Given that the relationship between involuntary job loss and job quality is conditional on both gender and race, it would be useful to look at the features of jobs in which women and non-whites are highly concentrated. While previous research has primarily considered worker characteristics and some also studied differences by industrial sectors and part-time status, it would be interesting to see if there are other features of jobs (rather than workers, themselves) that can leave workers more vulnerable to involuntary job loss. For example, there are likely some job functions that are less

central to organizations and, therefore, are first to be cut during times of economic struggle. If non-whites (and, perhaps, women) are more likely to work in positions that as are assigned these functions, as suggested by Wilson & McBrier (2005), it would be wise to consider why that is the case.

Third, it could be that racial and gender differences in both involuntary job loss and mobility into managerial positions are, in part, a pipeline problem. If women and non-whites are at greater risk for downsizing and layoffs because they are performing functions that are less important to the organization, then any policies aimed at increasing diversity would need to address this issue. Similarly, if non-white managers (and to a much smaller extent, in this sample, women) are not earning higher-level managerial positions because they are performing a different set of work duties (i.e., job functions) that leave them less prepared and unqualified for promotions, then policies aimed at increasing diversity in managerial positions would want to understand why these gender and racial disparities exist. Data that include information about how work tasks are assigned, and by whom, would address this particular limitation.

In either case, it would be useful for human resources planning in the LIS field to consider ways to ensure that women and racial minorities are provided with opportunities to develop skills that will make them qualified for leadership positions in order to address any pipeline issues preventing the development of a diverse workforce. In fact, Sivak & DeLong (2009), in their analysis of Canadian librarians, argue that there is a great need for managerial skills and leadership training in librarianship and that many librarians are reluctant to pursue the development of those skills.

Fourth, pursuing research that focuses on non-monetary work rewards, especially in populations of workers who have high intrinsic motivations, would provide a more complete



picture of career experiences. Job quality is multidimensional and to leave out the many intrinsic rewards provided to people through their work presents a skewed picture of employment. The ability to demonstrate the intrinsic rewards offered by a career in LIS may also offset some of the concern among prospective applicants about whether the tradeoff between a lower salary and higher intrinsic rewards is worth it. Also, given the high level of intrinsic motivation among librarians (Sivak & DeLong, 2009; Steffen & Lietzau, 2009) and the findings that unexpected career interruptions are associated with intrinsic work rewards, it is important to consider non-monetary measures of job quality when studying occupations, like librarianship, that employ workers with strong intrinsic motivations.

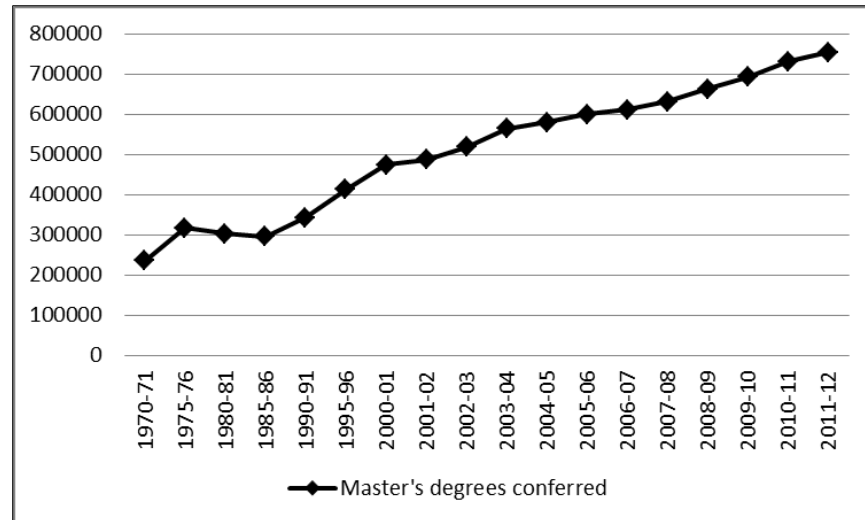
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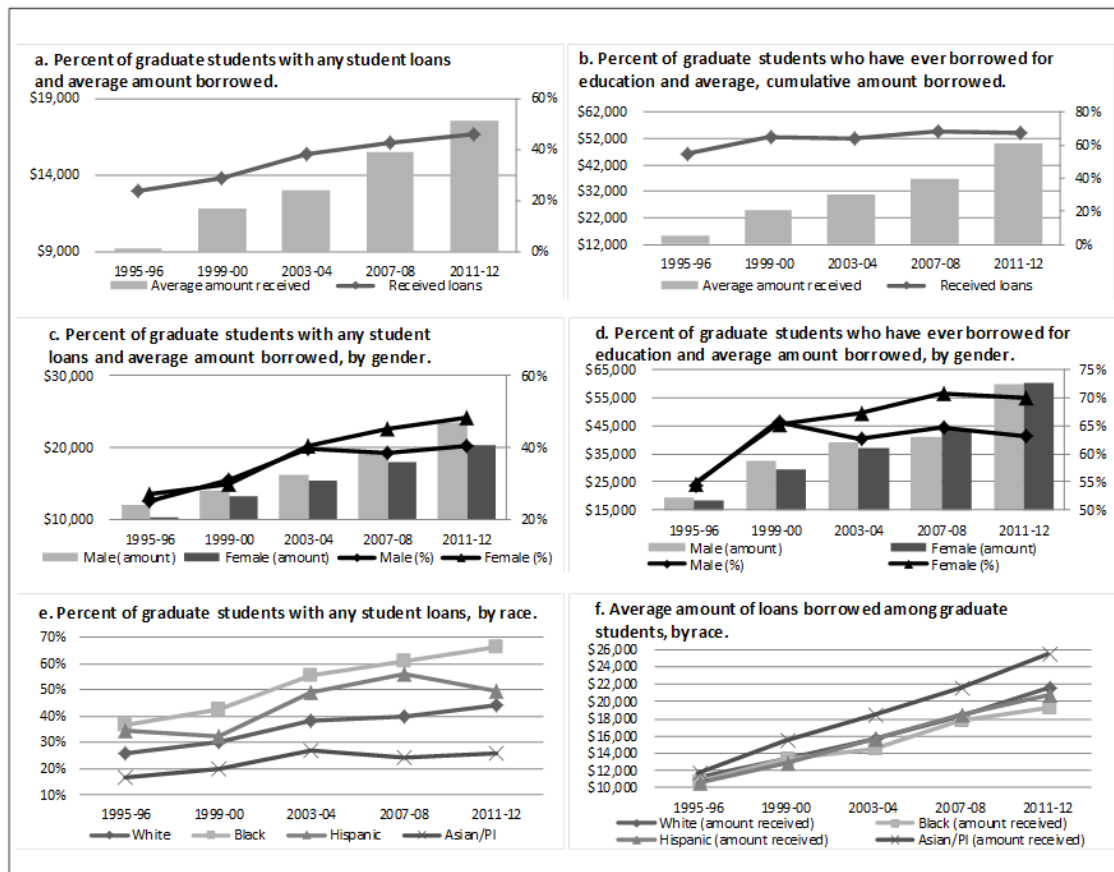
## APPENDIX A: TABLES AND FIGURES FOR CHAPTER 2

Figure 1. Number of master's degrees conferred (in all fields) in the United States (1970-2012).



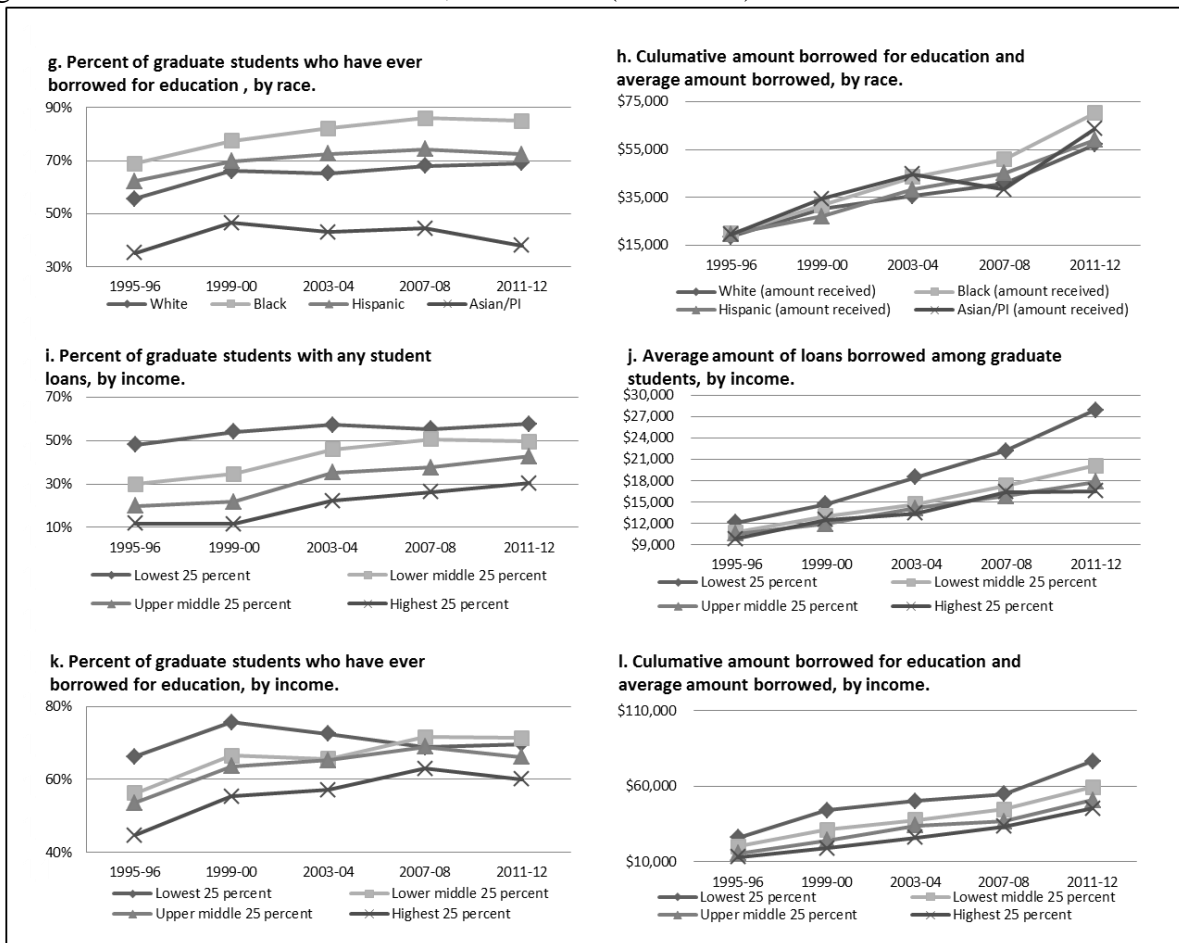
Source: National Center for Education Statistics (2015a).

Figure 2. Trends in student loan use in the United States (1995-2012).



Source: National Center for Education Statistics (2014)

Figure 2. Trends in Student Loan use, 1995-2012 (continued).



Source: National Center for Education Statistics (2014)

Table 1. Salary for the top 10 occupations with the highest percent of employed people with a master's degree (25 years and older).

Occupation	Mean salary (2012-2013)	% Master's degrees (May, 2014)
Speech-language pathologists	\$ 71,550	85%
Nurse practitioners	\$ 97,990	78%
Nurse midwives	\$ 97,700	77%
Nurse anesthetists	\$ 158,900	62%
Librarians	\$ 56,170	57%
Therapists, all other	\$ 59,190	55%
Exercise physiologists	\$ 49,040	55%
Urban and regional planners	\$ 66,940	51%
Secondary school teachers, except special and career/technical education	\$ 59,330	49%
Career/technical education teachers, secondary school	\$ 57,370	49%

Sources: Bureau of Labor Statistics (2014a; 2014b).

Note: the category labeled "therapists, all other" includes all therapists not otherwise specified individually.

Table 2. Motivations for pursuing a degree in LIS.

