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Survey Research:

Useful, Valuable Findings Require Hard Work

Kristin Hoffmann and Selinda Berg

INTRODUCTION

Gathering data using a survey¹ is often perceived by practitioner-researchers as one of the easiest ways to carry out research; however, a well-constructed survey can be difficult to develop.² Librarian practitioner-researchers often use surveys as an economical and easy way to capture information from a wide swath of people. Once the information is gathered, however, the application and usability of the data is often limited and can fall short of the standards of scholarship. Librarian practitioner-researchers may also default to a survey when it is not the most effective tool for data gathering.³ But when surveys are designed well and used appropriately, they can systematize evidence in ways that enable research to be used by others.

Our research experience with surveys has highlighted how important it is to consider whether a survey is the most appropriate tool for a research project and to devote time and effort to developing a well-constructed survey instrument. We have also seen how inferential statistical analysis can bring depth and rigor to survey findings. When surveys are designed well and used appropriately, they can systematize evidence in ways that enable research to be used by others.

This chapter demonstrates the utility and limitations of surveys using as an example a research project that we conducted from 2013 to 2017 to investigate what factors contribute to academic librarians' research productivity.

OUR EXAMPLE: FACTORS THAT ENCOURAGE RESEARCH PRODUCTIVITY

This project stemmed from our interest in supporting practitioner-researchers in academic libraries. Over the years, we have taken on several initiatives to do this; for example, we have provided leadership at our own institution with the Librarian and Archivist Research Support Network at the University of Western Ontario,⁴ organized research seminars for librarians, presented research workshops nationally and internationally, and provided leadership and stewardship for the Canadian Association of Research Libraries' Librarians Research Institute (LRI).⁵ Through this work, we noticed in conversations and in the published literature that librarians often said they lacked the skills and time they needed to do research. At the same time, however, we saw that many librarians were successful researchers, carrying out interesting projects and publishing their findings. We wanted to figure out what made those librarians successful. We wanted to shift the conversation of practitioner-researchers away from barriers and challenges toward the factors that promote, support, and empower academic librarians to be productive researchers.

With this goal in mind, we set out to develop a research study, together with another colleague, Denise Koufogiannakis from the University of Alberta, who had also been a peer mentor with us at the LRI. To date, the findings of this research have been presented in two articles;⁶ in this chapter, we will focus on the process that led us to those findings.

At the start of our process, we had anticipated a completely different research project than the study we eventually conducted. Our initial idea was to conduct in-depth interviews with librarians to understand their research successes; however, we soon realized that without an understanding of what promotes research success, we did not know what questions to ask. Each of us had our own ideas about what might influence a practitioner-researcher's success, but we needed to set aside our opinions and focus on looking for evidence. In doing so, it became clear very quickly that there was no research that comprehensively and empirically examined the various elements that could affect librarians' research.⁷

Over time, a new research question emerged: What factors have a positive effect on the research success of academic librarians? This question was best answered with a quantitative instrument that could empirically measure the effect of different factors on research productivity through statistical analysis. More specifically, for example, we did not simply want to know how many librarians had received research funding, but rather we wanted to know the relationship between the two factors and answer the question: Are librarians who received funding more likely to produce more research?

In this chapter, we discuss our research design process for this survey-based research. First, we further describe the process that led to our decision to conduct a survey and discuss how that choice allowed us to collect the data required to answer our research question. We also acknowledge some of the limitations we faced because of our choice to use a survey. We follow this with a section about creating the survey tool. This was a very time-consuming process that included an extensive literature review, identification of

survey instruments available, and, finally, creating, refining, and testing our final tool. In the third section, we explore how we used inferential statistics in order to make generalizations about what factors contribute to the research productivity of Canadian academic librarians.

