

2-1-2022

Building Librarians' Research Skills through Experiential Learning

Raeda K. Anderson

Virginia C. Crawford Research Institute, Shepherd Center; Georgia State University

Katherine Fisher

Emory University, katherine.fisher2@emory.edu

Emily Williams

Georgia State University

George Usmanov

Georgia State University

Follow this and additional works at: <https://digitalcommons.kennesaw.edu/glq>



Part of the [Educational Assessment, Evaluation, and Research Commons](#), [Library and Information Science Commons](#), and the [Quantitative, Qualitative, Comparative, and Historical Methodologies Commons](#)

Recommended Citation

Anderson, R. K., Fisher, K., Williams, E., & Usmanov, G. (2022). Building Librarians' Research Skills through Experiential Learning. *Georgia Library Quarterly*, 59(1). <https://doi.org/10.32727/7.2022.1>

This Peer-Reviewed Article is brought to you for free and open access by DigitalCommons@Kennesaw State University. It has been accepted for inclusion in Georgia Library Quarterly by an authorized editor of DigitalCommons@Kennesaw State University. For more information, please contact digitalcommons@kennesaw.edu.

Building Librarians' Research Skills through Experiential Learning

Cover Page Footnote

The authors thank the leadership of the Georgia State University Library and the Library Faculty Research Committee for supporting the Library Research and Survey Design Collaborative. As always, thank you to each respondent who participated in the study. Without willing and transparent respondents, quality analysis is simply impossible.

PEER REVIEWED



Building Librarians' Research Skills through Experiential Learning

By Raeda K. Anderson, Katherine Fisher, Emily Williams, and George Usmanov

Introduction

Librarians have a long history of supporting research in myriad contexts, adapting with the evolution of data collection processes and research methodologies (Corral et al., 2013; Houser, 2006; Thomas & Urban, 2018; Yoon & Schultz, 2017). With a growing emphasis in higher education on data analysis across most disciplines, nearly all librarians are called to help support research in new capacities (ACRL Research Planning and Review Committee, 2018; Kennedy & Brancolini, 2018). More specifically, data librarians are a growing subgroup within academic libraries and need to deeply understand the nuances and process of data collection to best facilitate their own work as well as the work of other scholars (Semeler et al., 2017; Weiss, 2018). As libraries expand to include more support for primary data collection and analysis, it is imperative that librarians have exposure to and confidence in their ability to help with and conduct primary data collection. Many academic librarians also have research agendas of their own, particularly those librarians with faculty status who are required to contribute to literature in library and information science or other disciplines. Librarians' individual research efforts benefit from increased facility with and confidence in handling data using statistical and social science methods.

While a notable number of studies have set out to explore the perceptions of librarians, and data librarians in particular, of how they can learn data collection and analysis skills, very few studies have examined the effects of programs

developed to facilitate these skills (Kennedy & Brancolini, 2018; Thomas & Urban, 2018; Yoon & Schultz, 2017). The current study examines how participating in a short research training program that includes collection of both qualitative and quantitative data as well as data analysis—research methodologies and tasks with which librarians trained in humanities disciplines and methods may be unfamiliar—affects the progress of and attitudes toward the research conducted by academic librarians. We collected data from library personnel involved in the program and analyzed the research outcomes for each component of the research training program using a concurrent mixed methods approach. Findings from this study indicate that participating in a research training program and pilot survey is associated with librarians' ability to conduct their own research as well as increased confidence to complete primary data collection. While this study did not measure long-term outcomes, we anticipate that increased skills and confidence might serve librarians not only in completing their own research but also in implementing evidence-based practices within libraries, assessing library services and programs, and advising other researchers on topics related to statistical analysis and data management.

Literature Review

Librarians as Researchers

Library and information science (LIS) literature traces long-running debates about how well prepared librarians are to conduct research and whether academic librarians should be

expected to do so (Biggs, 1981; Bridegam, 1978; Hill, 2005; Mitchell & Reichel, 1999; Powell et al., 2002; Wyss, 2010). Conducting research is widely seen as having benefits for academic librarians' patron services and individual professional development (Galbraith et al., 2016; Gillum, 2010; Montanelli & Stenstrom, 1986; Perkins & Slowik, 2013). Indeed, at institutions where librarians have faculty (or faculty-equivalent) status, librarians are often required to conduct research to maintain their faculty status and be promoted to a higher rank (Galbraith et al., 2016; Gillum, 2010; Hill, 2005; Sassen & Wahl, 2014; Silva et al., 2017). Thus, librarians' acquisition of research skills not only deeply benefits patrons who need support from experts familiar with their research methods and tools, it also benefits the librarians themselves, whose professional development, faculty status, and career trajectories often require successfully carrying out research projects. Despite the normative practice of librarian-led research, librarians encounter varying levels of institutional support for their scholarly activities (Sassen & Wahl, 2014; Silva et al., 2017), perhaps because of divergent perspectives in the profession and shifting roles for academic librarians over time.

Despite these disagreements about the necessity and appropriateness of librarians engaging in original research and the acknowledged paucity of adequate methods training in Master of Library and Information Science (MLIS) programs, there is broad agreement that research methods training and experience are valuable, even essential, for librarians; the results of Luo's (2011) survey about the effects of methods courses on the work of LIS practitioners confirm this belief among librarians. In addition, Best and Kneip (2010) have found that research and publications likely contribute to academic librarians' career advancement and rank even in settings where they are not formally required to publish. As researchers, many academic librarians utilize structured quantitative and qualitative methods; in fact, surveys are the

predominant research approach in high-profile LIS journals (Hider & Pymm, 2008), and the proportion of LIS publications that include statistics has increased over time (Van Epps, 2012), although it is not known how the design, rigor, and analysis methods employed in LIS studies compare to those utilizing similar survey approaches in other fields.

Learning Research Skills

While a 2011 literature review found no formal, broadly influential pedagogical culture for the teaching of social science research methods and noted varying approaches between disciplines, the authors observe that direct, active participation by students in research projects is a common goal (Wagner et al., 2011). Previous research in other practice-based fields, such as nursing, has also suggested that participatory action learning is an effective means of gaining research skills and confidence (Plach & Paulson-Conger, 2007).

Inquiry-guided learning (Atkinson & Hunt, 2008) builds on previously established models for active learning and, though developed as a pedagogical theory for classroom-based sociology instruction, offers methods and techniques with the potential for application in various research training contexts. Atkinson and Hunt (2008) conceptualize inquiry-guided learning "on a continuum between traditional lecture and independent student research" (p. 1) with the goal of "guiding students to increasingly independent questioning and constructing knowledge" (p. 6). This approach not only includes active learning through participation in the research process but also uses frequent analysis and synthesis activities to promote and reinforce high-level thinking about real-life questions posed by emerging researchers.

