Designing and Implementing a Career Retrospective Web-based Survey of Library and Information Science Graduates

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Abstract

Over the last decade the library and information science (LIS) field has experienced an increasing concern with workforce issues, including the aging of the workforce, the lack of minority presence in the field, and the need for succession planning. Little systematic research has been done to characterize the exact nature of the problems and to develop data collection models that can be used to track the workforce on an ongoing basis. The Workforce Issues in Library and Information Science 1 (WILIS 1) project is a three-year research project designed to study the career patterns of graduates of library and information science (LIS) programs in North Carolina. The purpose of this paper is to describe the study design and methodology of the career retrospective study fielded by the WILIS study and to discuss the methodological lessons learned from this experience. The WILIS 1 career retrospective survey was fielded as a Web-based survey with complex skip patterns and achieved a 35 percent response rate. Topics for which lessons were learned include: the identification of effective strategies for updating graduate contact records, the relative efficacy of paper versus e-mail contacts in the survey recruitment process, the contributions of a nonresponse study to issues of generalizability, issues related to survey length, and the use of incentives.

Introduction

Over the last decade the library and information science (LIS) literature has reflected an increasing concern with workforce issues, including the aging of the workforce (e.g. Berry, 2003; Lynch, 2000; Lynch, 2005; J.

LIBRARY TRENDS, Vol. 58, No. 2, Fall 2009 ("Workforce Issues in LIS." edited by Joanne Gard Marshall, Paul Solomon, and Susan Rathbun-Grubb), pp. 155–166

Marshall, 2005; Matarazzo, 2000); the lack of minority presence in the field (e.g., Alire, 1996; Winston, 1998; Winston, 2008); and the need for succession planning (e.g., Curran, 2003; Wilder, 2003; Young, Hernon, & Powell, 2004). Although recruitment, education, and retention of LIS professionals continue to be cited among the top issues facing the field (Paulson, 2003), little systematic research has been done to characterize the exact nature of the problem and to develop data collection models that can be used to track the workforce on an ongoing basis. The Workforce Issues in Library and Information Science (WILIS 1)[1] project is a three-year research project designed to study the career patterns of graduates of library and information science (LIS) programs in North Carolina. WILIS 1 is a collaborative research project of the University of North Carolina at Chapel Hill School of Information and Library Science and Institute on Aging. The purpose of the project was twofold: first, to build an in-depth understanding of educational, workplace, career, and retention issues faced by North Carolina LIS graduates using the life course perspective from the social sciences and, second, to develop a transferable model for career tracking of LIS graduates. The purpose of this paper is to describe the study design and methodology of the career retrospective study and to discuss the methodological lessons learned from this experience.

Theoretical Perspective

As a framework for the research, the career retrospective survey used the life course perspective, a sociological approach that can be applied to the study of work, jobs, and careers. The life course perspective directs attention to an individual's experiences over time, examining stability and change, linkages between individuals, and linkages between individuals and social institutions. This examination, in line with the emphases of the life course perspective, should pay attention to the context of historical circumstances such as changing demographics (e.g., workforce aging and diversification) and events (e.g., recessions, political events, wars).

We know that workers, particularly female workers, move in and out of the labor force due to changing economic conditions, restructuring, and downsizing in work settings and due to changes in personal situations (e.g., family, health, residential location) (Cappelli, et al., 1997; Doeringer, 1990; V. Marshall, Heinz, Krueger, & Verma, 2001). Acknowledging this less than orderly labor force participation may also be important when attempting to understand the careers of underrepresented groups in LIS, as the impact of circumstances may differ by race and ethnic background. Understanding and examining this less than orderly career pattern may also shed some light on the experiences of older workers as they close in on traditional retirement age and begin to make decisions about timing and structure of labor force exit (Hayward, Friedman, & Chen, 1998; V. Marshall & Mueller, 2002). Lessons learned about labor force

entry, exit, and reentry behavior of these subgroups will inform the efforts of workforce planners, LIS programs and leaders in the field of LIS as they seek to make decisions. (See V. Marshall, Rathbun-Grubb, and J. Marshall in this issue for an extended discussion on the application of the life course perspective.)