It seemed like a good fit for my interests	93%	1,509
Wanted a job where I could make a difference	71%	1,146
Availability of jobs	59%	963
Flexible career options	54%	878
Worked as an assistant in a library or information center	47%	765
Flexible education options for working adults	41%	662
Like working with computers	37%	601
An LIS career fits with my family responsibilities	33%	544
Length of training	32%	528
Always wanted to be a librarian	32%	512
Family or friend worked in LIS	31%	504
Family or friend recommended LIS	31%	510
Benefits	27%	431
Salary	25%	404
Volunteered in a library or information setting	18%	296
Recruited by LIS program	3%	56
Guidance counselor in high school	1%	11

\*Note: Sample sizes vary; the N's reported are the number of people who responded "A lot" or "A moderate amount" to each question.

Table 3. Percentages (pre- and post-imputation) and means of control and explanatory variables.

Variables (Valid N)	Original data set (N=1,626)	Imputed data sets (M=5)	% Missing
Female (1,626)	80%	-	0%
Non-white (1,623)	11%	89%	<1%
<i>Black</i>	6%	6%	<1%
<i>Asian/PI</i>	2%	2%	<1%
<i>Other</i>	3%	3%	<1%
Program-Graduate school (1,626)			
<i>UNC-CH</i>	51%	-	<1%
<i>ASU</i>	7%	-	<1%
<i>ECU</i>	8%	-	<1%
<i>UNC-G</i>	20%	-	<1%
<i>NCCU</i>	14%	-	<1%
Graduation cohort (1,626)			
<i>1954-69</i>	3%	-	<1%
<i>1970-74</i>	6%	-	<1%
<i>1975-79</i>	10%	-	<1%
<i>1980-84</i>	9%	-	<1%
<i>1985-89</i>	10%	-	<1%
<i>1990-94</i>	12%	-	<1%
<i>1995-99</i>	18%	-	<1%
<i>2000-04</i>	23%	-	<1%
<i>2005-07</i>	9%	-	<1%

Note: Descriptive statistics for funding source variables are presented in Table 5.

\* " - " indicates that there were no imputed values for this variable.

Table 3 (continued). Percentages (pre- and post-imputation) and means of control and explanatory variables.

Variables (Valid N)	Original data set (N=1,626)	Imputed data sets (M=5)	% Missing
Current library setting (1,626)			
<i>School Library</i>	25%	-	0%
<i>Public Library</i>	15%	-	0%
<i>Academic Library</i>	22%	-	0%
<i>Other Library</i>	14%	-	0%
<i>Non-Library</i>	24%	-	0%
First post-graduation job in library setting (1,557)	86%	86%	4%
Current managerial status (1,546)			
<i>Non-manager</i>	61%	61%	5%
<i>Supervisor</i>	11%	11%	5%
<i>Middle Manager</i>	16%	16%	5%
<i>Senior Administrator</i>	13%	13%	5%
Supervisory position in first post-graduation job (1,556)	53%	54%	4%
Current organization size (1,626)			
1-9	4%	-	0%
10-24	5%	-	0%
25-99	21%	-	0%
100-499	25%	-	0%
500-999	12%	-	0%
1,000+	33%	-	0%
Organization size (First post-graduation job) (1,554)			
1-9	3%	-	0%
10-24	5%	-	0%
25-99	26%	-	0%
100-499	27%	-	0%
500-999	10%	-	0%
1,000+	29%	-	0%
Age (1,621)	47.6 (10.7)	47.6 (10.7)	<1%
Tenure in current job (1,571)	6.8 (7.1)	6.9 (7.1)	3%
Tenure if first post-graduation job (1,572)	5.1 (5.9)	5.2 (5.9)	3%
Weekly hours worked (1,626)	40.2 (9.1)	-	0%
Weekly hours worked in first post-grad job (1,557)	39.6 (6.5)	39.6 (6.5)	4%
Current salary (1,626)	\$55,008 (\$26,753)	-	0%
Post-graduation salary (1,626)	\$43,038 (\$19,396)	-	0%
Salary increase (1,626)	\$11,970 (\$27,466)	-	0%

Note: Descriptive statistics for funding source variables are presented in Table 5.

\* " - " indicate that there were no imputed values for this variable.



Table 4. Financial aid sources by gender and race.

	Scholarship	Loans	Family	Savings	Employer	N
All	18%	31%	36%	39%	9%	1,626
Gender						
<i>Male</i>	19%	32%	30%	44%	8%	319
<i>Female</i>	17%	31%	37%	37%	10%	1,307
$\chi^2$	0.6981	0.0436	5.1512*	4.6403*	0.6717	
Race						
<i>White</i>	16%	30%	36%	40%	9%	1,448
<i>Black</i>	29%	53%	22%	25%	12%	89
<i>Asian/PI</i>	19%	16%	50%	50%	3%	32
<i>Other</i>	28%	35%	35%	22%	7%	54
<i>F</i>	4.54**	8.02***	3.25*	5.42***	0.88	
	Library work	Non-library work	Other	Grants	Assistantships	N
All	47%	16%	9%	11%	25%	1,626
Gender						
<i>Male</i>	50%	20%	14%	10%	34%	319
<i>Female</i>	46%	15%	8%	11%	23%	1,307
$\chi^2$	1.9285	4.8392*	13.1734***	1.7222	16.4707***	
Race						
<i>White</i>	48%	16%	9%	10%	25%	1,448
<i>Black</i>	36%	22%	12%	18%	15%	89
<i>Asian/PI</i>	28%	19%	13%	6%	44%	32
<i>Other</i>	48%	15%	9%	20%	29%	54
<i>F</i>	3.03*	0.97	0.54	3.74*	3.94**	

\*\*\*p&lt;0.001, \*\*p&lt;0.01, \*p&lt;0.05,

Table 5. Frequencies and means for measures of job quality by gender, race, loan status.

	Autonomy	Satisfaction	Growth	Security	N
All	3.24 (.510)	3.22 (.579)	3.00 (.580)	2.86 (.801)	1,626
Gender					
<i>Male</i>	3.31 (.521)	3.16 (.605)	3.08 (.619)	2.80 (.797)	319
<i>Female</i>	3.22 (.507)	3.23 (.571)	2.99 (.569)	2.87 (.802)	1,307
<i>t</i>	2.5403*	-2.1867*	2.6074**	-1.4893	
Race					
<i>White</i>	3.25 (.505)	3.23 (.572)	3.01 (.571)	2.88 (.783)	1,448
<i>Black</i>	3.21 (.549)	3.12 (.677)	3.02 (.670)	2.83 (.956)	89
<i>Asian/PI</i>	2.98 (.633)	3.16 (.519)	2.84 (.591)	2.38 (.833)	32
<i>Other</i>	3.24 (.498)	3.17 (.620)	2.95 (.654)	2.56 (.839)	54
<i>F</i>	3.11*	1.35	1.05	6.89***	
Loan use					
<i>No</i>	3.23 (.517)	3.24 (.571)	2.99 (.567)	2.90 (.778)	1,114
<i>Yes</i>	3.26 (.496)	3.18 (.593)	3.03 (.608)	2.76 (.840)	512
<i>t</i>	-0.9201	1.9934*	-1.2869	3.4325***	

Note: Standard deviations are in parentheses.

\*\*\*p&lt;0.001, \*\*p&lt;0.01, \*p&lt;0.05

Table 5 (continued). Frequencies and means for measure of job quality by gender, race, loan status.

	Current Salary	Post-graduation Salary	Salary increase	N
All	\$55,008 (\$26,753)	\$43,038 (\$19,396)	\$11,970 (\$27,466)	1,626
Gender				
<i>Male</i>	\$68,978 (\$36,926)	\$46,525 (\$24,935)	\$22,453 (\$36,393)	319
<i>Female</i>	\$51,598 (\$22,344)	\$42,187 (\$17,692)	\$9,411 (\$24,140)	1,307
<i>t</i>	10.7641***	3.5948***	7.7400***	
Race				
<i>White</i>	\$54,668 (\$26,719)	\$42,609 (\$18,971)	\$12,059 (\$27,970)	1,448
<i>Black</i>	\$55,538 (\$26,194)	\$43,516 (\$21,041)	\$12,021 (\$20,276)	89
<i>Asian/PI</i>	\$70,843 (\$31,309)	\$57,073 (\$22,945)	\$13,769 (\$24,158)	32
<i>Other</i>	\$53,297 (\$23,684)	\$44,248 (\$22,250)	\$9,048 (\$27,001)	54
<i>F</i>	3.92**	5.97***	0.25	
Loan use				
<i>No</i>	\$55,585 (\$28,824)	\$43,776 (\$20,969)	\$11,809 (\$30,240)	1,114
<i>Yes</i>	\$53,752 (\$21,543)	\$41,433 (\$15,325)	\$12,319 (\$20,175)	512
<i>t</i>	1.2837	2.2654*	-0.3475	

Note: Standard deviations are in parentheses.

\*\*\*p&lt;0.001, \*\*p&lt;0.01, \*p&lt;0.05

Table 6. OLS estimates predicting job quality measures (including all predictors) (N=1,626).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Autonomy	Satisfaction	Opportunities for growth and promotion	Job security	Current salary	Post-graduation salary	Salary increase
<i>Funding sources</i>							
<i>Loans</i>	-0.0239 (0.0297)	-0.0595 (0.0354)	-0.0362 (0.0342)	-0.125** (0.0484)	-2.467* (1.251)	-1.477 (1.067)	-1.524 (1.360)
<i>Scholarships</i>	0.0909** (0.0330)	0.0909* (0.0393)	0.127*** (0.0380)	0.0289 (0.0537)	1.225 (1.389)	2.037 (1.196)	-906.1 (1,514)
<i>Family assist.</i>	-0.00468 (0.0272)	-0.0107 (0.0323)	-0.00332 (0.0313)	-0.0139 (0.0443)	-2.398* (1.144)	-1.690 (0.975.7)	-895.1 (1,242)
<i>Personal savings</i>	-0.0253 (0.0259)	-0.0325 (0.0307)	-0.0266 (0.0297)	0.0165 (0.0420)	-1.732 (1.088)	-182.2 (938.2)	-1,669 (1,178)
<i>Employer assist.</i>	0.0484 (0.0435)	0.0624 (0.0518)	0.0302 (0.0501)	-0.0775 (0.0708)	2.582 (1.831)	-1.198 (1.574)	3,599 (1,988)
<i>Library work</i>	-0.0118 (0.0251)	-0.0114 (0.0299)	-0.0436 (0.0289)	-0.0487 (0.0409)	-149.3 (1,058)	-1,901* (903.0)	1,666 (1,147)
<i>Non-library work</i>	-0.0541 (0.0336)	-0.00669 (0.0400)	-0.0801* (0.0387)	-0.0387 (0.0547)	3.070* (1.414)	2.571* (1.233)	290.2 (1,557)
<i>Grants</i>	-0.0583 (0.0436)	-0.0875 (0.0518)	-0.143** (0.0502)	-0.124 (0.0709)	1.198 (1.835)	286.1 (1,572)	553.2 (2,000)
<i>Assistantships</i>	-0.0163 (0.0405)	-0.0199 (0.0481)	-0.0427 (0.0465)	0.0433 (0.0658)	827.6 (1,703)	944.1 (1,461)	137.5 (1,859)
<i>Other funding</i>	0.0161 (0.0311)	-0.0184 (0.0370)	-0.0152 (0.0358)	-0.0528 (0.0506)	200.5 (1,310)	-3,444** (1,118)	3,445* (1,423)
Female	-0.00508 (0.0318)	0.0578 (0.0378)	-0.0521 (0.0366)	-0.000240 (0.0518)	-10,704*** (1,338)	-2,349* (1,135)	-7,788*** (1,456)
Race (Reference: White)							
<i>Black</i>	-0.0615 (0.0605)	-0.161* (0.0717)	-0.0496 (0.0696)	-0.0478 (0.0981)	2,527 (2,548)	2,846 (2,175)	-92.14 (2,763)
<i>Asian/PI</i>	-0.328*** (0.0892)	-0.0492 (0.106)	-0.233* (0.103)	-0.439** (0.145)	9,399* (3,763)	10,962*** (3,232)	-2,067 (4,130)
<i>Other</i>	-0.0322 (0.0689)	-0.0929 (0.0822)	-0.0869 (0.0798)	-0.340** (0.112)	344.1 (2,901)	981.7 (2,472)	-401.1 (3,147)
Age	-0.00151 (0.0119)	-0.0164 (0.0140)	0.00516 (0.0135)	-0.0628** (0.0191)	-498.7 (498.8)	-526.0 (429.6)	-15.96 (534.9)
Age <sup>2</sup>	1.36e-05 (0.000126)	0.000157 (0.000149)	-9.63e-05 (0.000144)	0.000705*** (0.000202)	5.282 (5.286)	6.569 (4.541)	-0.712 (5.669)

Note: [] indicates F-statistic.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 (Standard errors in parentheses)

Table 6 (continued). OLS estimates predicting job quality measures (including all predictors) (N=1,626).