Quantitative methods training offered outside of formal courses or degree programs cannot easily scaffold activities and concepts to develop skills and build confidence over long

periods of time, but some features of successful instruction are transferable. In addition to a broad focus on participatory or experiential elements, one feature of successful research instruction that can be implemented in a variety of settings is the use of a data analysis “activity or assignment...that feels relevant to students,” who “tend to respond to concepts more enthusiastically and understand more fully when they are able to relate it to their own lives” (Lindner, 2012, p. 52). Put another way, instructors should design courses or trainings “both to stimulate students’ interest and to increase their investment” in order to engage anxious or uninterested students in quantitative and statistical activities (Caulfield & Persell, 2006, p. 39). Another predictor of success in learning quantitative skills, and a feature readily incorporated into training programs of any length or type, is the use of collaborative groups and cooperative learning strategies to reinforce material, encourage problem solving, and promote gains in confidence (Caulfield & Persell, 2006).

Library-Oriented Research Instruction

The American Library Association’s Core Competencies of Librarianship (American Library Association, 2009), adopted as policy by the ALA Council, identifies research as an essential skillset. Familiarity with the fundamentals of quantitative methods is specified as an expectation for all MLIS graduates. It is unsurprising, then, that most of the quantitative and other research methods training available to librarians is based in MLIS programs and that previous studies of research methods training and quantitative skill development for librarians have focused primarily on the existence, frequency, and scope of methods coursework in MLIS programs (Alemanne & Mandel, 2018; Alemanne et al., 2019; Goulding & Usherwood, 2003; Luo, 2011; Luo, 2012; Perkins & Helbig, 2008).

In 2010, when many currently practicing librarians were enrolled in LIS programs, all of

the top ten library schools included research methods courses in their curriculum and provided additional research training through field placements and directed studies (Best & Kneip, 2010). A larger study in 2005 of 25 representative ALA-accredited LIS schools noted that 20 of those required a research course for a master’s degree. Of the research topics addressed in relevant syllabi from the 25 schools, quantitative research methods and data analysis appeared most frequently (Perkins & Helbig, 2005). More recent research indicates that while a notable amount of LIS research is quantitative and many LIS programs include methods courses, MLIS students receive far less exposure to statistical analysis and inferential statistics than do graduate students in related disciplines such as sociology (Park, 2021) and MLIS-level research methods training in the United States is uneven and often superficial (Bright, 2020).

Despite the apparent prevalence of methods courses and quantitative methods training, academic librarians’ research confidence is markedly lower for tasks such as analyzing quantitative data and running statistical tests compared to tasks such as articulating research questions and writing literature reviews (Alemanne et al., 2019; Kennedy & Brancolini, 2018). This disconnect might be explained in part by concerns explored in a study examining links between research methods education and professional practice for librarians (Luo, 2011). When survey respondents were asked to suggest improvements to MLIS research methods curricula, many focused on the need for more statistical analysis instruction and more real-world application. The researcher noted that librarians desire “more real-world examples to illustrate how LIS professionals conduct and consume research in their workplace” and quoted one respondent as saying, “The research methods course I took at my university didn’t have a practical component to it, so I wasn’t able to use what I ‘learned’ in the field” (Luo, 2011, p. 197). The responses suggest an unmet need among many academic

librarians for hands-on, statistically rigorous methods training.

The literature has long included calls for LIS schools to offer, expand, or improve methods instruction (Evans et al., 2013; Liebscher, 1998), and more recent work has outlined new models for incorporating this training into LIS programs, such as through field experiences (Berg et al., 2009), diversified methods training (Luo, 2017), and experiential learning through external partnerships (Mandel, 2017). Three-fourths of respondents to a 2009 survey believed that research methods courses should be required components of MLIS degrees, and about 80% indicated that such courses benefitted their work as librarians (Luo, 2012). A divergent view came from one respondent who emphasized the need for methods courses to “teach practical research methods that can be used in the field; don’t focus exclusively on quantitative methods” (Luo, 2011). This comment suggests a paradoxical problem: some librarians do not receive enough quantitative training to feel confident about applying data collection and analysis skills in pursuit of practical research projects, while others who *do* receive quantitative training may not perceive it as useful for their work in the field of librarianship. It remains unclear whether, in general, MLIS graduates and librarians feel that LIS degrees as presently designed and taught adequately prepare them to conduct original research (Kennedy & Brancolini, 2018).

Given this knowledge and experience gap—sometimes manifest as fear of or aversion to certain research tasks, as in the case of librarians who “shudder at the thought of learning and utilizing research skills of expanding knowledge through hypothesis testing and quantitative methodology” (Perkins & Helbig, 2008, p. 513)—there is a clear need for further training and experience, particularly in the quantitative realm. While improving the LIS curriculum is an important component of the effort to enhance librarians’ research skills, working librarians who are no longer in school,

busy with job responsibilities, and facing research expectations must also be able to gain these benefits and build both skills and confidence.

One notable departure from the focus in the literature on MLIS-based methods training is research by Kennedy and Brancolini (Kennedy & Brancolini, 2012; Brancolini & Kennedy, 2017; Kennedy & Brancolini, 2018), which examines the benefits of participation in the Institute for Research Design in Librarianship (IRDL), a continuing education program “designed to bring together a diverse group of academic and research librarians who are motivated and enthusiastic about conducting research but need additional training and/or other support to perform the steps successfully” (About IRDL, 2013). IRDL participants develop individual research proposals during the instructional phase of the program then execute their projects over the following year. Kennedy and Brancolini found before launching the IRDL that research confidence is a reliable indicator of how likely a librarian is to conduct research and disseminate the results (2013). Per their subsequent research on the outcomes of the IRDL experience, a self-efficacy scale measuring academic librarians’ confidence in completing discrete steps in the research process can be used to assess the effectiveness of research training programs (Brancolini & Kennedy, 2017) and thus predict the likelihood that participants will conduct and disseminate research in the future. Since IRDL’s inception in 2014, a few similar programs focused on specialized areas of librarianship have emerged, but these intensive immersion programs can serve only a small percentage of librarians (Fullington et al., 2020).