Study Design and Methodology

The study was designed to develop a career retrospective (1964–2005) Web-based survey and implement it with six LIS programs in North Carolina. (For the full overview of the study see J. Marshall et al. in this issue.) A Web survey was determined to be an appropriate choice based on the likely computer literacy of even older LIS graduates, the efficiency and cost implications of Web-based collection for larger samples, and to test the feasibility of an e-mail-only career tracking instrument for recent LIS graduates (Crawford, 2002; Crawford, Couper, & Lamias, 2001; Dillman, 2000).

Survey Development

The first phase of the WILIS project focused on the development of a Web-based alumni survey. The survey was built upon gathering information on up to five jobs per respondent. These jobs included: the job immediately prior to LIS education, the job post–LIS education, the longest-held job, the highest achieving job (based on respondent's self-appraisal), and the current job (or immediately previous job if the respondent was currently not working). The intention was to avoid asking the entire list of jobs, particularly for individuals with long careers (potentially up to forty years since graduation), but to be able to get a sense of the breadth of their careers. A core set of items related to job quality (e.g., compensation, benefits, job satisfaction, work setting and reasons for leaving) were asked across all five job types and more detailed information was gathered on current job (or previous job in the case of those who were not currently working). The sections for current job and last job were expanded to include more questions on specific job functions, work environment, benefits, career development, retirement plans, and views on older and younger workers. This design would enable the researchers to assess sequencing in regard to setting, relation to LIS program, and LIS and other education. The survey used complex skip patterns to allow for duplication of job types. In other words, it is possible that the respondent's current job was also their longest job. In this case, the respondents would answer the current job section and the job would be coded as both. The survey collected data on these career histories of respondents, as well as data related to educational history (up to six degrees), demographics, specific jobs held, breaks in employment, continuing education, opinions about trends in LIS, satisfaction

with LIS as a career, and perspectives of recent graduates about their LIS programs and entry into the workforce.

Census of Alumni

Alumni holding bachelor's or master's degrees who graduated during the years of 1964–2005 were obtained from the five LIS master's programs. These alumni records were combined, and 505 cases were removed from the initial list of 9,089 alumni due to not receiving an LIS degree, being deceased, or not having enough information on the graduate. At the time of the pilot test, the population was 8,584 alumni. After the pilot, alumni were added to the population: (1) 184 alumni from one school used in an experiment in the full launch and (2) thirty-five cases that responded to a listserv message but were not in the original alumni files. These additions increased the population to 8,803 alumni from the five North Carolina LIS master's level programs. Four of the participating programs did not have current contact information on their alumni.[2] Updated contact information was obtained for these alumni through a commercial alumni tracking company (AlumniFinder), manual Internet searching, and regional LIS association membership list searching. Contact information for all alumni was verified and updated with a postcard mailing using return service and soliciting current contact information through individual participating LIS program newsletters. Table 1 displays the percent updated by the different means employed. We found that outsourcing the updates to an alumni tracking vendor and the use of a postcard with return requested service were the most productive methods of updating contact information. For cases where more problem solving was needed, online searching was employed and was successful for a considerable fifty-nine cases or about 15 percent.

Pilot Test

After designing and programming the survey, we decided that a pilot test of the survey and the methodology was warranted. The pilot test provided an opportunity to test the feasibility of launching this long and complicated survey and for us to test the relative benefits of using mailed invitation letters and nonresponse follow-up. For the pilot, a random sample (n = 750) was selected from the population (n = 8,584).

Pilot Study. The final sample size of the pilot, after attempting to update contact information, was 721. Twenty-nine records were removed because we were unable to find any type of valid contact information. Of the 721, 100 percent had mailing addresses but only 55 percent (n = 392) had e-mail addresses. Invitation letters with a two-dollar bill as an incentive were mailed to 721 alumni.

Four reminders with instructions for completing the Web-based survey were sent to nonrespondents. The first, third, and fourth reminders were

Table 1. Comparison of Updated Records by the Methods for Finding Current Alumni Contact Information

Method	Number of Cases	Number Updated	Percent Updated
Outsourcing to alumni tracking vendors*	5,358	4,925	91.9
Online searching	400	59	14.8
Use a mailed postcard	5,358	1197	22.3
Professional membership directories	400	37	9.3
LIS listservs	5,358	172	3.2
Publicity/Press	5,358	0	0.0

*Verified and/or updated 4,892 cases and identified 33 as deceased.
NOTE: Online searching and professional membership directories were used only in the pilot test; the other methods were used in both the pilot phase and full launch of the survey.