	(1) Autonomy	(2) Satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary	(6) Post-graduation salary	(7) Salary increase
Graduation cohort (Reference category: 2005-07)							
1954-69	-0.0552 (0.104)	-0.152 (0.123)	-0.141 (0.119)	-0.00324 (0.169)	7.883 (4,375)	1,686 (3,657)	5,986 (4,774)
1970-74	-0.0569 (0.0816)	-0.112 (0.0968)	-0.220* (0.0938)	0.0419 (0.133)	15,903*** (3,443)	4,796 (2,894)	10,771** (3,801)
1975-79	-0.0498 (0.0727)	-0.0320 (0.0862)	-0.167* (0.0834)	0.0355 (0.118)	17,453*** (3,065)	-1,005 (2,587)	18,218*** (3,373)
1980-84	-0.00386 (0.0711)	-0.000603 (0.0844)	-0.107 (0.0815)	0.109 (0.116)	13,147*** (3,000)	-1,729 (2,508)	14,493*** (3,268)
1985-89	-0.0159 (0.0682)	-0.00891 (0.0810)	-0.141 (0.0782)	0.0544 (0.111)	14,563*** (2,873)	-557.3 (2,443)	14,948*** (3,131)
1990-94	-0.0502 (0.0634)	-0.0592 (0.0752)	-0.183* (0.0726)	0.0105 (0.103)	12,071*** (2,677)	283.5 (2,262)	11,770*** (2,913)
1995-99	0.00567 (0.0565)	-0.0817 (0.0671)	-0.177** (0.0648)	0.119 (0.0916)	11,890*** (2,383)	1,240 (2,028)	10,577*** (2,594)
2000-04	-0.00913 (0.0509)	0.0107 (0.0605)	-0.112 (0.0585)	0.0720 (0.0827)	7,074*** (2,141)	1,535 (1,832)	5,583* (2,320)
Current work setting (Reference category: Non-library setting)							
School library	-0.185*** (0.0421)	-0.0380 (0.0502)	-0.0178 (0.0484)	0.174* (0.0685)	-5,753** (1,783)		-3,614 (1,960)
Public library	-0.0619 (0.0422)	-0.0331 (0.0501)	0.124* (0.0485)	0.0588 (0.0687)	-10,306*** (1,781)		-4,898* (1,977)
Academic library	-0.0110 (0.0382)	-0.0644 (0.0454)	0.0772 (0.0439)	0.110 (0.0620)	-11,985*** (1,608)		-5,319** (1,800)
Special library	-0.0241 (0.0417)	-0.0540 (0.0496)	0.0601 (0.0480)	0.000955 (0.0679)	-2,852 (1,755)		-312.1 (1,960)
Current managerial status (Reference category: Non-managers)							
Supervisor	0.119** (0.0432)	0.0388 (0.0514)	0.0834 (0.0493)	0.0133 (0.0708)	7,777*** (1,819)		8,574*** (1,938)
Middle manager	0.0402 (0.0368)	0.0618 (0.0468)	0.111** (0.0423)	0.153* (0.0605)	1,845 (1,584)		1,385 (1,678)
Senior administrator	0.289*** (0.0420)	0.133** (0.0479)	0.247*** (0.0473)	0.154* (0.0674)	14,248*** (1,902)		14,622*** (1,930)

Note: [] indicates F-statistic.

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05 (Standard errors in parentheses)

Table 6 (continued). OLS estimates predicting job quality measures (including all predictors) (N=1,626).

	(1) Autonomy	(2) Satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary	(6) Post-graduation salary	(7) Salary increase
Current organization size (Reference category: 1,000+ employees)							
<i>1-9 employees</i>	0.239*** (0.0651)	-0.0124 (0.0775)	-0.0127 (0.0750)	0.120 (0.106)	-11,174*** (2,740)		-7,568* (3,110)
<i>10-24 employees</i>	-0.0139 (0.0626)	-0.0171 (0.0744)	-0.107 (0.0721)	0.0189 (0.102)	-16,430*** (2,636)		-12,581*** (3,084)
<i>25-99 employees</i>	0.0183 (0.0381)	-0.00807 (0.0453)	-0.0822 (0.0439)	0.00598 (0.0620)	-10,668*** (1,606)		-9,508*** (2,055)
<i>100-499 employees</i>	0.0108 (0.0331)	0.0550 (0.0394)	-0.0353 (0.0381)	0.0106 (0.0539)	-9,457*** (1,395)		-8,975*** (1,774)
<i>500-999 employees</i>	-0.00268 (0.0417)	-0.0636 (0.0496)	-0.0757 (0.0480)	-0.124 (0.0679)	-5,234** (1,754)		-1,266 (2,167)
Weekly hours worked (current job)	0.00390** (0.00143)	-0.00385* (0.00170)	0.00697*** (0.00165)	-0.00451 (0.00233)	1,106*** (60.52)		1,280*** (71.53)
Years in current job	0.00159 (0.00204)	0.00166 (0.00248)	-0.00394 (0.00235)	-0.00521 (0.00345)	106.7 (85.61)		126.7 (97.71)
Library setting (post-graduation job)						-2,991* (1,405)	877.1 (1,821)
Supervisory position (post-graduation job)						2,322* (971.4)	-2,147 (1,211)
Organization size – Post-graduation job (Reference category: 1,000+ employees)							
<i>1-9 employees</i>						-8,737*** (2,540)	1,955 (3,386)
<i>10-24 employees</i>						-9,519*** (2,153)	9,373** (2,971)
<i>25-99 employees</i>						-6,194*** (1,258)	4,450* (1,949)
<i>100-499 employees</i>						-5,061*** (1,203)	4,415* (1,800)
<i>500-999 employees</i>						-6,625*** (1,664)	-106.7 (2,341)

Note: [] indicates F-statistic.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 (Standard errors in parentheses)

Table 6 (continued). OLS estimates predicting job quality measures (including all predictors) (N=1,626).

	(1) Autonomy	(2) Satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary	(6) Post-graduation salary	(7) Salary increase
Weekly hours (post-graduation job)							
Years in post-graduation job							
Graduate Program	[4.00]**	[0.62]	[1.24]	[0.12]	[16.03]***	[7.70]***	[1.90]
Constant	3.202*** (0.263)	3.786*** (0.312)	2.940*** (0.301)	4.325*** (0.423)	34,012** (11,025)	27,154*** (9,613)	1,725 (12,140)
R <sup>2</sup>	.125	.036	.101	.058	.436	.210	.378
Adjusted R <sup>2</sup>	.102	.010	.077	.033	.421	.192	.358

Note: [ ] indicates F-statistic.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 (Standard errors in parentheses)

Table 7. OLS estimates (for funding variables only) predicting autonomy (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
Funding sources				
<i>Loans</i>	0.00826 (0.0288)	0.00988 (0.0303)	-0.0106 (0.0303)	-0.0239 (0.0297)
<i>Scholarships</i>	0.108** (0.0340)	0.109** (0.0341)	0.103** (0.0339)	0.0909** (0.0330)
<i>Family assist.</i>	-0.00336 (0.0273)	0.000744 (0.0273)	-0.0173 (0.0279)	-0.00468 (0.0272)
<i>Personal savings</i>	-0.0223 (0.0263)	-0.0247 (0.0265)	-0.0311 (0.0265)	-0.0253 (0.0259)
<i>Employer assist.</i>	0.0265 (0.0446)	0.0262 (0.0446)	0.0534 (0.0448)	0.0484 (0.0435)
<i>Library work</i>	0.0311 (0.0255)	0.0238 (0.0256)	-0.00574 (0.0257)	-0.0118 (0.0251)
<i>Non-library work</i>	-0.0660 (0.0346)	-0.0687* (0.0346)	-0.0583 (0.0345)	-0.0541 (0.0336)
<i>Grants</i>	-0.0239 (0.0448)	-0.0319 (0.0449)	-0.0364 (0.0447)	-0.0583 (0.0436)
<i>Assistantships</i>	-0.0167 (0.0415)	-0.0118 (0.0415)	-0.0303 (0.0414)	-0.0163 (0.0405)
<i>Other funding</i>	0.0727* (0.0303)	0.0702* (0.0307)	0.0167 (0.0318)	0.0161 (0.0311)
Graduate program			[11.85]***	[4.00]**
$R^2$	.017	.027	.059	.125
Adjusted $R^2$	.011	.017	.043	.102

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), weekly hours worked, and number of years employed in current job.

Table 8. OLS estimates (for funding variables only) predicting job satisfaction (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
Funding sources				
<i>Loans</i>	-0.0647* (0.0327)	-0.0739* (0.0345)	-0.0657 (0.0350)	-0.0595 (0.0354)
<i>Scholarships</i>	0.0865* (0.0386)	0.0925* (0.0388)	0.0927* (0.0391)	0.0909* (0.0393)
<i>Family assist.</i>	-0.0125 (0.0310)	-0.0164 (0.0311)	-0.0122 (0.0322)	-0.0107 (0.0323)
<i>Personal savings</i>	-0.0421 (0.0299)	-0.0399 (0.0301)	-0.0377 (0.0306)	-0.0325 (0.0307)
<i>Employer assist.</i>	0.0689 (0.0507)	0.0694 (0.0508)	0.0610 (0.0517)	0.0624 (0.0518)
<i>Library work</i>	-0.0176 (0.0290)	-0.0177 (0.0292)	-0.0148 (0.0297)	-0.0114 (0.0299)
<i>Non-library work</i>	-0.0163 (0.0393)	-0.0107 (0.0394)	-0.0103 (0.0398)	-0.00669 (0.0400)
<i>Grants</i>	-0.0922 (0.0509)	-0.0771 (0.0512)	-0.0849 (0.0516)	-0.0875 (0.0518)
<i>Assistantships</i>	-0.0158 (0.0471)	-0.0180 (0.0473)	-0.0218 (0.0478)	-0.0199 (0.0481)
<i>Other funding</i>	-0.0327 (0.0344)	-0.0350 (0.0349)	-0.0258 (0.0367)	-0.0184 (0.0370)
Graduate program			[0.66]	[0.62]
$R^2$	.011	.017	.023	.036
Adjusted $R^2$	.005	.008	.006	.010

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), weekly hours worked, and number of years employed in current job.



Table 9. OLS estimates (for funding variables only) predicting opportunities for growth and promotion (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
Funding sources				
<i>Loans</i>	0.0297 (0.0327)	-0.0169 (0.0342)	-0.0232 (0.0346)	-0.0362 (0.0342)
<i>Scholarships</i>	0.151*** (0.0386)	0.148*** (0.0385)	0.151*** (0.0386)	0.127*** (0.0380)
<i>Family assist.</i>	-0.0172 (0.0310)	-0.00846 (0.0308)	-0.00852 (0.0318)	-0.00332 (0.0313)
<i>Personal savings</i>	-0.0171 (0.0299)	-0.0193 (0.0299)	-0.0275 (0.0302)	-0.0266 (0.0297)
<i>Employer assist.</i>	0.0592 (0.0507)	0.0451 (0.0504)	0.0420 (0.0511)	0.0302 (0.0501)
<i>Library work</i>	-0.0185 (0.0290)	-0.0243 (0.0289)	-0.0365 (0.0294)	-0.0436 (0.0289)
<i>Non-library work</i>	-0.0739 (0.0392)	-0.0889* (0.0391)	-0.0824* (0.0393)	-0.0801* (0.0387)
<i>Grants</i>	-0.0908 (0.0509)	-0.102* (0.0508)	-0.110* (0.0510)	-0.143** (0.0502)
<i>Assistantships</i>	-0.0348 (0.0471)	-0.0393 (0.0469)	-0.0483 (0.0473)	-0.0427 (0.0465)
<i>Other funding</i>	0.0366 (0.0343)	0.0131 (0.0347)	-0.0109 (0.0363)	-0.0152 (0.0358)
Graduate program			[3.61]**	[1.24]
$R^2$	.018	.037	.051	.101
Adjusted $R^2$	.012	.027	.034	.077

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), weekly hours worked, and number of years employed in current job.