Current Study

This study explores the outcomes of a participatory learning program designed to increase librarians’ skill and confidence in quantitative methods. Most current literature on the development of quantitative skills for

librarians focuses on MLIS-based coursework and research projects. The approach studied in this article, however, fills a gap for librarians who did not receive methods training as part of a graduate program; those who received theoretical training but no hands-on experience with research design, data collection, and analysis; and those seeking to develop additional quantitative skills. While assessments of the innovative IRDL program have shown significant gains in research confidence and skill (Kennedy & Brancolini, 2018), the current study demonstrates that similar benefits can be obtained for librarians who lack access to programs like IRDL but can participate in a low-cost, sustainable program of short-term instruction and experiential learning. Just as other workplace-based research support programs may create a "community culture of research" and increase librarians' scholarly productivity (Schmidt et al., 2021), our findings suggest that contributing to a collaborative team research project can provide librarians with benefits even beyond instruction and a community of practice.

Methods

The purpose of this study is to examine the influence of an experiential research program, the Library Research and Survey Design Collaborative (LRSDC), on academic librarians' research skills, particularly in quantitative and statistical methods, and their confidence to design and pursue individual research projects. At Georgia State University (GSU), a large, public university in the Southeast, research is a requirement for librarians, both to maintain rank and be promoted; however, many library faculty have limited formal training and experience in survey design, data collection, or data analysis. In response to a need expressed by library faculty for more training in these areas to expand the range of research projects they could undertake, the data librarian at GSU designed and facilitated the LRSDC. This training focused on data collection with a survey containing both closed-ended, quantitative

questions and open-ended, qualitative questions; this approach was chosen because surveys are the predominant data collection mode in library journals (Hider & Pymm, 2008) and most survey analysis employs quantitative methodologies. Additionally, an entire component of the training included an analysis session for quantitative data. This section outlines the structure and execution of the LRSDC and ends with an explanation of the study conducted of all library faculty who participated in the program.

Research Training Program Overview

Over the course of one week, with a time commitment of about eight to twelve hours for each individual participant, the LRSDC enabled library faculty to develop and propel their own research ideas while honing their skills in research design, survey design, survey execution, and data analysis. The learning objectives for researchers included transforming research ideas into measurable indicators, writing quality survey questions, formatting a survey, collecting data, and analyzing data. Within the program, LRSDC participants worked together to develop and administer a pilot survey that focused on patrons' experiences and perceptions of the library at GSU. The major components of the program are outlined below. While pedagogical scholarship indicates that knowledge transfer and retention are superior when learning occurs in shorter training sessions held over a longer period of time (for one example, see Raman et al., 2010), the logistical complexities of convening multiple instructional sessions for librarians from several campuses and the likelihood of attrition during a longer program made an all-day initial session the most practical approach. After establishing a shared foundation of knowledge about core research concepts, the program's subsequent phases occurred on separate days to support reinforcement of content over time.

Preprogram: Leadership Focus Group.

Approximately one month before LRSDC took place, Dr. Raeda Anderson (primary investigator, social statistician, and data librarian) conducted a one-hour focus group with four employees in library leadership roles to understand which topics were of key interest to library administration. Information collected from the focus group as well as research from scholars in survey methodology and sociology informed Anderson in how to best develop the structure and content of the research training program.

Program Section I: Research Design Workshop.

Anderson, with assistance from George Usmanov, a graduate research assistant, conducted an all-day workshop for all LRSDC participants covering research design fundamentals, survey design, and data collection techniques utilized by scholars in sociology as well as survey research and methodology (Couper, 2005; Couper & Nicholls, 1998; Fowler & Mangione, 1990; Groves, 2004; Lavrakas, 2008; Olson et al., 2018; Olson et al., 2020; Smyth & Olson, 2019; Smyth et al., 2014; Timbrook et al., 2018; Wagner & Olson, 2018). The morning session included participant introductions highlighting research experience and interests followed by a refresher short course on the research process. Anderson concluded the session with a general overview of survey design, encompassing conceptualization, operationalization, and generating quality indicators.

Anderson devoted the second half of the day to survey development, beginning with an overview of mode and design. After this instruction, participants reviewed the themes generated during the focus group and developed survey questions based on the combined interests of library leadership and the participants' already discussed interests. The collaboration resulted in a patron survey designed to gain a better understanding of patrons' use of library services. For efficiency and ease of administration, the survey

questions were compiled using the online survey platform Qualtrics. LRSDC participants discussed and determined many other data collection parameters as a group, including how the pilot survey would be administered, where it would take place, and who would be asked to respond.

Program Section II: Data Collection Practice.

Four one-hour blocks of data collection occurred over the course of two days in the GSU Atlanta campus library. Each data collection session included two or more research teams composed of librarians who had attended the previous workshop. These teams targeted separate sections of the library to increase recruitment of pilot survey participants. At the beginning of all data collection sessions, Anderson or Usmanov reminded LRSDC participants of the standard data collection practices being followed for the survey. Research team members informed each potential respondent of the goals of the project and that their responses were anonymous. Each data collection session ended with a research team discussion led by Anderson or Usmanov to discuss the team's experience and answer questions.

Program Section III: Data Analysis. Shortly after the completion of data collection, Anderson and Usmanov facilitated a two-hour session on data analysis, which began with the introduction of an initial findings report compiled by Usmanov prior to the session. The report included the final survey measure, final response figures, and a breakdown of responses to the individual questions. The group discussed the findings as laid out in the report and collaboratively decided which aspects of the data to examine more closely. Using this discussion as a guide, Anderson and Usmanov demonstrated how to download data from Qualtrics, generate frequency distributions, run descriptive statistics, and conduct basic analysis of the survey data in SPSS (IBM's program Statistical Package for the Social Sciences), including t-tests and ANOVA (analysis of variance), while

LRSDC participants simultaneously performed the tasks themselves.

Postprogram: Final Report. After the session, Usmanov and Anderson finalized the report of findings and distributed it to LRSDC participants and library leaders. The report described the methods used, named the researchers, and presented analysis offering insights into the use of library space, patrons' knowledge of library services, and the demographics of those surveyed. The report modeled best practices in distributing research findings and provided participants with concrete examples to imitate in their future research. Sharing the report with library administrators not only provided them with data collected to inform library initiatives but also conveyed the level of interest in this type of project, the value it has for our organization, and the importance of promoting research skills among librarians.

Research Training Program Assessment

Three months after the conclusion of the librarian research training program, we conducted a follow-up study to assess the effects of the training on LRSDC participants' self-perception and confidence as researchers as well as their progress on personal research projects. The results from the three-month follow-up assessment are the focus of this article. The data collection for the Research Training Program Assessment was approved by GSU's Institutional Review Board (IRB).