sent via e-mail to the alumni with e-mail addresses (i.e., nonrespondents with only a mailing address did not receive these reminders). The second reminder was a methodological experiment to test the effect of the reminder format (letter and e-mail) on response rates. In Group 1 (alumni that had a mailing address and no e-mail address), a postal letter reminder was sent to three-quarters of that group ($n = 221$) and no reminder was sent to the remaining one-quarter ($n = 74$). This allowed us to test the hypothesis that the letter reminder would be more effective than no reminder, while hopefully improving our response rate by sending the letter format to the majority. Group 2 included alumni who had both postal and e-mail addresses. In order to test the effectiveness of a letter versus e-mail reminder, half of this group ($n = 146$) received a letter reminder and the other half ($n = 145$) was sent an e-mail reminder. The Web survey had a 31 percent completion rate ($n = 224$). For Group 1 (no e-mail addresses), there was a difference in survey completion between the group that received a mail reminder (9.8 percent) and the group that received no reminder (6.8 percent), but it was not significant ($\chi 2 = 1.064$, $p = 0.587$). For Group 2 (postal and e-mail addresses), there was no substantive or statistical difference between the group that received a postal reminder and the group that received an e-mail reminder ($\chi 2 = .023$, $p = .989$).

Pilot Results. The completion rate for the full survey increased to 39 percent ($n = 281$) as a result of the nonresponse study (see Nonresponse Study below). The response rate was calculated such that a response was counted as a completed survey if the respondent answered at least through Section A (Education). Twelve respondents did not complete at least Section A (Education) and were not included in the response rate. The pilot survey has a response rate of 37 percent ($n = 269$). The five LIS programs were represented with response rates ranging from 30 percent to 41 percent of their graduates in the sample. Demographic data were gathered

on the pilot respondents ($n = 269$). The age of respondents ranged from twenty-seven years to eighty-three years with a mean of fifty-one (std. dev. = 12) and a median of fifty. Alumni are predominately female (82 percent) and married or living with a partner (70 percent). Most respondents are white (89 percent) with 7 percent African American and 2 percent American Indian. Only very few (1 percent) are of Hispanic, Spanish, or Latino origins.

Nonresponse Study

After achieving a response rate of 31 percent with the pilot, we were very interested in understanding two main things about the pilot sample: (a) Was this a selected sample in any important way? In other words, were those who did respond different in some important way than those who did not respond? (b) Was there a common reason that nonresponders were not responding? Answering these two questions would help us interpret our results from the study and would put us in a position to make better decisions (if warranted) for the full launch of the alumni survey. In order to conduct this nonresponse study, a random sample ($n = 400$) was selected from the alumni who had not completed the pilot version of the alumni survey. This number was chosen based on available resources and probable sample size needs.

Nonresponse Study Design. The nonresponse study was conducted between June and August 2007. The nonresponse survey collected data on the reason for not completing the full survey, accuracy of postal and e-mail addresses, employment status, satisfaction with LIS as a career, and demographics. The latter three sets of measures were deemed the important potential selection factors that might impact the overall generalizability of our findings. Invitation letters with a five dollar bill, paper version of the survey, and instructions for completing a Web-based survey were mailed to 400 alumni. Telephone surveys were conducted with alumni who did not respond within two weeks. Alumni were called until a case was resolved or eight call attempts had been made. After the third call, a voicemail message was left and an e-mail reminder was sent to nonrespondents with e-mail addresses. The survey also contained an invitation to complete the full survey. Respondents to the Web-based survey who were interested in the full survey were sent to the pilot survey website upon completing the nonresponse survey. Paper and telephone survey respondents who indicated an interest in completing the full survey and provided an e-mail address were sent an e-mail invitation.

We conducted a methodological experiment with the letter invitation to test the effect of the envelope design on response rates. There were three groups. In Group 1, 133 alumni received an envelope with only the study name (Workforce Issues in Library and Information Science) appearing as the sender's name. The envelopes for Group 2 ($n = 133$) con-

tained the study name and the name of their LIS program as the sender. The third group ($n = 134$) were mailed envelopes with the study name and the UNC-Chapel Hill name. In Group 3, within each program half of the alumni had a UNC-Chapel Hill logo on the envelope and the other half did not. There was no impact of sender name on rate of survey completion rate (χ 2 = 2.448, $p = 0.654$). There was also no impact of including the UNC logo on survey completion rate (χ x2 = 1.266, $p = .531$).