Table 10. OLS estimates (for funding variables only) predicting job security (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
Funding sources				
<i>Loans</i>	-0.145** (0.0452)	-0.144** (0.0473)	-0.142** (0.0481)	-0.125** (0.0484)
<i>Scholarships</i>	0.0294 (0.0534)	0.0310 (0.0533)	0.0340 (0.0537)	0.0289 (0.0537)
<i>Family assist.</i>	-0.0221 (0.0429)	-0.0240 (0.0426)	-0.0153 (0.0442)	-0.0139 (0.0443)
<i>Personal savings</i>	0.00107 (0.0413)	0.00928 (0.0413)	0.0117 (0.0421)	0.0165 (0.0420)
<i>Employer assist.</i>	-0.0791 (0.0701)	-0.0715 (0.0697)	-0.0823 (0.0710)	-0.0775 (0.0708)
<i>Library work</i>	-0.0564 (0.0401)	-0.0557 (0.0400)	-0.0536 (0.0408)	-0.0487 (0.0409)
<i>Non-library work</i>	-0.0687 (0.0543)	-0.0572 (0.0540)	-0.0555 (0.0547)	-0.0387 (0.0547)
<i>Grants</i>	-0.132 (0.0704)	-0.116 (0.0702)	-0.120 (0.0709)	-0.124 (0.0709)
<i>Assistantships</i>	0.0232 (0.0651)	0.0283 (0.0649)	0.0308 (0.0657)	0.0433 (0.0658)
<i>Other funding</i>	-0.0967* (0.0475)	-0.0791 (0.0479)	-0.0598 (0.0505)	-0.0528 (0.0506)
Graduate program			[0.23]	[0.12]
$R^2$	.014	.034	.037	.058
Adjusted $R^2$	.008	.024	.020	.033

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), weekly hours worked, and number of years employed in current job.

Table 11. OLS estimates (for funding variables only) predicting current salary (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
Funding sources				
<i>Loans</i>	-3,134* (1,503)	-701.3 (1,525)	-2,133 (1,486)	-2,467* (1,251)
<i>Scholarships</i>	3,634* (1,775)	3,699* (1,717)	2,820 (1,659)	1,225 (1,389)
<i>Family assist.</i>	-1,332 (1,425)	-1,058 (1,373)	-3,617** (1,364)	-2,398* (1,144)
<i>Personal savings</i>	297.8 (1,374)	-935.8 (1,332)	-1,118 (1,299)	-1,732 (1,088)
<i>Employer assist.</i>	283.4 (2,330)	791.3 (2,246)	4,597* (2,193)	2,582 (1,831)
<i>Library work</i>	1,868 (1,334)	1,340 (1,289)	-788.8 (1,261)	-149.3 (1,058)
<i>Non-library work</i>	4,440* (1,804)	3,487* (1,741)	4,574** (1,689)	3,070* (1,414)
<i>Grants</i>	6,483** (2,339)	3,824 (2,262)	3,883 (2,190)	1,198 (1,835)
<i>Assistantships</i>	1,639 (2,164)	3,187 (2,089)	1,818 (2,030)	827.6 (1,703)
<i>Other funding</i>	6,251*** (1,579)	5,197*** (1,544)	814.0 (1,559)	200.5 (1,310)
Graduate program			[19.37]***	[16.03]***
$R^2$	.023	.101	.177	.436
Adjusted $R^2$	.017	.092	.163	.421

\*\*\*p&lt;0.001, \*\*p&lt;0.01, \*p&lt;0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), weekly hours worked, and number of years employed in current job.

Table 12. OLS estimates (for funding variables only) predicting first post-graduation salary (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
<i>Loans</i>	-2,487* (1,093)	-1,617 (1,143)	-2,379* (1,151)	-1,477 (1,067)
<i>Scholarships</i>	2,681* (1,291)	2,523 (1,287)	2,373 (1,284)	2,037 (1,196)
<i>Family assist.</i>	-2,078* (1,036)	-2,203* (1,029)	-2,603* (1,056)	-1,690 (975.7)
<i>Personal savings</i>	710.2 (999.1)	556.7 (998.3)	-14.89 (1,005)	-182.2 (938.2)
<i>Employer assist.</i>	-352.4 (1,695)	150.6 (1,683)	812.9 (1,698)	-1,198 (1,574)
<i>Library work</i>	-1,715 (970.0)	-1,576 (966.0)	-1,830 (975.9)	-1,901* (903.0)
<i>Non-library work</i>	2,706* (1,312)	2,523 (1,305)	2,903* (1,307)	2,571* (1,233)
<i>Grants</i>	2,421 (1,701)	1,760 (1,695)	1,797 (1,695)	286.1 (1,572)
<i>Assistantships</i>	2,038 (1,574)	2,446 (1,566)	2,549 (1,572)	944.1 (1,461)
<i>Other funding</i>	-1,591 (1,149)	-2,096 (1,157)	-3,170** (1,207)	-3,444** (1,118)
Graduate program			[5.43]***	[7.70]***
$R^2$	.017	.040	.062	.210
Adjusted $R^2$	.011	.030	.045	.192

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting in first post-graduation job (non-library), supervisory status in first post-graduation job (non-supervisor), organization size in first post-graduation job (1000+ employees), weekly hours worked in first post-graduation job, and number of years employed in first post-graduation job.

Table 13. OLS estimates (for funding variables only) predicting salary increase (N=1,626).

	(1) Funding sources only	(2) Demographics only	(3) Demographics + school	(4) Full model
<i>Funding sources</i>				
<i>Loans</i>	-647.3 (1,545)	915.2 (1,598)	245.7 (1,583)	-1,524 (1,360)
<i>Scholarships</i>	953.8 (1,825)	1,175 (1,799)	446.1 (1,768)	-906.1 (1,514)
<i>Family assist.</i>	746.0 (1,465)	1,146 (1,439)	-1,014 (1,454)	-895.1 (1,242)
<i>Personal savings</i>	-412.4 (1,412)	-1,492 (1,396)	-1,103 (1,384)	-1,669 (1,178)
<i>Employer assist.</i>	635.8 (2,395)	640.7 (2,354)	3,784 (2,336)	3,599 (1,988)
<i>Library work</i>	3,583** (1,371)	2,916* (1,351)	1,042 (1,343)	1,666 (1,147)
<i>Non-library work</i>	1,734 (1,855)	964.0 (1,825)	1,671 (1,799)	290.2 (1,557)
<i>Grants</i>	4,063 (2,404)	2,063 (2,371)	2,085 (2,333)	553.2 (2,000)
<i>Assistantships</i>	-398.9 (2,225)	741.0 (2,190)	-730.4 (2,163)	137.5 (1,859)
<i>Other funding</i>	7,842*** (1,624)	7,293*** (1,618)	3,984* (1,661)	3,445* (1,423)
Graduate program			[7.57]***	[1.90]
$R^2$	.021	.063	.114	.378
Adjusted $R^2$	.015	.054	.098	.358

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The models are additive and variables included in each model are as follows (reference categories in parentheses): *Baseline*. Funding sources only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Current work setting (non-library), work setting in first post-graduation job (non-supervisor), current managerial status (non-manager), supervisory status in first post-graduation job (non-supervisor), current organizational size (1000+ employees), organization size in first post-graduation job (1000+ employees), weekly hours worked in current job, weekly hours worked in first post-graduation job, number of years employed in current job, and number of years employed in first post-graduation job.

## APPENDIX B: TABLES AND FIGURES FOR CHAPTER 3

Figure 3. List of administrative job functions

Communications and public relations	Management
Development and external relations	Marketing and sales
Facilities and space planning	Organizational evaluation and research
Financial management	Staff training and evaluations
Grants administration	Strategic planning
Human resources	

Table 14. Frequencies, and means for administrative job functions by gender and race.

	All	Gender		Race	
		Male	Female	White	Non-white
Administrative job functions performed	(N=893)	(N=746)	(N=147)	(N=803)	(N=90)
<i>Communications and public relations</i>	65%	63%	65%	66%*	53%
<i>Development and external relations</i>	37%	44%	35%	37%	36%
<i>Facilities and space planning</i>	54%	54%	53%	55%***	37%
<i>Financial management</i>	60%	59%	60%	61%*	50%
<i>Grants administration</i>	28%	27%	28%	28%	22%
<i>Human resources</i>	38%	51%***	35%	38%	31%
<i>Management</i>	65%	67%	65%	67%**	52%
<i>Marketing and sales</i>	20%	20%	19%	20%	18%
<i>Organizational evaluation and research</i>	35%	42%	34%	36%	27%
<i>Staff training and evaluation</i>	65%	61%	66%	67%*	53%
<i>Strategic planning</i>	53%	56%	53%	54%*	42%
Number of job functions performed	5.2 (3.6)	5.4(3.9)	5.1(3.6)	5.3(3.6)**	4.2(3.6)

Note: Standard deviations are in parentheses.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

Table 15. Percentages (pre- and post-imputation) and means of control and explanatory variables.

Variables (Valid N)	Original Data set	Imputed Data sets (M=5)	% Missing
Female (893)	84%	-	0%
Non-white (893)	10%	-	0%
<i>Black</i>	6%		
<i>Asian</i>	1%		
<i>Other</i>	3%		
Program-Graduate School (893)			
<i>UNC-CH</i>	47%	-	0%
<i>ASU</i>	9%	-	0%
<i>ECU</i>	11%	-	0%
<i>UNC-G</i>	18%	-	0%
<i>NCCU</i>	15%	-	0%
Graduation Cohort (893)			
<i>1954-69</i>	9%	-	0%
<i>1970-74</i>	9%	-	0%
<i>1975-79</i>	13%	-	0%
<i>1980-84</i>	10%	-	0%
<i>1985-89</i>	12%	-	0%
<i>1990-94</i>	12%	-	0%
<i>1995-99</i>	16%	-	0%
<i>2000-04</i>	15%	-	0%
<i>2005-07</i>	4%	-	0%
Current Library Setting (883)			
<i>School Library</i>	33%	34%	1%
<i>Public Library</i>	21%	21%	1%
<i>Academic Library</i>	21%	21%	1%
<i>Other Library</i>	14%	14%	1%
<i>Non-Library</i>	11%	10%	1%
Manager (893)			
<i>Supervisor</i>	25%	-	0%
<i>Middle Manager</i>	40%	-	0%
<i>Senior Administrator</i>	35%	-	0%
Current Organization size (890)			
<i>1-9</i>	3%	3%	<1%
<i>10-24</i>	5%	5%	<1%
<i>25-99</i>	28%	28%	<1%
<i>100-499</i>	27%	27%	<1%
<i>500-999</i>	10%	10%	<1%
<i>1,000+</i>	27%	27%	<1%
Age (891)	52.9(11.6)	52.9(11.6)	<1%
Tenure (863)	9.2 (8.4)	9.3(8.5)	3%
Salary (745)	\$60,305.33 (\$26,245.91)	\$59,989.94 (\$26,009.94)	17%

*Note:* Standard deviations in parentheses.



Table 16. Managerial status by gender and race.

	All (managers + non-managers)	Managers	N
Race and gender category	%	%	
<i>White Male</i>	15%	39%	327
<i>White Female</i>	73%	41%	1,637
<i>Non-white Male</i>	3%	32%	59
<i>Non-white Female</i>	9%	37%	190
N	2,213	893	2,213
$\chi^2=3.0577, p=0.383$			

Table 17. Managerial-level breakdown by gender and race.

Race & gender category	All	Supervisors	Middle Managers	Senior Administrators	N
	%	%	%	%	
<i>White Male</i>	14%	34%	22%	45%	128
<i>White Female</i>	76%	24%	43%	33%	675
<i>Non-white Male</i>	2%	26%	32%	42%	19
<i>Non-white Female</i>	8%	24%	44%	32%	71
N		226	353	314	893
$\chi^2=20.6341, p=0.0002$					

Table 18. Odds ratios predicting job functions (for gender and race variables only) (N=893).