Data Collection

Survey Design. This study used a brief survey of ten questions to evaluate librarians' experiences and abilities following their participation in the library research training program, LRSDC. The study used a concurrent mixed methods approach, where respondents provide both qualitative data (e.g., open-ended questions) and quantitative data (e.g., closed-ended questions) at the same time (Creswell &

Creswell, 2018). The survey covered the following topics: rank and status at the university, the training sections the respondents attended, reflective questions on what within the LRSDC contributed to their learning about the research process, confidence after attending the LRSDC, progress on current personal research, progress toward future research, and interest in participating in a similar program in the future. Respondents were not asked for their names, email addresses, or any other directly identifiable information.

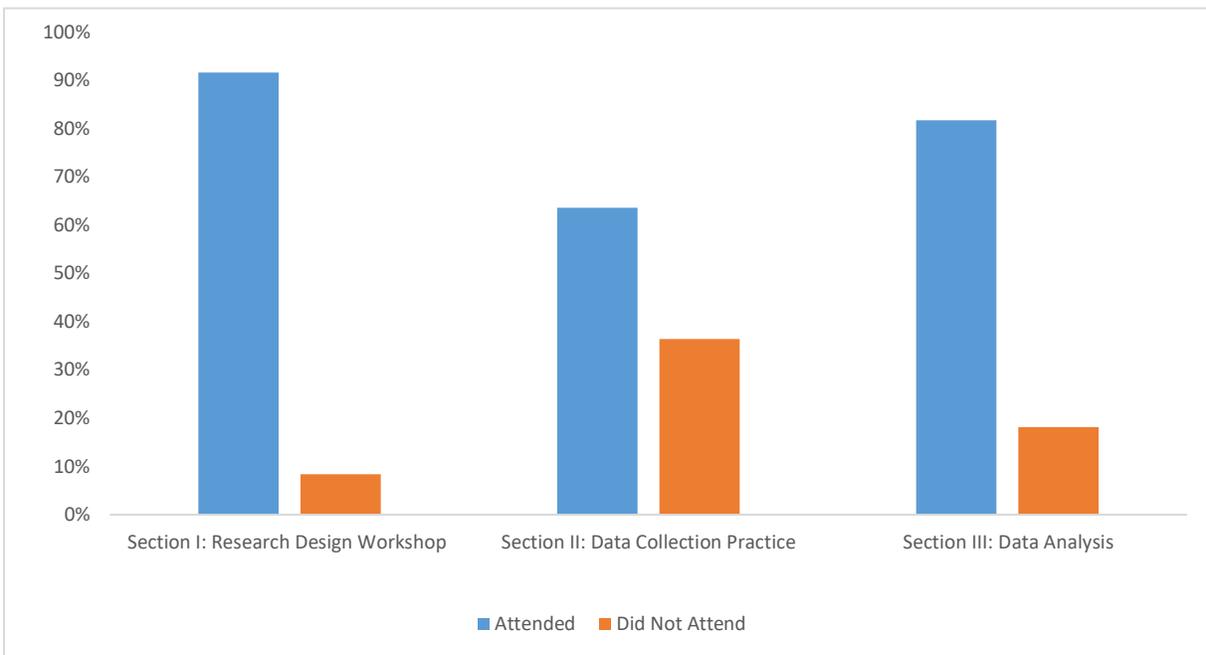
Survey Dissemination. We disseminated the survey via email to all library personnel who participated in LRSDC. We chose to use the online survey platform Qualtrics because it is well suited to manage both open- and closed-ended questions. Each potential respondent received the goals of the project and was informed that all responses would remain anonymous. The survey was available for four weeks, and all research training program participants received two calls to complete the survey with no follow-ups to specific individuals.

Results

Seventy-three percent ($n = 11$) of the librarians who participated in LRSDC completed the survey. Data from those librarians were examined for the respondents' participation in the distinct components of the research training program, their perceptions of the overall program and its distinct components, their self-perception in regard to individual research, and the progress of their current research project(s) after completing the training program.

Participation in Training Program

As previously described, the research training program was divided into three distinct sections: Section I, Research Design Workshop; Section II, Data Collection Practice; and Section III, Data Analysis. Section I was subdivided into

Figure 1: Librarian Participation in Training Components

two segments based on the primary learning objectives: Research Design and Survey Design. While participants were strongly encouraged to attend all components of the program, attendance was not mandatory and missing one section did not forfeit the right to attend other sections. While some participants took part in all three sections, others were unable to attend all of them because of scheduling conflicts, illness, or section training locations. As seen in Figure 1, nearly all respondents (90.9%, $n = 10$) attended Section I, the all-day Research Design Workshop. Additionally, nearly two-thirds of the respondents (63.6%, $n = 7$) collected data during one or more of the Section II data collection sessions within the library. Finally, most (81.8%, $n = 9$) of the respondents participated in Section III, Data Analysis.

Perceptions of the Training Program

The participant study included questions to gauge how the training program and each of its sections—Research Design Workshop, Data Collection Practice, and Data Analysis—contributed to the participants' knowledge of the research process. Regarding the individual

components of the training program, the majority of respondents (80.0%, $n = 8$) who attended the all-day Research Design Workshop asserted that it made a significant contribution to their knowledge of the research process, and approximately one-fifth (20.0%, $n = 2$) stated the all-day workshop made a moderate contribution. (Because the research design and survey design components of the all-day workshop were two distinct modules, the study asked participants to report separately on the contribution each made to their knowledge. We have described combined results, as the two questions received identical percentages of responses indicating moderate contributions and significant contributions.) Of the respondents who participated in Data Collection Practice, slightly less than half (42.9%, $n = 3$) identified the section as having a moderate contribution to their knowledge of the research process with more than half (57.1%, $n = 4$) identifying this section as having made a significant contribution. Among respondents who attended the Data Analysis component and reported on its contribution to their knowledge, three-fourths (75.0%, $n = 6$) indicated this section contributed significantly

to their knowledge, with the remaining one-fourth (25.0%, $n = 2$) identifying this section as having made a moderate contribution. Thus, nearly all librarians' knowledge of the research process increased as a result of participation in each section of the training program: 100.0% reported increased knowledge from the overall experience of the program, 100.0% from the all-day Research Design Workshop; 100.0% from the Data Collection Practice, and 88.9% from the Data Analysis.

When asked about their perceptions of LRSDC, respondents' comments fell within two related streams which intersect at research skills and level of comfort with research. Responses included the following statements:

- “[The training program] helped to demystify and clarify the survey research process.”
- “I am less overwhelmed by the process. I can think through how to plan a project better now.”
- “I better understand the steps involved in conducting a research project.”
- “I like the concept that research doesn't have to be difficult or elaborate to get useful, publishable information.”