IDENTIFYING THAT A SURVEY IS THE APPROPRIATE TOOL

As mentioned above, we did not initially plan to conduct a survey. We had planned to do an in-depth qualitative analysis of a specific phenomenon related to academic librarians' research success. In our initial stages, we discussed the questions we wanted to investigate and quickly realized that many of those questions were grounded in our experiences, assumptions, and biases. There was a lack of research to support the assumptions underlying our questions. Without understanding what factors contributed to the research success of librarians, we could not begin to understand why or how they were important. We were also generating a plethora of questions that we wanted answered, and before going into interviews, we needed to be certain that we had focused our research problem and questions very carefully. Our conversations led us to recognize that before we tried to delve into the lived experiences of librarians' research success, we first needed to gain an informed understanding of the factors contributing to research success. We chose, therefore, to build a quantitative survey to understand the practices, attitudes, and attributes of librarians and how these factors affect research productivity. Conducting quantitative research on a larger group allows researchers to gain a baseline generalizable understanding of the context first, which can then lead to a qualitative investigation that can begin to answer the why and how questions.

The online survey is commonly used to collect self-reported attributes, attitudes, past behaviors, and opinions of respondents. It is often selected because of the conveniences afforded by the survey: it is relatively inexpensive, can ensure confidentiality (though not necessarily anonymity), and can overcome geographic challenges.⁸ While these were considerations for our study, a driver for us was the ability to consistently ask the same questions over a large group of people. The survey allowed us to collect the same information from all individuals, with the goal of making generalizations and inferences. We collected information about the actions and attributes of academic librarians as well as research outputs of each respondent. From this data, we sought to determine whether relationships existed between the respondents' research productivity and certain of their attributes, behaviors, and opinions. In particular, we wanted to understand what actions and attributes led to higher research productivity.

By choosing the survey method, we also recognized and accepted the limitations of the survey method. Standardized and pre-selected responses mean that surveys cannot capture the complexities of each individual's situation. In our survey, as in most, we asked respondents to choose the *best* answer, recognizing that pre-selected responses cannot capture all of the permutations and subtleties within the questions asked. We recognized

that opinions about the research environment in academic libraries are complex and would be difficult to capture in a survey, so we focused on questions that asked respondents to report their actions and behaviors, rather than to share their opinions. We discuss this further in the next section.

The self-reporting nature is an important consideration when deciding to use a survey method. You are asking respondents to self-report, requiring them to be honest and forthcoming as well as to take the time and effort to answer your questions. For our survey, we believed that it was imperative that respondents self-report. However, for other studies, self-reporting may be difficult or inappropriate. If respondents are unlikely to know the answer or to be able to provide honest answers, then the survey is not the right tool. Additionally, a survey should not be used to gather information that can be obtained in easier and more reliable ways outside of the survey format. For example, in our survey, because we collected the name of each respondent's home institution, we did not ask respondents about institutional characteristics (e.g., number of students, unilingual/bilingual), but rather we sought standardized information about the institutions from other sources. Gathering from standardized sources also ensures consistency and removes the chance of errors (e.g., individuals may not know the number of full-time equivalent students at their home institutions). Self-reporting is also predicated on self-selection. In our research, we had to acknowledge that the results may reflect a self-selection bias. For our study, it is likely that our respondents were those who are most interested and engaged in research.

Your data collection method needs to fit with the question you want to answer. While we still want to further tease out some of the complexities of academic librarians' research environments, the survey was invaluable for us to go into this next stage with an informed and evidence-based understanding of the factors contributing to research productivity.

CONSTRUCTING A SURVEY INSTRUMENT

As referred to earlier, it was relatively easy for us to generate questions we wanted to ask in our survey. However, developing a survey instrument involves much more than thinking of questions to ask; you also need to carefully review the relevance of each survey question for your overall research purpose, carefully consider the wording and type of each question, and pre-test your questions. This work helps to ensure that your survey is cohesive and focused, that your respondents will be able to easily understand what you are asking of them, and that you are able to use the data in the ways you want.

As you create the survey, you should concurrently prepare for the analysis. Putting this effort into constructing a survey instrument takes a significant amount of time; however, this usually means that your analysis phase can be faster and can go more smoothly. In our study, we spent more than a year developing the survey and about six months analyzing the data. We are not suggesting that all surveys need this much time to develop or analyze—there were several factors that resulted in our project taking longer than we had

intended. However, we do suggest that you plan to spend as much or more time developing your survey as analyzing your data.

Existing Tools

Because the survey is so popular for gathering research data, there are many existing survey tools available for consultation and consideration. Some existing tools are formally standardized and validated instruments, such as the Measure of Job Satisfaction scale.⁹ Others are locally developed instruments, which are sometimes included in the associated publication as an appendix. Using an existing tool, in whole or in part, reduces the work involved in developing your survey. It also strengthens the rigor of your research because your questions will be consistent with ones that have already been asked, which will tie your survey to the wider body of literature.