		Demographics only	Demographics + school	Full model
Communications and public relations	Female	1.047 (0.200)	0.959 (0.189)	1.019 (0.222)
	Non-white	0.610* (0.139)	0.589* (0.149)	0.589* (0.156)
Development and external relations	Female	0.680* (0.126)	0.627* (0.120)	0.775 (0.172)
	Non-white	0.974 (0.228)	0.906 (0.235)	0.862 (0.240)
Facilities and space planning	Female	0.910 (0.169)	0.905 (0.173)	0.988 (0.213)
	Non-white	0.489** (0.114)	0.480** (0.123)	0.480** (0.131)
Financial management	Female	0.991 (0.184)	0.888 (0.170)	0.953 (0.207)
	Non-white	0.657 (0.148)	0.580* (0.146)	0.572* (0.155)
Grants administration	Female	1.043 (0.214)	0.903 (0.192)	0.993 (0.242)
	Non-white	0.735 (0.196)	0.839 (0.245)	0.837 (0.262)
Human resources	Female	0.474*** (0.0884)	0.527*** (0.101)	0.612* (0.132)
	Non-white	0.737 (0.180)	0.767 (0.206)	0.752 (0.215)
Management	Female	0.841 (0.164)	0.911 (0.184)	1.080 (0.246)
	Non-white	0.555** (0.126)	0.575* (0.145)	0.533* (0.143)
Marketing and sales	Female	0.973 (0.220)	0.969 (0.226)	1.076 (0.272)
	Non-white	0.822 (0.240)	0.755 (0.242)	0.745 (0.246)
Organizational evaluation and research	Female	0.680* (0.127)	0.695 (0.134)	0.818 (0.176)
	Non-white	0.656 (0.165)	0.632 (0.174)	0.594 (0.172)
Staff training and evaluation	Female	1.229 (0.231)	1.257 (0.244)	1.272 (0.271)
	Non-white	0.588* (0.133)	0.571* (0.144)	0.585* (0.154)
Strategic planning	Female	0.840 (0.155)	0.947 (0.181)	1.306 (0.287)
	Non-white	0.614* (0.140)	0.627 (0.157)	0.548* (0.148)

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Table 19. Odds ratios predicting job functions (including all predictors) (N=893).

Variables	(1) Communications and public relations	(2) Development and external relations	(3) Facilities and space planning	(4) Financial management	(5) Grants administration
Female	1.019 (0.222)	0.775 (0.172)	0.988 (0.213)	0.953 (0.207)	0.993 (0.242)
Non-white	0.589* (0.156)	0.862 (0.240)	0.480** (0.131)	0.572* (0.155)	0.837 (0.262)
Age	1.195*** (0.0639)	0.998 (0.0548)	1.099 (0.0579)	1.071 (0.0575)	1.065 (0.0667)
Age <sup>2</sup>	0.998*** (0.000498)	1.000 (0.000511)	0.999 (0.000491)	0.999 (0.000503)	0.999 (0.000592)
Graduation cohort	(Reference category: 2005-2007)				
1954-69	1.998 (1.149)	1.049 (0.612)	1.247 (0.695)	1.751 (1.007)	0.640 (0.388)
1970-74	1.173 (0.649)	0.654 (0.376)	1.422 (0.781)	1.308 (0.730)	0.383 (0.231)
1975-79	1.786 (0.927)	0.751 (0.405)	1.349 (0.686)	1.159 (0.596)	0.490 (0.274)
1980-84	1.125 (0.564)	0.532 (0.287)	1.125 (0.560)	1.272 (0.645)	0.569 (0.314)
1985-89	0.971 (0.462)	0.500 (0.258)	1.135 (0.540)	1.110 (0.534)	0.415 (0.220)
1990-94	1.596 (0.746)	1.048 (0.520)	1.294 (0.601)	0.968 (0.453)	0.729 (0.370)
1995-99	1.802 (0.789)	1.146 (0.533)	1.727 (0.754)	1.017 (0.447)	0.611 (0.292)
2000-04	1.834 (0.777)	1.116 (0.509)	1.160 (0.494)	0.938 (0.399)	0.728 (0.339)
Graduate program	[1.45]	[11.28]*	[2.55]	[6.89]	[9.77]*
Constant	0.00708*** (0.00979)	0.235 (0.332)	0.0368* (0.0505)	0.160 (0.220)	0.0531 (0.0851)

Note: [ ] indicate chi-squared values.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05.

Table 19 (continued). Odds ratios predicting job functions (including all predictors) (N=893).

<u>Variables</u>	(1) Communications and public relations	(2) Development and external relations	(3) Facilities and space planning	(4) Financial management	(5) Grants administration
Female	1.019 (0.222)	0.775 (0.172)	0.988 (0.213)	0.953 (0.207)	0.993 (0.242)
Non-white	0.589* (0.156)	0.862 (0.240)	0.480** (0.131)	0.572* (0.155)	0.837 (0.262)
Managerial status	(Reference category: senior administrator)				
<i>Supervisor</i>	0.344*** (0.0729)	0.261*** (0.0569)	0.270*** (0.0564)	0.230*** (0.0488)	0.222*** (0.0559)
<i>Middle manager</i>	0.520** (0.105)	0.381*** (0.0747)	0.307*** (0.0604)	0.308*** (0.0630)	0.447*** (0.0959)
Library setting	(Reference category: non-library setting)				
<i>School library</i>	2.545** (0.807)	0.812 (0.275)	4.029*** (1.342)	3.982*** (1.295)	1.356 (0.495)
<i>Public library</i>	2.829*** (0.834)	2.236* (0.705)	5.486*** (1.707)	2.670*** (0.795)	2.283* (0.768)
<i>Academic library</i>	1.249 (0.361)	1.230 (0.395)	2.778*** (0.859)	1.813* (0.545)	0.932 (0.337)
<i>Special library</i>	2.143* (0.661)	1.871 (0.609)	2.694** (0.867)	3.164*** (1.008)	0.849 (0.315)
Years in current job	0.987 (0.0112)	0.995 (0.0112)	1.000 (0.0111)	0.984 (0.0113)	1.001 (0.0121)
Current salary	1.000* (3.96e-06)	1.000** (4.45e-06)	1.000 (3.68e-06)	1.000* (3.93e-06)	1.000** (4.47e-06)
Organization size	(Reference category: 1-9 employees)				
<i>10-24 employees</i>	0.582 (0.260)	1.679 (0.801)	1.066 (0.490)	1.001 (0.462)	1.131 (0.605)
<i>25-99 employees</i>	1.341 (0.587)	3.050** (1.271)	1.314 (0.559)	1.333 (0.568)	3.483** (1.478)
<i>100-499 employees</i>	1.188 (0.297)	2.080** (0.526)	0.983 (0.238)	1.401 (0.349)	2.267** (0.611)
<i>500-999 employees</i>	0.894 (0.193)	1.478 (0.339)	1.243 (0.266)	0.986 (0.214)	1.731* (0.441)
<i>1000+ employees</i>	1.005 (0.278)	1.621 (0.467)	0.917 (0.251)	1.094 (0.303)	1.562 (0.510)
Constant	0.00708*** (0.00979)	0.235 (0.332)	0.0368* (0.0505)	0.160 (0.220)	0.0531 (0.0851)

Note: [ ] indicate chi-squared values.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05.

Table 19 (continued). Odds ratios predicting job functions (including all predictors) (N=893).

	(6) Human resources	(7) Management	(8) Marketing and sales	(9) Organizational evaluation and research	(10) Staff training and evaluation	(11) Strategic planning
<b>Variables</b>						
Female	0.612* (0.132)	1.080 (0.246)	1.076 (0.272)	0.818 (0.176)	1.272 (0.271)	1.306 (0.287)
Non-white	0.752 (0.215)	0.533* (0.143)	0.745 (0.246)	0.594 (0.172)	0.585* (0.154)	0.548* (0.148)
Age	1.153* (0.0664)	1.138* (0.0606)	1.096 (0.0774)	1.085 (0.0618)	1.089 (0.0565)	1.134* (0.0619)
Age <sup>2</sup>	0.999* (0.000534)	0.999* (0.000495)	0.999 (0.000687)	0.999 (0.000531)	0.999 (0.000481)	0.999** (0.000514)
Graduation cohort	(Reference category: 2005-2007)					
1954-69	1.240 (0.746)	1.541 (0.899)	0.302 (0.211)	1.580 (0.935)	2.123 (1.197)	2.583 (1.478)
1970-74	1.017 (0.603)	0.731 (0.407)	0.337 (0.231)	1.111 (0.649)	1.616 (0.886)	2.366 (1.324)
1975-79	0.910 (0.512)	1.110 (0.579)	0.505 (0.312)	1.502 (0.822)	1.729 (0.883)	2.051 (1.069)
1980-84	0.776 (0.434)	1.198 (0.611)	0.577 (0.352)	1.387 (0.750)	1.367 (0.684)	1.805 (0.924)
1985-89	1.094 (0.583)	1.135 (0.550)	0.656 (0.377)	1.000 (0.521)	1.104 (0.524)	1.245 (0.604)
1990-94	0.889 (0.467)	1.130 (0.529)	0.693 (0.388)	1.007 (0.515)	1.078 (0.497)	1.783 (0.844)
1995-99	1.125 (0.558)	1.763 (0.780)	0.974 (0.506)	1.181 (0.568)	1.664 (0.727)	1.420 (0.633)
2000-04	1.113 (0.546)	1.551 (0.657)	1.103 (0.558)	1.343 (0.632)	1.187 (0.497)	1.297 (0.561)
Graduate program	[1.63]	[2.89]	[3.02]	[5.32]	[4.24]	[5.61]
Constant	0.0174** (0.0258)	0.0426* (0.0587)	0.0740 (0.130)	0.0453* (0.0672)	0.193 (0.259)	0.0276* (0.0393)

Note: [ ] indicate chi-squared values.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05.

Table 19 (continued). Odds ratios predicting job functions (including all predictors) (N=893).

Variables	(6) Human resources	(7) Management	(8) Marketing and sales	(9) Organizational evaluation and research	(10) Staff training and evaluation	(11) Strategic planning
Female	0.612* (0.132)	1.080 (0.246)	1.076 (0.272)	0.818 (0.176)	1.272 (0.271)	1.306 (0.287)
Non-white	0.752 (0.215)	0.533* (0.143)	0.745 (0.246)	0.594 (0.172)	0.585* (0.154)	0.548* (0.148)
Managerial status (Reference category: senior administrator)						
<i>Supervisor</i>	0.331*** (0.0692)	0.206*** (0.0463)	0.328*** (0.0830)	0.247*** (0.0539)	0.346*** (0.0726)	0.194*** (0.0419)
<i>Middle manager</i>	0.339*** (0.0665)	0.327*** (0.0697)	0.428*** (0.104)	0.386*** (0.0752)	0.574** (0.115)	0.470*** (0.0924)
Library setting (Reference category: non-library setting)						
<i>School library</i>	0.505* (0.168)	1.943* (0.627)	0.525 (0.207)	1.220 (0.407)	1.667 (0.530)	0.836 (0.266)
<i>Public library</i>	2.723*** (0.813)	4.326*** (1.344)	1.713 (0.573)	1.450 (0.447)	3.282*** (0.992)	1.783 (0.537)
<i>Academic library</i>	1.448 (0.435)	2.163* (0.659)	0.696 (0.249)	1.206 (0.380)	1.355 (0.390)	1.324 (0.404)
<i>Special library</i>	1.353 (0.422)	2.364** (0.756)	1.452 (0.509)	1.624 (0.529)	1.753 (0.533)	1.670 (0.527)
Years in current job	1.011 (0.0117)	1.006 (0.0122)	1.013 (0.0148)	0.990 (0.0110)	1.000 (0.0115)	0.993 (0.0118)
Current salary	1.000 (3.85e-06)	1.000* (4.31e-06)	1.000 (4.44e-06)	1.000* (3.86e-06)	1.000 (3.70e-06)	1.000*** (4.69e-06)
Organization size (Reference category: 1-9 employees)						
<i>10-24 employees</i>	2.074 (0.993)	0.470 (0.218)	0.791 (0.454)	1.452 (0.674)	0.492 (0.219)	0.886 (0.403)
<i>25-99 employees</i>	1.140 (0.468)	0.751 (0.335)	1.337 (0.575)	1.871 (0.753)	1.029 (0.448)	0.822 (0.344)
<i>100-499 employees</i>	1.453 (0.369)	0.792 (0.203)	1.037 (0.294)	1.500 (0.376)	0.774 (0.188)	1.172 (0.288)
<i>500-999 employees</i>	1.238 (0.274)	0.768 (0.173)	0.735 (0.193)	1.702* (0.380)	1.078 (0.233)	1.186 (0.260)
<i>1000+ employees</i>	1.029 (0.290)	0.990 (0.292)	0.981 (0.317)	1.722 (0.490)	0.882 (0.242)	1.196 (0.339)
Constant	0.0174** (0.0258)	0.0426* (0.0587)	0.0740 (0.130)	0.0453* (0.0672)	0.193 (0.259)	0.0276* (0.0393)

Note: [ ] indicate chi-squared values.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05.