Nearly all respondents indicated that they would be interested in a similar training in the future (90.9%, $n = 10$ said “yes”; 9.1%, $n = 1$ said “maybe”; and 0.0%, $n = 0$ said “no”).

Self-Perception as Researchers

Not only did we observe improvements in terms of the amount of knowledge about the research process, but we also found notable changes in confidence and self-perception. The survey results indicated a marked shift in participants' perception of their own skills and identities as researchers, noting that they feel more confident and are making concrete plans to advance their individual research projects. All respondents (100.0%, $N = 11$) reported that their confidence in research was higher after

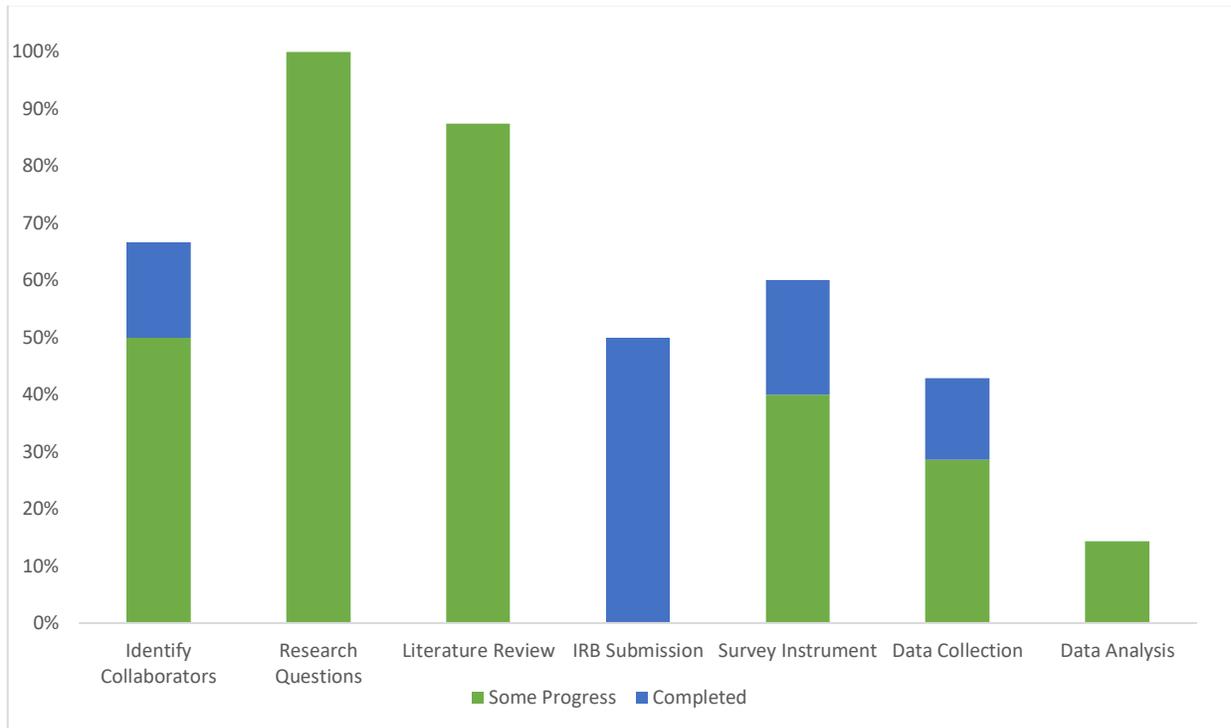
participating in the training compared to before the training. Through statements such as “my own research projects” and “a blueprint to continue my progress” (emphasis added), participants signaled their ownership of these efforts and their confidence in pursuing them more proactively.

Post-Training Program Progress in Personal Research

As seen in Figure 2, respondents indicated a wide range of participation in research projects at the time we administered the follow-up survey, approximately three months after the training program. About a quarter of the respondents (27.3%, $n = 3$) were not currently working on any projects, and about a quarter (27.3%, $n = 3$) were working on one research project. Slightly more respondents (36.4%, $n = 4$) were working on two research projects, and one participant was working on three or more current research projects. In the survey, we asked participants to identify how much progress they had made on different components of a research project since the training program had ended. Response options included *completed*, *some progress made*, *no progress made*, or *not applicable*. For personal projects where a given research component was applicable, we analyzed the amount of progress made by respondents who participated in the training program.

A notable amount of the respondents' research included collaboration with other scholars. Most respondents (66.7%, $n = 4$) had made progress in identifying collaborators, with 50.0% ($n = 3$) making some progress and one participant (16.7%) completing their identification of collaborators.

Every respondent (100.0%, $N = 7$) who needed to develop research questions had made progress on developing their research questions by the time the survey was administered. For respondents who needed to complete a literature review for their research, one (12.5%)

Figure 2: Research Component by Level of Progress

had made no progress while the majority (87.5%, $n = 7$) had made some progress. It should be noted that one respondent indicated that a literature review was not relevant for their study, and no respondents had completed their literature reviews.

Half (50.0%, $n = 2$) of those whose research required an IRB application had completed this task. For those respondents needing to generate surveys and interview questions for their study, one person had completed this work and slightly less than half (40.0%, $n = 2$) had made progress.

Respondents varied in their reporting of data collection and data analysis. Of those who needed data collection for their research, more than a quarter (28.6%, $n = 2$) had made progress on data collection, one had completed data collection, and slightly more than half (57.1%, n

= 4) had not made progress on data collection. Of the respondents whose projects required data analysis, one had made progress on their analysis, while most (85.7%, $n = 6$) had not made progress. Between the time of the training program and the training program evaluation, about half (42.9%, $n = 3$) of respondents made progress on data collection and one person made progress on their data analysis. Finally, not one respondent had drafted a manuscript, submitted their research to a conference, or submitted their work for publication between the time of the training program and training program evaluation.¹ The minimal progress in these areas of the research process likely reflects the relatively short period of time between the training program and the program evaluation, approximately three months, more than the skills, confidence, or motivation of the respondents.

¹ Of note, some respondents (18.2%, $n = 2$) stated that collecting data, writing a draft, submitting to conferences, and submitting publications were not applicable to their project.

Anecdotally, in the time since the training program took place, the authors Anderson and Usmanov have experienced an increase in one-on-one data research consultations with several program participants developing research projects. They have also observed a larger number of librarians using Qualtrics, survey design principles, and other skills developed in the training program to enhance their teaching and other day-to-day work.