Results of the Nonresponse Study. The nonresponse survey had a 36 percent response rate ($n = 144$). While half of the alumni (49 percent) completed the paper version of the survey, about one-quarter completed the survey via telephone (29 percent) or via the Internet (22 percent). Demographic data were gathered on the respondents ($n = 144$). The age of respondents ranged from twenty-eight years to eighty-nine years with a mean of fifty-four (std. dev. = 14) and a median of fifty-three. Alumni are predominately female (91 percent). More than half (62 percent) are married or living with a partner. The majority of respondents are white (90 percent) with 8 percent African-American and 1 percent American Indian. Very few are of Hispanic, Spanish, or Latino origins (3 percent). The nonresponse survey asked about barriers to completing the pilot survey (see table 2). The most frequently reported barrier was not having time to complete the survey (33 percent).

The respondents to the pilot survey and nonresponse survey were compared on the following variables: gender, self-reported race/ethnicity, marital/cohabitation status, U.S. citizenship, employment status, type of work, whether the respondent had left the LIS field, salary/annualized wage, career satisfaction, and which LIS program attended. The only statistically significant difference between the two groups was gender composition ($X^2 = 4.34$, $p < .05$). A higher percentage of males completed the pilot survey (16 percent) than completed the nonresponse study (10 percent). All other nonresponse variables were not significantly different than those variables as reported in the pilot. This finding suggests that other than a potential overrepresentation of males, there is no known selection problem with the pilot sample. As the full launch was very similar to the pilot methodology, there is also no reason to expect that the sample is not representative of the population of LIS graduates from the five masters' programs in North Carolina.

Full Launch

Determining Full Launch Sampling Frame. For the full launch, the remaining 8,053 alumni were selected from the population. From pilot findings, the most efficient methods were employed to update contact information: alumni tracking vendor, LIS program advertisements, and a postcard mailing with return service. Alumni records ($n = 4,885$) from the four programs without current contact information were submitted to Alum-

Table 2. Barriers to Completing the Pilot Survey (N = 144 who completed non-response survey)

I did not respond to the survey because . . . (select all that apply)	Yes(%)
Did not have time	30.8
Forgot	18.9
Did not receive a letter invitation	17.5
Did not receive an email reminder	13.3
Thought it would take too long	13.3
Am not interested	5.6
Do not have computer access	4.9
No particular reason	4.9
Do not have web access	4.2
Am asked to complete too many questionnaires and did not want to do another one	3.5
Thought it would it would be too difficult	2.8
Did not trust that my data would be kept confidential	1.4
Was not being paid to do the survey	1.4
I did complete the survey	1.4
Did not think the study was important	0.7
Already completed another LIS workforce questionnaire	0.7
Had technical difficulties with the website	0.0

niFinder. Contact information for 4,314 cases was verified and/or updated by AlumniFinder. An additional 321 cases were updated using the postcard method, 232 responded to a listserv message, six were updated by the program newsletter method, and 690 alumni were e-mailed the study directly (we are unsure of the impetus, but it was likely a listserv message, program newsletter, or advertisement by the LIS program). Four hundred fifty-one cases were removed due to 432 alumni with no valid contact information and 19 graduates who were deceased. The loss rate was 5.6 percent resulting in 7,566 alumni included in the full launch. To our knowledge, 49 percent had only a mailing address, 48 percent had both a mailing and e-mail address, and 2 percent had only an e-mail address.

Full Launch Study Design. Minor modifications were made to the alumni survey and the survey methodology. Survey Science Group was contracted to program and administer the Web-based survey for the full launch. Invitation letters with a two dollar bill were mailed to 7,397 alumni (Singer, 2002). A postal letter reminder for all nonrespondents was added to the survey procedure. The first reminder was sent via e-mail, and the second reminder was a postal letter. The third and fourth reminders were e-mailed to nonrespondents. Alumni with no mailing address received the study invitation and postal reminder via e-mail, and graduates with only a mailing address did not receive the three e-mail reminders. An experiment of the effect of incentives and mode on response rate was devised

with University of North Carolina School of Information and Library Science alumni who graduated between 2006 and 2007. These 169 alumni did not receive a two dollar incentive and received all study communication via e-mail.