Table 20. OLS estimates predicting the number of job functions performed (for gender and race variables only) (N=893).

	Demographics only	Demographics + school	Full model
Female	-0.399 (0.325)	-0.407 (0.334)	-0.0766 (0.323)
Non-white	-1.022* (0.401)	-1.050* (0.441)	-1.027* (0.410)

*Note:* Standard errors are in parentheses.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05.

Table 21. OLS estimates predicting the number of job functions performed (including all predictors) (N=893).

Female	-0.0766 (0.323)
Non-white	-1.027* (0.410)
Age	0.205* (0.0807)
Age <sup>2</sup>	-0.00204** (0.000749)
Graduation cohort	(Reference category: 2005-07)
1954-69	0.661 (0.860)
1970-74	0.0265 (0.842)
1975-79	0.310 (0.789)
1980-84	0.0614 (0.778)
1985-89	-0.172 (0.741)
1990-94	0.209 (0.722)
1995-99	0.553 (0.678)
2000-04	0.381 (0.659)
Graduate program	[1.50]
Constant	-0.0364 (2.076)

*Note:* [ ] indicate *F* statistics.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.



Table 21 (continued). OLS estimates predicting the number of job functions performed (N=893).

Female	-0.0766 (0.323)
Non-white	-1.027* (0.410)
Managerial status	(Reference category: senior administrator)
<i>Supervisor</i>	-2.953*** (0.315)
<i>Middle manager</i>	-2.050*** (0.297)
Library setting	(Reference category: Non-library setting)
<i>School library</i>	1.303** (0.395)
<i>Public library</i>	-0.0433 (0.417)
<i>Academic library</i>	0.541 (0.450)
<i>Special library</i>	-0.799 (0.486)
Years in current job	-0.00593 (0.0168)
Current salary	1.76e-05** (5.36e-06)
Organization size	(Reference category: 1-9 employees)
<i>10-24 employees</i>	-0.146 (0.697)
<i>25-99 employees</i>	0.719 (0.614)
<i>100-499 employees</i>	0.472 (0.369)
<i>500-999 employees</i>	0.283 (0.327)
<i>1000+ employees</i>	0.267 (0.420)
Constant	-0.0364 (2.076)

Note: [ ] indicate *F* statistics.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

## APPENDIX C: TABLES AND FIGURES FOR CHAPTER 4

Table 22. Percentages (pre- and post-imputation) and means of control and explanatory variables.

Variables (Valid N)	Original data set (N=1,763)	Imputed data sets (M=5)	% Missing
Female (1,763)	80%	-	0%
Non-white (1,760)	11%	11%	<1%
<i>Black</i>	6%	6%	
<i>Asian/PI</i>	2%	2%	
<i>Other</i>	3%	3%	
Program-Graduate school (1,761)			<1%
<i>UNC-CH</i>	51%	51%	
<i>ASU</i>	6%	6%	
<i>ECU</i>	8%	8%	
<i>UNC-G</i>	21%	21%	
<i>NCCU</i>	14%	14%	
Graduation cohort (1,761)			<1%
<i>1954-69</i>	3%	3%	
<i>1970-74</i>	6%	6%	
<i>1975-79</i>	11%	11%	
<i>1980-84</i>	9%	9%	
<i>1985-89</i>	10%	10%	
<i>1990-94</i>	12%	12%	
<i>1995-99</i>	18%	18%	
<i>2000-04</i>	22%	22%	
<i>2005-07</i>	9%	9%	
Current library setting (1,763)			0%
<i>School Library</i>	24%	-	
<i>Public Library</i>	16%	-	
<i>Academic Library</i>	21%	-	
<i>Other Library</i>	15%	-	
<i>Non-Library</i>	24%	-	

Notes: " - " indicates that there were no imputed values for this variable.

Standard deviations in parentheses.

Table 22 (continued). Percentages (pre- and post-imputation) and means of control and explanatory variables.

Variables (Valid N)	Original data set (N=1,763)	Imputed data sets (M=5)	% Missing
Manager (1,678)			5%
<i>Non-manager</i>	60%	60%	
<i>Supervisor</i>	11%	11%	
<i>Middle Manager</i>	16%	16%	
<i>Senior Administrator</i>	13%	13%	
Current organization size (1,761)			<1%
1-9	4%	4%	
10-24	5%	5%	
25-99	20%	20%	
100-499	25%	25%	
500-999	12%	12%	
1,000+	34%	34%	
Full-time status in current job (1,763)	91%	-	0%
Age (1,758)	47.6 (10.8)	47.6(10.8)	<1%
Tenure in current job (1,702)	6.9 (7.1)	6.9 (7.1)	3%
Tenure in job before LIS (1,637)	5.0 (5.87)	4.2 (4.7)	7%
Tenure in job after LIS (1,344)	4.3 (4.75)	5.1 (5.90)	24%
Tenure in longest job (1,687)	9.8 (7.33)	9.8 (7.3)	4%
Tenure in highest achieving job (1,698)	6.8 (7.26)	6.9 (7.3)	4%

Notes: " - " indicates that there were no imputed values for this variable.  
Standard deviations in parentheses.

Table 23. Frequencies and means for measures of job quality by gender, race, and involuntary job loss.

	Autonomy	Satisfaction	Growth	Security	Current Salary	N
All	3.24 (.512)	3.22 (.583)	3.00 (.591)	2.85 (.800)	\$54,781.10 (26,623.70)	1,763
Gender						
<i>Male</i>	3.31 (.521)	3.17 (.593)	3.08 (.617)	2.80 (.799)	\$68,393.36 (36,571.29)	351
<i>Female</i>	3.22 (.508)	3.23 (.579)	2.98 (.583)	2.87 (.800)	\$51,397.31 (22,267.38)	1,412
<i>t</i>	3.0350**	-1.7469	2.8935**	-1.3299	11.0662***	
Race						
<i>White</i>	3.25 (.506)	3.23 (.570)	3.01 (.581)	2.88 (.784)	\$54,527.29 (26,505.74)	1,559
<i>Non-white</i>	3.17 (.553)	3.10 (.664)	2.95 (.660)	2.67 (.895)	\$56,590.78 (27,605.68)	201
<i>t</i>	1.9418	3.065**	1.1843	3.4443***	-1.0338	
CE						
<i>No</i>	3.25 (.514)	3.23 (.582)	3.016 (.586)	2.89 (.790)	\$54,554.32 (26,474.29)	1,609
<i>Yes</i>	3.15 (.485)	3.09 (.580)	2.83 (.613)	2.53 (.834)	\$57,150.45 (28,118.13)	154
<i>t</i>	2.1688*	2.9030**	3.6476***	5.2643***	-1.1561	

Notes: Standard deviations are in parentheses.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

Table 24. Frequencies and means for measures of involuntary job loss by gender and race.

	Experienced involuntary job loss	Number of involuntary job losses	Timing of involuntary job loss			Full- time	Tenure (years)	N
			<i>Before entering LIS program</i>	<i>After LIS graduation</i>	<i>Longest held</i>	<i>Highest achieving</i>		
All	8.7%							1,763
Among those who experienced involuntary job loss (N=154)								
Gender								
Male	12.5%	1.25 (.493)	31.0%	32.0%	28.0%	12.0%	6.03 (5.52)	154
Female	8.0%	1.34 (.526)	34%	39.0%	25.0%	9%	6.09 (.5.18)	44
$\chi^2$	7.9403**	1.22 (.477)	30%	29.0%	29.0%	14%	6.01 (.5.67)	110
<i>t</i>		1.4012	0.2452	1.3200	0.2613	0.6004	0.0829	
							0.0829	
Race								
White	8.7%	1.25 (.500)	32.0%	28.0%	30.0%	13.0%	6.41 (.5.69)	135
Non-white	9.5%	1.26 (.452)	0.2379	6.7936**	1.5853	1.0030	3.37 (.3.90)	19
$\chi^2$							2.2782*	
<i>t</i>	0.1403	-0.0934					2.2782*	

Notes: 34 people reported two job losses, 1 person reported three job losses, and 1 person reported four job losses.

\*Standard deviations are in parentheses.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

Table 25. Odds ratios predicting involuntary job loss (N=1,763).

	(1)	(2)	(3)	(4)	(5)
Female	0.589** (0.112)	0.591** (0.112)	0.575** (0.109)	0.607* (0.118)	0.619* (0.121)
Non-white		1.066 (0.276)	1.158 (0.302)	1.100 (0.310)	1.027 (0.296)
Age			1.084 (0.0794)	1.062 (0.0880)	1.071 (0.0898)
Age <sup>2</sup>			0.999 (0.000769)	1.000 (0.000864)	1.000 (0.000873)
Graduation cohort (Reference category: 2005-2007)					
1954-69				0.0729* (0.0812)	0.0749* (0.0848)
1970-74				0.434 (0.229)	0.497 (0.274)
1975-79				0.509 (0.235)	0.634 (0.306)
1980-84				0.511 (0.240)	0.632 (0.305)
1985-89				0.463 (0.215)	0.586 (0.278)
1990-94				0.892 (0.364)	1.134 (0.474)
1995-99				0.775 (0.300)	0.915 (0.359)
2000-04				0.748 (0.274)	0.831 (0.308)
Graduate program				[4.44]	[1.93]
Number of years worked in each job					
<i>Job before LIS program</i>					0.978 (0.0238)
<i>Job after LIS graduation</i>					0.956 (0.0245)
<i>Longest held job</i>					1.011 (0.0208)
<i>Highest achieving job</i>					0.947** (0.0176)
Constant	0.143*** (0.0231)	0.142*** (0.0235)	0.0123** (0.0210)	0.0194* (0.0358)	0.0167* (0.0312)

Notes: [ ] indicates  $\chi^2$  statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 26. OLS regression coefficients for involuntary job loss predicting job quality (for involuntary job loss variable only) (N=1,763).

		(1)	(2)	(3)	(4)
		Job Loss variable only (Baseline)	Demographics	School	Full
Autonomy	Involuntary Job loss	-0.0935* (0.0431)	-0.100* (0.0432)	-0.110* (0.0428)	-0.119** (0.0421)
	R <sup>2</sup>	0.003	0.012	0.045	0.115
	Adjusted R <sup>2</sup>	0.002	0.009	0.036	0.099
Job satisfaction	Involuntary Job loss	-0.142** (0.0490)	-0.134** (0.0491)	-0.133** (0.0494)	-0.116* (0.0501)
	R <sup>2</sup>	0.005	0.012	0.018	0.032
	Adjusted R <sup>2</sup>	0.004	0.009	0.009	0.014
Opportunities for growth & promotion	Involuntary Job loss	-0.181*** (0.0497)	-0.176*** (0.0494)	-0.187*** (0.0495)	-0.181*** (0.0493)
	R <sup>2</sup>	0.007	0.027	0.040	0.087
	Adjusted R <sup>2</sup>	0.007	0.025	0.031	0.071
Job security	Involuntary Job loss	-0.353*** (0.0670)	-0.357*** (0.0667)	-0.358*** (0.0671)	-0.317*** (0.0679)
	R <sup>2</sup>	0.015	0.033	0.038	0.058
	Adjusted R <sup>2</sup>	0.015	0.030	0.029	0.042
Current salary	Involuntary Job loss	2,596 (2,246)	263.9 (2,168)	124.0 (2,092)	-1,473 (1,795)
	R <sup>2</sup>	0.001	0.079	0.156	0.405
	Adjusted R <sup>2</sup>	0.000	0.077	0.148	0.394

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, standard errors in parentheses.

Notes: The variables included in each model are as follows (reference categories in parentheses): *Baseline*. Job loss variable only. *Demographics*. Gender (male), race (white), age, age<sup>2</sup>. *School*. Graduation cohort (2005-2007) and graduate program (no categories included due to confidentiality agreement). *Full*. Work setting (non-library), managerial status (non-manager), organization size (1000+ employees), Full-time status (part-time), and number of years employed in current job.