Discussion

Implications

These findings offer promising evidence that participation in even brief and inexpensive research training programs can yield rapid and measurable benefits for librarians' knowledge and confidence, in relation to specific skill areas such as survey design and statistical analysis as well as research design and the research process in general. The LRSDC was purposefully designed to provide short, intensive instruction, and these qualities contributed to the program's overall success and effectiveness. Attendance in the program was as high as fifteen participants, representing multiple GSU campuses and library departments, indicating not only that the perceived need for research training among library employees prior to the program was actual but that the structure and timeline of the program were ideal. The brevity of the program, with three sections over the course of seven days, allowed for many library employees to work around their schedules and attend most of the sections. Having a large group with diverse library interests provided active and interesting discussions throughout the program, and the large number of participants greatly contributed to successful data collection sessions.

With participants designing, administering, and analyzing a quantitative research project, the LRSDC eased anxiety, clarified the process, and provided participants with the steps to plan and execute their own research, as noted in remarks

made by the participants in the follow-up study. Participants wrote, "I better understand the steps involved in conducting a research project" and "I like the concept that research doesn't have to be difficult or elaborate to get useful, publishable information." In addition, the study results indicate a marked shift in participants' perceptions of their own skills and identities as researchers, noting that they feel more confident and are making concrete plans to advance their individual research projects. These results verify that the LRSDC and its immersive quality were a successful method of teaching research methods and design.

The LRSDC has enhanced our library's ability to carry out research in direct, immediate ways and increased our collective confidence and interest in quantitative methods. Although assessment was not the explicit goal of the LRSDC at the beginning, the work done as part of the experience helped participants to assess aspects of our library services. The program provided an opportunity to leverage our colleagues' unique expertise and bring library research and assessment into conversation with other disciplines. By setting this precedent, we have opened up new possibilities for more rigorous, theoretically informed, thoughtfully designed assessment within our organization.

Limitations

This analysis contains a handful of important limitations. First, we collected data from LRSDC participants during only one time period, and thus changes in skills, perceptions, and research progress can only be measured by the perceptions and the reporting of the survey respondents. Second, due to the anonymity of the data collection, it is possible, though unlikely, that some respondents completed the survey more than once. Third, because the primary investigator is also a colleague, it is possible, but unlikely, that some respondents may have reported inflated confidence, skills, and research progress. Fourth, these findings cannot be generalized to all academic librarians

nor librarians in general without replication across different institutions.

GSU Library is unique in that it employs a quantitative data specialist with extensive formal training in survey research and methodology as well as a doctorate in sociology, a field with cornerstones in data collection and data analysis. The execution of a similar training program may be more difficult for those institutions that do not have dedicated specialists or individuals with such skills to be able to facilitate a similar program encompassing the entire research process. Those organizations might have to modify their instruction, but there are most certainly specialists within the larger institution or professional community who could offer training specifically in areas in which the library lacks skilled practitioners. Even without an in-house specialist, librarians who have received training in survey design and data analysis through an employer-sponsored program, a professional organization, or a dedicated course may replicate portions of this program by undertaking collaborative research projects with guidance from relevant experts at various stages. Regardless of the scale of the training program or who is leading it, direct experience in the quantitative research design process is what has proven to be most valuable and instrumental in successful execution.

It should be noted that the LRSDC, while designed and facilitated by Anderson, could only be truly successful with the logistical organization of the program by the hosting library committee and the large number of engaged program participants from across library departments and campuses. These three components meant the training program could more effectively facilitate practical, hands-on practice with methods, provide a high level of individualized attention and feedback, build interest and buy-in across the library, and make sure people with a variety of interests and skill levels could contribute.

Future Directions

In light of these limitations, library scholars administering a similar program should consider executing a pretest, short-term posttest, and long-term posttest to examine the effects over time of training for librarians. Additionally, these scholars should consider collecting data not only from librarians within the program but also from librarians who elected not to participate in order to determine statistically significant differences between the samples on self-perceptions of research knowledge, progress on research projects, and overall patterns of research scholarship for library faculty. Ultimately, this study serves as a framework for further investigation into the long-term persistence of participants' gains and the relationship between increased knowledge or confidence resulting from participation and librarians' future productivity in research and publication.

Our experience with LRSDC and the results of this study have also led us to think critically about the structure and execution of the training program. In the future, we plan to incorporate the IRB process as part of the training program. Doing so exposes participants to the IRB approval process firsthand while allowing them to finish the program with meaningful, measurable research outputs, and the groundwork for a publication. In addition, we plan to conduct a longitudinal study of research attitudes and productivity among the first group of librarians who attended LRSDC. The participant study will also be repeated each time the LRSDC is held in order to continue refining the experience and learning about its effects.

Conclusion

As trends in academic research focus more on quantitative methods, survey design, and data analysis, librarians at higher education institutions must evolve and develop data collection and analysis skills, not only to better

support faculty and students, but also to provide relevant scholarship within their own profession. GSU Library has been responsive to this trend and has implemented services and hired dedicated employees to address these changes within the institution. An experiential research training program—the LRSDC, developed and executed by the data librarian and administered to library employees—was the last essential component at our institution for addressing this evolution within the library profession. The program provided an efficient and effective method of teaching data collection and analysis that not only boosted participants' confidence, improved research skills, and increased research productivity, but also provided valuable data on library services for use by the participants and library administration.

Teaching library employees how to conduct data-driven research will benefit the librarians' individual professional development and improve support for students and faculty at all stages of the research process. This study confirmed that LRSDC participants, after completing the program, have a better understanding of data collection and analysis tools and feel better equipped to participate meaningfully in conceptualizing and carrying out quantitative assessment projects. At the very least, participation increased librarians'

knowledge about the research process, planting insights that they can use for assessment of their own instruction or services. Although the LRSDC is a small program, its initial success underscores the outside benefits of participatory or immersive research training for librarians. We invite other librarians to approach this article as a case study of collaborative, in-house upskilling and draw on the experiential portions of the program to construct their own training and assessment initiatives. In the end, we hope that the LRSDC serves as a model for how libraries can pool their researchers' time, interests, and energy into quickly generated, publishable data while providing an opportunity for librarians with little to no previous hands-on experience to conduct research with peers and mentors.