As we surveyed the literature to identify factors that were related to research productivity, we also noted which papers included research instruments. Although there were many available instruments, we were not able to find an existing tool that we could use in its entirety because research within librarianship is unique and none of the existing tools addressed all of the elements that we needed in order for our instrument to be appropriate for librarians. We were, however, able to adapt individual questions and types of questions from existing instruments.

Practitioner-researchers may find that their research includes unique aspects that are not addressed in existing survey instruments. However, there are many situations where tools from other disciplines are appropriate and would strengthen the research by practitioner-researchers. Many researchers in disciplines within the social sciences or health sciences use surveys in their research, and you may be able to adopt or adapt those instruments.

Terminology

As mentioned in the first section, a survey allows researchers to ask the same questions consistently of a large number of respondents. With large groups, it is quite likely that individuals within the group will come from many different environments and they may use different terms to express the same concept. Researchers who are developing surveys need to ensure that the terms in their survey questions will be understood by all potential respondents. You cannot go back to your participants and ask them to clarify what they meant, nor can you provide more explanation after you have distributed your survey, so it is important to spend time in the development phase to capture all of the possible terms and provide clarifying explanations if needed. If you are a solo researcher or if all co-researchers are from the same or very similar institutions, it can be especially difficult to think of terminology that might be used by participants at other institutions. (For more on this, see the section below about pre-testing.)

One example where we needed to consider terminology for our study was related to employment status. Across the seventy-five institutions where our potential participants were employed, the status of librarians varies considerably. Some Canadian academic

librarians have the same status as staff, without tenure or a tenure-like status; some have the same status as faculty, including tenure; and most have academic status, which is somewhere in between. Among universities where librarians have academic status, many different terms are used; the most common are tenure, continuing status, and permanence. Rather than try to capture all of the possible options, we asked respondents, “Do you have tenure (or equivalent) or are you in a tenure-track (or equivalent) position?” We were confident that our respondents would be able to identify whether their employment status was similar to tenure, even if the term “tenure” was not used at their institution.

Scope

Ensuring that every survey question is related to the scope of your research study is important both for maintaining your study’s intended focus and also for avoiding survey fatigue among your participants. It can be tempting to ask as many questions as possible, but your respondents may not finish your survey if they feel it is too long or if they cannot see how all the questions are relevant to your survey’s stated purpose.

For our study, we each had theories about how particular factors might be related to research productivity and we started drafting questions that probed those factors in considerable depth. As we reviewed our lists of questions, we often reminded each other that this was intended to be an initial survey of factors and that in-depth probing of individual factors needed to be a later phase of the project. For example, one of Selinda’s theories was that library school education was a key factor and she wanted to ask more questions about participants’ experiences in library school. But we kept coming back to the point that until we knew that a participant’s library school was statistically correlated to research productivity, asking those additional questions was not a good use of our or our participants’ time.

We also decided that our survey would focus on what individual respondents had done or experienced with respect to research, not on what was available to them. Because we wanted to examine what actions and attributes helped researchers to be successful, we wanted there to be an element of personal experience and personal control in each of the factors we examined. For example, we decided to ask, “Have you taken a sabbatical or other research leave?” rather than, “Do you have the option to take a sabbatical or other research leave?” We further decided to frame these as yes-or-no statements, usually starting with “I” (e.g., “I have taken a sabbatical or other research leave”) so that respondents could easily read a statement and see whether or not it applied to them. We returned to this focus again and again as we were developing questions to ensure that each question was about the individual and their actions or attributes.

The Essential Questions

Your respondents’ time is valuable. In addition to ensuring that each question in your survey is relevant to your project’s scope, questions in your survey should not be repetitive or redundant. Each question should be one that you have to ask in your survey in order

to get the data. As discussed above, some data are available through other sources and you do not need to gather them in your survey.