Table 27. Full models for OLS estimates predicting job quality (including all predictors) (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Involuntary job loss	-0.119** (0.0421)	-0.116* (0.0501)	-0.181*** (0.0493)	-0.317*** (0.0679)	-1,473 (1,795)
Female	-0.0177 (0.0301)	0.0416 (0.0359)	-0.0562 (0.0353)	0.00955 (0.0486)	-11,179*** (1,287)
Non-white	-0.0910* (0.0400)	-0.146** (0.0476)	-0.0950* (0.0468)	-0.213*** (0.0644)	2,473 (1,708)
Age	-0.00501 (0.0112)	-0.0239 (0.0133)	0.00565 (0.0131)	-0.0552** (0.0180)	-314.5 (476.5)
Age <sup>2</sup>	5.04e-05 (0.000119)	0.000242 (0.000141)	-9.64e-05 (0.000139)	0.000655*** (0.000191)	4.751 (5.072)
Graduation cohort (Reference category: 2005-2007)					
1954-69	-0.0472 (0.0992)	-0.141 (0.118)	-0.170 (0.116)	0.0597 (0.160)	8,363* (4,220)
1970-74	-0.0390 (0.0768)	-0.0893 (0.0912)	-0.194* (0.0898)	-0.0164 (0.123)	13,512*** (3,272)
1975-79	-0.0482 (0.0680)	0.0105 (0.0808)	-0.145 (0.0795)	-0.0543 (0.109)	14,942*** (2,908)
1980-84	0.00265 (0.0673)	0.0368 (0.0799)	-0.113 (0.0786)	-0.0722 (0.108)	11,586*** (2,875)
1985-89	-0.0302 (0.0645)	-0.0116 (0.0765)	-0.187* (0.0753)	-0.0140 (0.104)	13,745*** (2,745)
1990-94	-0.0596 (0.0600)	-0.0307 (0.0712)	-0.183** (0.0701)	-0.00694 (0.0965)	10,987*** (2,562)
1995-99	-0.0105 (0.0537)	-0.0364 (0.0638)	-0.171** (0.0628)	-0.0982 (0.0864)	11,617*** (2,299)
2000-04	-0.0312 (0.0482)	0.0319 (0.0572)	-0.125* (0.0564)	-0.0667 (0.0775)	6,868*** (2,074)
Graduate program	[4.04**]	[1.00]	[1.21]	[0.51]	[17.71***]
Current work setting (Reference category: Non-library setting)					
School library	-0.185*** (0.0412)	-0.0557 (0.0489)	-0.0321 (0.0484)	0.149* (0.0664)	-6,333*** (1,753)
Public library	-0.0752 (0.0400)	-0.0418 (0.0476)	0.0834 (0.0469)	-0.0507 (0.0645)	-14,173*** (1,707)
Academic library	-0.0215 (0.0364)	-0.0720 (0.0432)	0.0561 (0.0427)	-0.0977 (0.0586)	-14,136*** (1,558)
Special library	-0.0452 (0.0394)	-0.0586 (0.0468)	0.0293 (0.0461)	0.0139 (0.0634)	-6,471*** (1,688)
Current managerial status (Reference category: Non-managers)					
Supervisor	0.108** (0.0408)	0.0153 (0.0491)	0.0796 (0.0480)	0.0219 (0.0654)	9,196*** (1,780)
Middle manager	0.0360 (0.0369)	0.0488 (0.0427)	0.115** (0.0429)	0.133* (0.0583)	1,683 (1,532)
Senior administrator	0.296*** (0.0392)	0.145** (0.0457)	0.288*** (0.0460)	0.133* (0.0628)	16,688*** (1,689)
Constant	3.327*** (0.243)	3.836*** (0.288)	3.037*** (0.284)	3.994*** (0.391)	43,558*** (10,364)
R <sup>2</sup>	.115	.032	.087	.058	.405
Adjusted R <sup>2</sup>	.099	.014	.071	.042	.394

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05



Table 27 (continued). Full models for OLS estimates predicting job quality (including all predictors) (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Current organization size (Reference category: 1,000+ employees)					
<i>1-9 employees</i>	0.249*** (0.0618)	0.00379 (0.0736)	-0.0362 (0.0726)	-0.109 (0.0997)	-10,299*** (2,638)
<i>10-24 employees</i>	-0.00559 (0.0599)	-0.0459 (0.0713)	-0.112 (0.0703)	-0.0360 (0.0966)	-16,213*** (2,559)
<i>25-99 employees</i>	0.0260 (0.0366)	0.00157 (0.0435)	-0.0809 (0.0429)	-0.0284 (0.0590)	-11,160*** (1,560)
<i>100-499 employees</i>	0.00974 (0.0319)	0.0583 (0.0380)	-0.0593 (0.0374)	-0.0295 (0.0514)	-10,163*** (1,361)
<i>500-999 employees</i>	-0.0137 (0.0397)	-0.0607 (0.0473)	-0.0950* (0.0466)	-0.130* (0.0640)	-5,697*** (1,698)
Full-time (current job)	0.142** (0.0439)	-0.0999 (0.0523)	0.151** (0.0515)	-0.142* (0.0709)	31,872*** (1,875)
Years in current job	0.000436 (0.00199)	0.00220 (0.00239)	-0.00414 (0.00233)	0.00557 (0.00321)	71.54 (85.74)
Constant	3.327*** (0.243)	3.836*** (0.288)	3.037*** (0.284)	3.994*** (0.391)	43,558*** (10,364)
R <sup>2</sup>	.115	.032	.087	.058	.405
Adjusted R <sup>2</sup>	.099	.014	.071	.042	.394

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 28. OLS estimates for the timing of involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Timing of involuntary job loss (Reference category: no reported experience of involuntary job loss)					
<i>Before LIS program</i>	-0.0634 (0.0744)	-0.109 (0.0887)	-0.127 (0.0873)	-0.0396 (0.120)	-2,539 (3,179)
<i>After LIS graduation</i>	-0.0804 (0.0819)	-0.0789 (0.0976)	-0.188 (0.0961)	-0.397** (0.132)	-1,223 (3,496)
<i>Longest held</i>	-0.143 (0.0945)	-0.0585 (0.113)	-0.248* (0.111)	-0.528*** (0.152)	-3,432 (4,037)
<i>Highest achieving</i>	-0.0253 (0.174)	-0.128 (0.207)	-0.0383 (0.204)	-0.405 (0.279)	667.0 (7,410)
<i>Multiple jobs</i>	-0.234** (0.0838)	-0.210* (0.0998)	-0.222* (0.0983)	-0.410** (0.135)	693.9 (3,578)
Female	-0.0196 (0.0302)	0.0398 (0.0360)	-0.0568 (0.0354)	-0.00810 (0.0486)	-11,142*** (1,290)
Non-white	-0.0909* (0.0401)	-0.146** (0.0477)	-0.0941* (0.0470)	-0.208** (0.0645)	2,433 (1,713)
Age	-0.00521 (0.0112)	-0.0243 (0.0133)	0.00580 (0.0131)	-0.0552** (0.0180)	-300.5 (477.2)
Age <sup>2</sup>	5.43e-05 (0.000119)	0.000248 (0.000141)	-9.77e-05 (0.000139)	0.000656*** (0.000191)	4.587 (5.080)
Graduation cohort (Reference category: 2005-2007)					
<i>1954-69</i>	-0.0492 (0.0994)	-0.144 (0.118)	-0.169 (0.116)	-0.0515 (0.160)	8,323* (4,230)
<i>1970-74</i>	-0.0390 (0.0770)	-0.0894 (0.0914)	-0.194* (0.0900)	0.0289 (0.123)	13,433*** (3,280)
<i>1975-79</i>	-0.0484 (0.0683)	0.0101 (0.0812)	-0.144 (0.0799)	0.0675 (0.110)	14,829*** (2,922)
<i>1980-84</i>	0.00226 (0.0674)	0.0367 (0.0800)	-0.113 (0.0788)	0.0798 (0.108)	11,517*** (2,881)
<i>1985-89</i>	-0.0305 (0.0646)	-0.0106 (0.0766)	-0.187* (0.0754)	0.0174 (0.104)	13,658*** (2,751)
<i>1990-94</i>	-0.0593 (0.0601)	-0.0286 (0.0713)	-0.185** (0.0703)	0.00412 (0.0965)	10,913*** (2,567)
<i>1995-99</i>	-0.0112 (0.0538)	-0.0356 (0.0640)	-0.172** (0.0630)	0.100 (0.0865)	11,534*** (2,306)
<i>2000-04</i>	-0.0320 (0.0483)	0.0332 (0.0573)	-0.126* (0.0565)	0.0628 (0.0775)	6,812** (2,078)
Graduate program	[4.30**]	[0.90]	[1.23]	[0.42]	[17.45***]
Current work setting (Reference category: Non-library setting)					
<i>School library</i>	-0.183*** (0.0413)	-0.0544 (0.0490)	-0.0307 (0.0484)	0.152* (0.0664)	-6,363*** (1,756)
<i>Public library</i>	-0.0765 (0.0401)	-0.0430 (0.0477)	0.0830 (0.0470)	0.0438 (0.0645)	-14,104*** (1,711)
<i>Academic library</i>	-0.0243 (0.0364)	-0.0730 (0.0433)	0.0538 (0.0428)	0.0900 (0.0586)	-14,095*** (1,562)
<i>Special library</i>	-0.0461 (0.0394)	-0.0603 (0.0469)	0.0300 (0.0462)	-0.0136 (0.0634)	-6,414*** (1,690)
Constant	3.329*** (0.243)	3.840*** (0.289)	3.035*** (0.285)	3.997*** (0.390)	43,413*** (10,375)
R <sup>2</sup>	0.117	0.032	0.087	0.062	0.405
Adjusted R <sup>2</sup>	0.099	0.013	0.069	0.043	0.393

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 28 (continued). OLS estimates for the timing of involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Current managerial status (Reference category: Non-managers)					
<i>Supervisor</i>	0.112** (0.0410)	0.0177 (0.0492)	0.0813 (0.0482)	-0.0113 (0.0655)	9,098*** (1,787)
<i>Middle manager</i>	0.0359 (0.0369)	0.0485 (0.0427)	0.115** (0.0429)	0.131* (0.0582)	1,709 (1,534)
<i>Senior administrator</i>	0.293*** (0.0393)	0.143** (0.0458)	0.288*** (0.0461)	0.129* (0.0628)	16,734*** (1,694)
Current organization size (Reference category: 1,000+ employees)					
<i>1-9 employees</i>	0.253*** (0.0619)	0.00828 (0.0738)	-0.0365 (0.0728)	0.112 (0.0998)	-10,437*** (2,645)
<i>10-24 employees</i>	-0.00189 (0.0600)	-0.0435 (0.0714)	-0.110 (0.0704)	0.0390 (0.0966)	-16,256*** (2,563)
<i>25-99 employees</i>	0.0266 (0.0366)	0.00338 (0.0436)	-0.0817 (0.0430)	0.0251 (0.0590)	-11,209*** (1,563)
<i>100-499 employees</i>	0.00941 (0.0320)	0.0603 (0.0381)	-0.0616 (0.0375)	0.0235 (0.0515)	-10,216*** (1,366)
<i>500-999 employees</i>	-0.0113 (0.0398)	-0.0572 (0.0474)	-0.0953* (0.0468)	-0.132* (0.0641)	-5,788*** (1,703)
Full-time (current job)	0.145** (0.0441)	-0.0964 (0.0525)	0.152** (0.0517)	-0.141* (0.0710)	31,765*** (1,882)
Years in current job	0.000212 (0.00200)	0.00212 (0.00240)	-0.00428 (0.00234)	-0.00596 (0.00322)	71.62 (86.11)
Constant	3.329*** (0.243)	3.840*** (0.289)	3.035*** (0.285)	3.997*** (0.390)	43,413*** (10,375)
R <sup>2</sup>	0.117	0.032	0.087	0.062	0.405
Adjusted R <sup>2</sup>	0.099	0.013	0.069	0.043	0.393