Raeda K. Anderson is a research scientist at the Shepherd Center

Katherine Fisher is the Head of Digital Archives at Emory University's Rose Library

Emily Williams is the Cataloging & Metadata Librarian at Georgia State University Library

George Usmanov is a graduate research assistant in the Department of Sociology at Georgia State University

References

- About IRDL. (2013, October 5). *Institute for Research Design in Librarianship*. <http://irdlonline.org/about/>
- ACRL Research Planning and Review Committee. (2018). 2018 top trends in academic libraries: A review of the trends and issues affecting academic libraries in higher education. *College & Research Libraries News*, 79(6), 286–300. <https://doi.org/10.5860/crln.79.6.286>
- Alemanne, N. D., & Mandel, L. H. (2018). Developing research practitioners: Exploring pedagogical options for teaching research methods in LIS. *Journal of Education for Library & Information Science*, 59(3), 26–40. <https://doi.org/10.3138/jelis.59.3.2018-0015.04>
- Alemanne, N. D., Yang, C., & Ren, X. (2019). *Exploring LIS research education as preparation for practitioner research*. [Conference presentation]. Association for Library and Information Science Education Annual Conference (ALISE), Knoxville, Tennessee, September 24, 2019. <https://www.ideals.illinois.edu/handle/2142/105318>
- American Library Association. (2009). *ALA's core competences of librarianship*. Retrieved August 13, 2020, from <http://www.ala.org/educationcareers/sites/ala.org/educationcareers/files/content/careers/corecomp/corecompetences/finalcorecompstat09.pdf>
- Atkinson, M. P., & Hunt, A. N. (2008). Inquiry-guided learning in sociology. *Teaching Sociology*, 36(1), 1–7. <https://doi.org/10.1177/0092055X08036001>
- Berg, S. A., Hoffmann, K., & Dawson, D. (2009). Integrating research into LIS field experiences in academic libraries. *Journal of Academic Librarianship*, 35(6), 591–598. <https://doi.org/10.1016/j.acalib.2009.08.007>
- Best, R. D., & Kneip, J. (2010). Library school programs and the successful training of academic librarians to meet promotion and tenure requirements in the academy. *College & Research Libraries*, 71(2), 97–114. <https://doi.org/10.5860/0710097>
- Biggs, M. (1981). Sources of tension and conflict between librarians and faculty. *The Journal of Higher Education*, 52(2), 182–201. <https://doi.org/10.2307/1981090>
- Brancolini, K. R., & Kennedy, M. R. (2017). The development and use of a research self-efficacy scale to assess the effectiveness of a research training program for academic librarians. *Library & Information Research*, 41(124), 44–84. <https://doi.org/10.29173/lirg760>
- Bridegam, W. (1978). A research requirement for librarians? *Journal of Academic Librarianship*, 4(3), 135–136.
- Bright, K. (2020). Teaching research methods in master's-level LIS programs: The United States perspective. *Journal of Education for Library & Information Science*, 61(3), 357–382. <https://doi.org/10.3138/jelis.61.3.2020-0001>
- Caulfield, S. L., & Persell, C. H. (2006). Teaching social science reasoning and quantitative literacy: The role of collaborative groups. *Teaching Sociology*, 34(1), 39–53. <https://doi.org/10.1177/0092055X0603400104>

- Corrall, S., Kennan, M. A., & Afzal, W. (2013). Bibliometrics and research data management services: Emerging trends in library support for research. *Library Trends*, 61(3), 636–674. <https://doi.org/10.1353/lib.2013.0005>
- Couper, M. P. (2005). Technology trends in survey data collection. *Social Science Computer Review*, 23(4), 486–501. <https://doi.org/10.1177/0894439305278972>
- Couper, M. P., & Nicholls, W. L., II. (1998). The history and development of computer assisted survey information collection methods. In M. P. Couper, R. P. Baker, J. Bethlehem, C. Z. Clark, J. Martin, W. L. Nicholls, II, and J. M. O'Reilly (Eds.), *Computer assisted survey information collection* (pp. 1–21). Wiley.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- Evans, A., Dresang, E., Campana, K., & Feldman, E. (2013). Research in action: Taking classroom learning to the field. *Journal of Education for Library and Information Science*, 54(3), 244–252. <https://www.jstor.org/stable/43686952>
- Fowler, F. J., Jr., & Mangione, T. W. (1990). *Standardized survey interviewing: Minimizing interviewer-related error*. Applied Social Research Methods Series. Sage Publications.
- Fullington, L., West, B. K., & Albarillo, F. (Eds.). (2020). *Reflections on practitioner research: A practical guide for informational professionals*. Association of College & Research Libraries.
- Galbraith, Q., Garrison, M., & Hales, W. (2016). Perceptions of faculty status among academic librarians. *College & Research Libraries*, 77(5), 582–594. <https://doi.org/10.5860/crl.77.5.582>
- Gillum, S. (2010). The true benefit of faculty status for academic reference librarians. *The Reference Librarian*, 51(4), 321–328. <http://doi.org/10.1080/02763877.2010.501419>
- Goulding, A., & Usherwood, B. (2003). Research-led teaching in librarianship and information studies. *Journal of Librarianship & Information Science*, 35(3), 137–39. <https://doi.org/10.1177/0961000603353001>
- Groves, R. M., Fowler Jr, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2011). *Survey Methodology*. (2nd ed.). Wiley.
- Hider, P., & Pymm, B. (2008). Empirical research methods reported in high-profile LIS journal literature. *Library & Information Science Research*, 30(2), 108–114. <https://doi.org/10.1016/j.lisr.2007.11.007>
- Hill, J. S. (2005). Constant vigilance, Babelfish, and foot surgery: Perspectives on faculty status and tenure for academic librarians. *Portal: Libraries and the Academy*, 5(1), 7–22. <https://doi.org/10.1353/pla.2005.0004>
- Houser, R. (2006). Building a library GIS service from the ground up. *Library Trends*, 55(2), 315–326. <https://doi.org/10.1353/lib.2006.0058>
- Kennedy, M. R., & Brancolini, K. R. (2013). Academic librarian research: A survey of attitudes, involvement, and perceived capabilities. *College & Research Libraries*, 73(5), 431–448. <https://doi.org/10.5860/crl-276>