Demographic and open-ended questions are two categories of questions that researchers should carefully consider before including them in a survey. Demographic questions commonly include age, gender, or years of experience. In our survey, we asked about age, gender, marital status, and whether respondents cared for dependents. These were contentious questions for some of our participants, who gave comments such as, “Marital status has nothing to do with research in LIS!!!” These demographic factors have been shown to affect faculty research productivity, and the only way to find out if those factors are also important for librarians is to collect the data and do the analysis. One theory we have about why some participants reacted negatively to these questions is that it seems that practitioner-researchers frequently conduct surveys where they ask for demographic data and then do not use that data in their analysis. If you do not plan to analyze your survey findings by age, gender, or any other demographic element, do not include those questions.

Open-ended questions provide an opportunity for your respondents to add their comments on a topic. These questions are sometimes referred to as a qualitative component of a survey; however, responses to open-ended survey questions rarely provide the depth of experience that is the marker of qualitative research.¹⁰ Open-ended questions are helpful when you do not have a sense of the possible responses you might get or when you want to give respondents an opportunity to elaborate on earlier responses. Be careful not to include too many open-ended questions, since they can easily result in survey fatigue.

We chose to include two open-ended questions in our survey. We asked, “Can you think of other factors that were not fully captured in the previous questions that have affected your research productivity?” primarily because we expected that many participants would feel that our yes-or-no statements did not fully capture the complexity of their experiences, and this open-ended question would give them an opportunity to expand on their individual situations. Indeed, many participants answered this question in just that way. When a potential new factor was identified in these comments (e.g., holding an administrative role), we could not analyze its effect on research productivity because we did not have data from all respondents, but we can now consider how that might become part of future studies. Similarly, the concerns and successes that participants described in their comments provided a fuller picture of some of the factors that we analyzed, which can help shape our future work.

We also asked, “Please list any ways that you have disseminated your research that were not included in the previous question.” We know that there are conversations among librarians about alternate or emerging forms of dissemination, but we did not have a clear sense of the extent to which librarians are disseminating their work in those forms. This question would both allow those participants who are disseminating in alternate or emerging forms to see a place for themselves in our survey and give us a better sense of how much those forms of dissemination are taking hold in librarianship. Our open-ended questions supplemented our closed-ended questions; they did not give us new data to use in our analysis.

Pre-testing

Pre-testing or pilot testing involves doing a simulation of your data collection tool and/or analysis before you gather data from participants. Pre-testing your data collection tool can help identify any problems related to the issues discussed in this section: are your questions all relevant, will respondents understand the terminology you use, and how will they feel about the length of the survey? You can pre-test multiple times as you develop your survey, and you can pre-test sections of the survey at different times.

We did two rounds of pre-testing with our survey; each time, we sent the survey to five colleagues who were academic librarians working outside of Canadian academic libraries (and therefore not part of our participant pool). We asked our pre-testers:

- Did you clearly understand each of the questions?
- Were the questions phrased clearly?
- Was the survey easy to complete?
- Did anything annoy you about the survey?
- Did the survey leave you perplexed in any way or wanting to comment on any aspect of what you were asked?
- What were your general impressions about the survey?

While our pre-testers' feedback mostly confirmed that our survey questions were clear, we did modify and add some questions based on their suggestions. Our pre-testers' comments also informed the way we composed the preamble that accompanied our survey.

Pre-testing your analysis can also be helpful for confirming that you can do the analysis you want and that your questions will give you data that you can work with. You can pre-test your analysis with the responses you get from pre-testing your data collection, although if your analysis involves statistical tests, you may need to generate additional data to have enough for the testing. As an alternative to pre-testing your analysis, you can consider taking your survey to a statistical consultant in order to get an expert's perspective about whether the data you will get from your survey will allow you to do the analysis you want. This is the approach we took, which we discuss more in the next section.

ANALYZING WITH INFERENCE RATHER THAN DESCRIPTIVE STATISTICS

Using inferential statistics is one way in which practitioner-researchers can expand the application of survey data and increase the rigor and, therefore, the quality of our body of scholarly literature within librarianship. This chapter does not allow for a full course on inferential statistical techniques; there are many texts and online works to assist you with independent learning about statistical methods, including those in the bibliography. We also do not present an in-depth description of the analysis that we carried out; rather, our intention is to underline how inferential statistics strengthened our research.