Full Launch Results. The Web survey had a 35.4 percent completion rate (n = 2,682). The response rate was calculated such that a response was counted as a completed survey if the respondent answered at least through Section A (Education). Twenty-nine respondents did not complete at least Section A (Education) and were not included in the response rate. Thus, the survey had a response rate of 35.1 percent (n = 2,653). The five LIS programs were represented with response rates ranging from 27 percent to 43 percent of their graduates in the sample.

Demographic data were collected on the respondents. The age of respondents ranged from twenty-three years to eighty-eight years with a mean of fifty (std. dev. = 12) and a median of fifty-two. Alumni are predominately female (82 percent) and married or living with a partner (70 percent). Most respondents are white (89 percent) with 7 percent African-American, 2 percent Chinese and 2 percent American Indian. Few respondents are of Hispanic, Spanish or Latino origins (1 percent) and are non-U.S. citizens (2 percent). As would be expected these findings mirror that of the pilot.

Discussion

Web-based surveys are an effective and efficient way to survey graduates of LIS master's programs. Even with a long and complicated career survey, the WILIS career retrospective study was able to achieve a reasonably good response rate (35 percent). Very few respondents to the nonresponse study (4.2 percent) were unable to complete the survey due to lack of Web access. We would expect that this barrier would be reduced further if the survey were targeted only to recent graduates. We have some evidence to support this expectation in that if you break recent graduates out of the overall response rate, the response rate for that subgroup is approximately 39 percent. Further, we find that, in the case of recent graduates, there is no difference in response rates between e-mail-only contact and the addition of the prenotification letter and the letter reminder. This is an important finding in that e-mail-only contacts were also not given an incentive (i.e., two-dollar bill). While we cannot directly estimate the effect of the incentive or the e-mail-only contact separately, for recent graduates, it seems that neither variable in the methodology had a sizable impact on the overall response rate.

Other issues likely to present as a challenge to programs or researchers seeking to survey graduates are that of survey length and complexity. Programs have different types of graduates (i.e., different degrees, dif-

ferent course delivery options, part-time/full-time students) that complicate how program feedback questions are asked. Web surveys give you the ability to accommodate complex skip patterning so that individuals with different characteristics can take different paths through the survey. This becomes important also when you are asking about employment. For example, in the WILIS 1 survey, we asked about up to five jobs per respondent. However, it is possible that the "job after the LIS program," for example, is the same job as the current job. This means that you would need to accommodate this in the programming of the survey so that individuals are not asked to fill out the same information on the same job and so that jobs are not overrepresented in the final data. Furthermore, as surveys are created, length always becomes an obstacle. The WILIS 1 survey took over one hour to complete. Despite this, 82 percent of respondents who started the survey completed the entire survey. This rate of completion and the response rate would likely improve as survey length is reduced. In our most recent experience with the pilot test of a shorter recent graduates survey, our average response rate is above 50 percent and the rate of completion is about 92 percent (those who start and finish the survey/those who started). This latest survey is approximately twenty minutes long.

E-mail-only Web surveys have both costs and benefits. Web surveys that combine both paper and e-mail contact seem to be the best way to contact the most representative alumni group. Web surveys also help to minimize length and accommodate complexity for survey designers. The major challenge with e-mail-only Web surveys is accumulating accurate and reliable lists. In general, the schools were able to provide e-mail addresses for about half of their alumni. Sources of physical addresses to update lists are more stable than e-mail addresses and therefore more likely to yield contact with graduates. Vendors are able to use public and private databases to reliably update graduate lists. E-mail-only surveys are significantly cheaper but are less likely to be representative of the graduate population. Strategies to overcome this barrier to reduced costs may be to keep in regular contact with alumni via e-mail (e.g., through e-newsletters, social networking software, etc.) and to provide a way for graduates to update their records via the Web. These strategies are likely to increase the percentage of graduates with "live" e-mail addresses and would increase the effectiveness of e-mail-only survey designs, which are less costly for implementers. This challenge exists for both recent graduates and for a career retrospective design, but is more pronounced for the latter. Devoting resources to keeping good contact information for graduates is likely to pay off for programs that intend to survey their alumni as is periodically necessary for program review and accreditation purposes.

Notes

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

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