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 29. OLS estimates for the interaction between race and involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Involuntary job loss – race interactions (Reference category: White, no reported experience of involuntary job loss)					
<i>White, involuntary job loss</i>	-0.0983* (0.0450)	-0.144** (0.0535)	-0.223*** (0.0526)	-0.325*** (0.0725)	-376.2 (1,917)
<i>Non-white, NO involuntary job loss</i>	-0.0762 (0.0417)	-0.166*** (0.0495)	-0.126** (0.0487)	-0.219** (0.0671)	3,276 (1,778)
<i>Non-white, Involuntary job loss</i>	-0.336** (0.114)	-0.0905 (0.136)	-0.00856 (0.134)	-0.484** (0.185)	-5,835 (4,883)
Female	-0.0184 (0.0301)	0.0424 (0.0359)	-0.0548 (0.0353)	-0.00931 (0.0486)	-11,214*** (1,286)
Age	-0.00531 (0.0112)	-0.0235 (0.0133)	0.00628 (0.0131)	-0.0551** (0.0180)	-330.8 (476.4)
Age <sup>2</sup>	5.21e-05 (0.000119)	0.000240 (0.000141)	-0.000100 (0.000139)	0.000654*** (0.000192)	4.845 (5.070)
Graduation cohort (Reference category: 2005-2007)					
<i>1954-69</i>	-0.0425 (0.0993)	-0.148 (0.118)	-0.180 (0.116)	-0.0615 (0.160)	8,614* (4,221)
<i>1970-74</i>	-0.0360 (0.0769)	-0.0934 (0.0912)	-0.200* (0.0898)	0.0153 (0.124)	13,675*** (3,273)
<i>1975-79</i>	-0.0456 (0.0680)	0.00687 (0.0808)	-0.150 (0.0794)	0.0533 (0.110)	15,085*** (2,908)
<i>1980-84</i>	0.00521 (0.0673)	0.0333 (0.0799)	-0.119 (0.0786)	0.0713 (0.108)	11,725*** (2,875)
<i>1985-89</i>	-0.0290 (0.0645)	-0.0133 (0.0764)	-0.189* (0.0752)	0.0135 (0.104)	13,811*** (2,744)
<i>1990-94</i>	-0.0581 (0.0600)	-0.0327 (0.0712)	-0.187** (0.0701)	0.00640 (0.0966)	11,066*** (2,562)
<i>1995-99</i>	-0.00864 (0.0537)	-0.0389 (0.0638)	-0.175** (0.0628)	0.0975 (0.0865)	11,718*** (2,300)
<i>2000-04</i>	-0.0297 (0.0482)	0.0299 (0.0572)	-0.128* (0.0564)	0.0662 (0.0776)	6,947*** (2,075)
Graduate program	[4.10**]	[0.91]	[1.23]	[0.49]	[17.49***]
Current work setting (Reference category: Non-library setting)					
<i>School library</i>	-0.187*** (0.0412)	-0.0540 (0.0489)	-0.0296 (0.0483)	0.150* (0.0665)	-6,399*** (1,753)
<i>Public library</i>	-0.0773 (0.0400)	-0.0390 (0.0476)	0.0878 (0.0469)	0.0515 (0.0646)	-14,286*** (1,707)
<i>Academic library</i>	-0.0232 (0.0364)	-0.0696 (0.0433)	0.0598 (0.0426)	0.0983 (0.0586)	-14,231*** (1,559)
<i>Special library</i>	-0.0473 (0.0394)	-0.0557 (0.0469)	0.0338 (0.0461)	-0.0131 (0.0635)	-6,584*** (1,688)
Constant	3.333*** (0.243)	3.828*** (0.288)	3.024*** (0.284)	3.992*** (0.391)	43,876*** (10,362)
R <sup>2</sup>	0.116	0.033	0.089	0.058	0.406
Adjusted R <sup>2</sup>	0.099	0.015	0.072	0.041	0.395

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 29 (continued). OLS estimates for the interaction between race and involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfaction	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Current managerial status (Reference category: Non-managers)					
<i>Supervisor</i>	0.106** (0.0409)	0.0186 (0.0491)	0.0847 (0.0480)	-0.0210 (0.0655)	9,065*** (1,781)
<i>Middle manager</i>	0.0355 (0.0369)	0.0495 (0.0427)	0.116** (0.0428)	0.133* (0.0583)	1,655 (1,532)
<i>Senior administrator</i>	0.296*** (0.0392)	0.145** (0.0456)	0.288*** (0.0460)	0.133* (0.0629)	16,684*** (1,688)
Current organization size (Reference category: 1,000+ employees)					
<i>1-9 employees</i>	0.249*** (0.0618)	0.00460 (0.0736)	-0.0350 (0.0725)	0.109 (0.0998)	-10,332*** (2,637)
<i>10-24 employees</i>	-0.00710 (0.0599)	-0.0439 (0.0713)	-0.109 (0.0702)	0.0365 (0.0967)	-16,295*** (2,559)
<i>25-99 employees</i>	0.0279 (0.0366)	-0.00100 (0.0436)	-0.0849* (0.0429)	0.0277 (0.0590)	-11,058*** (1,561)
<i>100-499 employees</i>	0.0113 (0.0319)	0.0561 (0.0380)	-0.0626 (0.0374)	0.0289 (0.0515)	-10,078*** (1,361)
<i>500-999 employees</i>	-0.0115 (0.0398)	-0.0638 (0.0473)	-0.0998* (0.0466)	-0.130* (0.0641)	-5,574** (1,699)
Full-time (current job)	0.143** (0.0439)	-0.102 (0.0523)	0.148** (0.0515)	-0.142* (0.0710)	31,939*** (1,874)
Years in current job	0.000473 (0.00199)	0.00215 (0.00239)	-0.00421 (0.00233)	-0.00558 (0.00321)	73.54 (85.69)
Constant	3.333*** (0.243)	3.828*** (0.288)	3.024*** (0.284)	3.992*** (0.391)	43,876*** (10,362)
R <sup>2</sup>	0.116	0.033	0.089	0.058	0.406
Adjusted R <sup>2</sup>	0.099	0.015	0.072	0.041	0.395

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 30. OLS estimates for the interaction between gender and involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfactio n	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Involuntary job loss – gender interactions (Reference category: Male, no reported experience of involuntary job loss)					
<i>Male, involuntary job loss</i>	-0.124 (0.0792)	-0.220* (0.0942)	-0.176 (0.0929)	-0.362** (0.128)	-4,580 (3,377)
<i>Female, NO involuntary job loss</i>	-0.0187 (0.0320)	0.0251 (0.0381)	-0.0555 (0.0375)	-0.0166 (0.0516)	-11,675*** (1,365)
<i>Female, involuntary job loss</i>	-0.135* (0.0548)	-0.0520 (0.0652)	-0.238*** (0.0642)	-0.317*** (0.0883)	-11,967*** (2,336)
Non-white	-0.0910* (0.0400)	-0.146** (0.0475)	-0.0950* (0.0469)	-0.213*** (0.0644)	2,483 (1,708)
Age	-0.00498 (0.0112)	-0.0235 (0.0133)	0.00563 (0.0131)	-0.0550** (0.0180)	-301.0 (476.6)
Age <sup>2</sup>	5.01e-05 (0.000119)	0.000238 (0.000141)	-9.62e-05 (0.000139)	0.000653*** (0.000192)	4.625 (5.073)
Graduation cohort (Reference category: 2005-2007)					
<i>1954-69</i>	-0.0472 (0.0993)	-0.142 (0.118)	-0.170 (0.116)	-0.0602 (0.160)	8,333* (4,220)
<i>1970-74</i>	-0.0390 (0.0769)	-0.0901 (0.0912)	-0.194* (0.0899)	0.0161 (0.123)	13,488*** (3,272)
<i>1975-79</i>	-0.0482 (0.0680)	0.0101 (0.0808)	-0.145 (0.0795)	0.0541 (0.109)	14,932*** (2,908)
<i>1980-84</i>	0.00262 (0.0673)	0.0363 (0.0799)	-0.113 (0.0786)	0.0720 (0.108)	11,571*** (2,875)
<i>1985-89</i>	-0.0303 (0.0645)	-0.0134 (0.0765)	-0.187* (0.0753)	0.0132 (0.104)	13,691*** (2,746)
<i>1990-94</i>	-0.0598 (0.0601)	-0.0339 (0.0713)	-0.183** (0.0702)	0.00556 (0.0966)	10,890*** (2,564)
<i>1995-99</i>	-0.0106 (0.0537)	-0.0374 (0.0638)	-0.171** (0.0628)	0.0978 (0.0865)	11,587*** (2,300)
<i>2000-04</i>	-0.0312 (0.0482)	0.0313 (0.0572)	-0.125* (0.0564)	0.0665 (0.0776)	6,850*** (2,075)
Graduate program	[4.16**]	[0.95]	[1.23]	[0.49]	[17.74***]
Current work setting (Reference category: Non-library setting)					
<i>School library</i>	-0.185*** (0.0412)	-0.0543 (0.0489)	-0.0322 (0.0484)	0.150* (0.0665)	-6,292*** (1,754)
<i>Public library</i>	-0.0753 (0.0400)	-0.0439 (0.0476)	0.0835 (0.0469)	0.0499 (0.0645)	-14,234*** (1,708)
<i>Academic library</i>	-0.0216 (0.0364)	-0.0739 (0.0433)	0.0562 (0.0427)	0.0969 (0.0586)	-14,194*** (1,559)
<i>Special library</i>	-0.0453 (0.0394)	-0.0594 (0.0468)	0.0294 (0.0462)	-0.0142 (0.0634)	-6,495*** (1,688)
Constant	3.328*** (0.243)	3.839*** (0.288)	3.037*** (0.284)	3.995*** (0.391)	43,640*** (10,364)
R <sup>2</sup>	0.115	0.033	0.086	0.058	0.405
Adjusted R <sup>2</sup>	0.099	0.015	0.070	0.041	0.394

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 30 (continued). OLS estimates for the interaction between gender and involuntary job loss predicting job quality (N=1,763).

	(1) Autonomy	(2) Job satisfactio n	(3) Opportunities for growth and promotion	(4) Job security	(5) Current salary
Current managerial status (Reference category: Non-managers)					
<i>Supervisor</i>	0.109** (0.0408)	0.0168 (0.0491)	0.0795 (0.0481)	-0.0212 (0.0655)	9,242*** (1,778)
<i>Middle manager</i>	0.0360 (0.0369)	0.0490 (0.0427)	0.115** (0.0429)	0.133* (0.0583)	1,692 (1,532)
<i>Senior administrator</i>	0.296*** (0.0393)	0.144** (0.0457)	0.288*** (0.0460)	0.133* (0.0629)	16,661*** (1,690)
Current organization size (Reference category: 1,000+ employees)					
<i>1-9 employees</i>	0.249*** (0.0619)	0.00559 (0.0736)	-0.0363 (0.0726)	0.110 (0.0998)	-10,245*** (2,639)
<i>10-24 employees</i>	-0.00558 (0.0599)	-0.0456 (0.0713)	-0.112 (0.0703)	0.0361 (0.0966)	-16,205*** (2,559)
<i>25-99 employees</i>	0.0260 (0.0366)	0.00130 (0.0435)	-0.0809 (0.0429)	0.0283 (0.0590)	-11,169*** (1,560)
<i>100-499 employees</i>	0.00973 (0.0319)	0.0582 (0.0380)	-0.0593 (0.0374)	0.0295 (0.0514)	-10,164*** (1,361)
<i>500-999 employees</i>	-0.0138 (0.0398)	-0.0618 (0.0473)	-0.0949* (0.0466)	-0.130* (0.0641)	-5,729*** (1,698)
Full-time (current job)	0.142** (0.0439)	-0.0992 (0.0523)	0.151** (0.0515)	-0.141* (0.0709)	31,891*** (1,875)
Years in current job	0.000437 (0.00199)	0.00220 (0.00239)	-0.00414 (0.00233)	-0.00556 (0.00321)	71.72 (85.73)
Constant	3.328*** (0.243)	3.839*** (0.288)	3.037*** (0.284)	3.995*** (0.391)	43,640*** (10,364)
R <sup>2</sup>	0.115	0.033	0.086	0.058	0.405
Adjusted R <sup>2</sup>	0.099	0.015	0.070	0.041	0.394

Notes: [ ] indicates F-statistic.

Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05