- Kennedy, M. R., & Brancolini, K. R. (2018). Academic librarian research: An update to a survey of attitudes, involvement, and perceived capabilities. *College & Research Libraries*, 79(6), 822–851. <https://doi.org/10.5860/crl.79.6.822>
- Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*. Sage Publications. <http://dx.doi.org/10.4135/9781412963947>
- Liebscher, P. (1998). Quantity with quality? Teaching quantitative and qualitative methods in an LIS master's program. *Library Trends*, 46(4), 668–91.
- Lindner, A. M. (2012). Teaching quantitative literacy through a regression analysis of exam performance. *Teaching Sociology*, 40(1), 50–59. <https://doi.org/10.1177/0092055X11430401>
- Luo, L. (2011). Fusing research into practice: The role of research methods education. *Library & Information Science Research*, 33(3), 191–201. <https://doi.org/10.1016/j.lisr.2010.12.001>
- Luo, L. (2012). Value of the research methods course: Voices from LIS practitioners. *School of Information Student Research Journal*, 2(1), 1–6. <http://scholarworks.sjsu.edu/slissrj/vol2/iss1/2>
- Luo, L. (2017). Diversified research methods education in LIS: Thinking outside the box. *Journal of Education for Library & Information Science*, 58(2), 49–63. <https://doi.org/10.3138/jelis.58.2.49>
- Mandel, L. H. (2017). Experiencing research firsthand: The “unClassroom” experiential learning approach to teaching research methods in an LIS master's program. *Journal of Education for Library and Information Science*, 58(4), 187–201. <https://doi.org/10.12783/issn.2328-2967/58/4/1>
- Mitchell, W. B., & Reichel, M. (1999). Publish or perish: A dilemma for academic librarians? *College & Research Libraries*, 60(3), 232–243. <https://doi.org/10.5860/crl.60.3.232>
- Montanelli, D. S., & Stenstrom, P. F. (1986). The benefits of research for academic librarians and the institutions they serve. *College & Research Libraries*, 47(5), 482–485. <https://doi.org/10.5860/crl.47.05.482>
- Olson, K., Smyth, J. D., & Cochran, B. (2018). Item location, the interviewer–respondent interaction, and responses to battery questions in telephone surveys. *Sociological Methodology*, 48(1), 225–268. <https://doi.org/10.1177/0081175018778299>
- Olson, K., Wagner, J., & Anderson, R. (2020). Survey costs: Where are we and what is the way forward? *Journal of Survey Statistics and Methodology*. <https://doi.org/10.1093/jssam/smaa014>
- Park, J. M. (2021). Statistics training in library science: Comparing approaches in library and information science to sociology graduate programs. *Journal of Education for Library & Information Science*. <https://doi.org/10.3138/jelis-2020-0080>
- Perkins, G. H., & Helbig, T. L. (2008). The value of LIS schools' research topics to library authors' professional work. *Journal of Academic Librarianship*, 34(6), 513–519. <https://doi.org/10.1016/j.acalib.2008.09.002>
- Perkins, G. H., Gay., & Slowik, A. J. W. (2013). The value of research in academic libraries. *College & Research Libraries*, 74(2), 143–157. <https://doi.org/10.5860/crl-308>

- Plach, S. K., & Paulson-Conger, M. (2007). Demystifying the research process with participatory learning: A taste of research. *Journal for Nurses in Staff Development*, 23(1), 45–48.
<http://doi.org/10.1097/00124645-200701000-00009>
- Powell, R. R., Baker, L. M., & Mika, J. J. (2002). Library and information science practitioners and research. *Library & Information Science Research*, 24(1), 49–72.
[https://doi.org/10.1016/S0740-8188\(01\)00104-9](https://doi.org/10.1016/S0740-8188(01)00104-9)
- Raman, M., Mclaughlin, K., Violato, C., Rostom, A., Allard, J., & Coderre, S. (2010). Teaching in small portions dispersed over time enhances long-term knowledge retention. *Medical Teacher*, 32(3), 250–255.
<https://doi.org/10.3109/01421590903197019>
- Sassen, C., & Wahl, D. (2014). Fostering research and publication in academic libraries. *College & Research Libraries*, 75(4), 458–491.
<https://doi.org/10.5860/crl.75.4.458>
- Schmidt, L., Boczar, J., Lewis, B., & Taylor, T. (2021). Increasing scholarly productivity: Developing an in-house academic librarian support network. *Journal of Academic Librarianship* 47(5), 1–5.
<https://doi.org/10.1016/j.acalib.2021.102385>
- Semeler, A. R., Pinto, A. L., & Rozados, H. B. F. (2019). Data science in data librarianship: Core competencies of a data librarian. *Journal of Librarianship & Information Science*, 51(3), 771–780.
<https://doi.org/10.1177/0961000617742465>
- Silva, E., Galbraith, Q., & Groesbeck, M. (2017). Academic librarians' changing perceptions of faculty status and tenure. *College & Research Libraries*, 78(4), 428–441.
<https://doi.org/10.5860/crl.78.4.428>
- Smyth, J. D., & Olson, K. (2019). The effects of mismatches between survey question stems and response options on data quality and responses. *Journal of Survey Statistics and Methodology*, 7(1), 34–65.
<https://doi.org/10.1093/jssam/smy005>
- Smyth, J., Olson, K., & Kasabian, A. S. (2014). The effect of answering in a preferred versus a non-preferred survey mode on measurement. *Survey Research Methods*, 8(3), 137–152.
<https://doi.org/10.18148/srm/2014.v8i3.5750>
- Thomas, C. V. L., & Urban, R. J. (2018). What do data librarians think of the MLIS? Professionals' perceptions of knowledge transfer, trends, and challenges. *College & Research Libraries*, 79(3), 401–23.
<https://doi.org/10.5860/crl.79.3.401>
- Timbrook, J., Olson, K., & Smyth, J. D. (2018). Why do cell phone interviews last longer? A behavior coding perspective. *Public Opinion Quarterly*, 82(3), 553–582.
<https://doi.org/10.1093/poq/nfy022>
- Van Epps, A. S. (2012). Librarians and statistics: Thoughts on a tentative relationship. *Practical Academic Librarianship: The International Journal of the SLA Academic Division*, 2(1), i–xiii.
<https://journals.tdl.org/pal/index.php/pal/article/view/5890>
- Wagner, C., Garner, M., & Kawulich, B. (2011). The state of the art of teaching research methods in the social sciences: Towards a pedagogical culture. *Studies in Higher Education*, 36(1), 75–88.
<https://doi.org/10.1080/03075070903452594>

Wagner, J., & Olson, K. (2018). An analysis of interviewer travel and field outcomes in two field surveys. *Journal of Official Statistics*, 34(1), 211–237.
<https://doi.org/10.1515/jos-2018-0010>

Weiss, Andrew. (2018). *Big data shocks: An introduction to big data for librarians and information professionals*. Rowman & Littlefield.

Wyss, P. A. (2010). Library school faculty member perceptions regarding faculty status for academic librarians. *College & Research Libraries*, 71(4), 375–388.
<https://doi.org/10.5860/crl-53r1>

Yoon, A., & Schultz, T. (2017). Research data management services in academic libraries in the US: a content analysis of libraries' websites. *College & Research Libraries*, 78(7), 920–33.
<https://doi.org/10.5860/crl.78.7.920>