Statistics are broadly categorized as descriptive and inferential. Descriptive statistics provide a description of the respondents and their responses through direct observations. Descriptive statistics in surveys describe how many respondents chose answer A, answer B, and answer C—for example, the percentage of respondents who have received research funding or the mean number of years that respondents have worked in an academic library. Descriptive statistics (e.g., means and medians) are calculated from a dataset to *describe* an attribute within that data or from those respondents. Descriptive statistics are common within the corpus of literature by practitioner-researchers.¹¹

In contrast, an inferential statistic (e.g., t-test, chi-square, ANOVA) is calculated from the data toward the goal of making *inferences*, that is, determining whether a hypothesized relationship exists between two or more attributes or concepts. Inferential statistical analysis goes beyond describing observable data and allows a researcher to indicate if a hypothesized relationship exists by assessing whether results are statistically significant. If significant, the relationship may be generalizable beyond that of the current research, meaning the same relationship would be seen in similar populations, not only in the survey respondents. Table 1 gives a brief summary of differences between descriptive and inferential statistics.

The goal of our research was to understand what factors, supports, and attributes contributed to the research productivity of academic librarians. We wanted to be able to make inferences about which particular attributes, actions, or behaviors (our dependent variables) were likely to have an effect on librarians' research productivity (our independent variable). We developed hypotheses about whether there was a relationship between particular factors and research productivity so that as we built the survey, we had a sense of the relationships we wanted to test. We then designed our survey in order to facilitate these tests.

Inferential statistical analysis increased the applicability and transferability of our research. Descriptive statistics can only provide a descriptive snapshot of the respondents of a survey. However, by finding the relationships between factors, you can consider how your findings extend beyond the respondents of your survey to the wider population. The descriptive statistic that 53.2 percent of respondents received research training after their MLIS tells us little about the research productivity of academic librarians. In contrast, inferential statistics (specifically, the Mann-Whitney Test) showed that those who received additional training after their MLIS had higher research productivity than those who did not. While our study cannot discern the complexities of why and how this occurs, we can conclude that research training should be encouraged, as those with research training are more likely to have higher research productivity.

Practitioner-researchers may shy away from inferential statistical analysis as it is more complex, requires some working knowledge of statistical software, and needs more planning and consideration in the research design process. For our study, we met with statistical consultants at the University of Western Ontario and consulted heavily with data experts at the University of Windsor's Academic Data Centre. These experts helped us design a survey that allowed us to run the tests we desired, advised us on cleaning up our data and applying new inferential analysis techniques, and reassured us that we were

interpreting our results appropriately. While inferential statistics can be intimidating, there is no better way to learn something than by doing it.

Research does not *require* numbers, statistics, or inferential statistical analysis; however, when you do engage with quantitative research, there is value in ensuring that your data and analysis are as robust as possible and can contribute to your findings to their fullest capacity. While it is challenging to learn inferential statistical analysis, librarians have the capacity to learn these methods. By using inferential statistical analysis, we will increase our potential to ask new questions and create research that is more rigorous and has greater applicability.

REFLECTIONS

Survey research can be a particularly useful and appropriate method to choose when you want to gather data to gain a baseline generalizable understanding of a particular situation or context. Creating a survey instrument can be complicated and requires attention and hard work, so first look for existing tools that you can use or adapt. Review each possible question for its relevance to the study and for clear terminology. Pre-test the survey instrument and consult with statistical experts to ensure that your survey will give you the data you want. Performing inferential statistical analysis can lead to high-quality and highly transferable survey results, and this may require further learning or consultation with experts. Survey research can be an effective and efficient way to collect research data, but it also requires hard work in order to produce useful and valuable findings.

Our research study to investigate factors that encourage research productivity for academic librarians reinforced several key aspects of survey research for us:

- Having a clear purpose and focus for our research study helped justify the choice of method. We were confident that a quantitative survey was the right tool because our goal was to gather data from a large number of librarians to empirically measure the effect of various factors on participants' research productivity.
- Building a strong survey took time and effort and resulted in a smoother process of data analysis. Because we carefully aligned our survey questions with our study's focus, we are able to justify including questions that some respondents perceived as controversial.
- Consulting with a statistical expert helped us to increase our knowledge of and comfort with inferential statistics, which in turn resulted in more generalizable findings from our study.

Beyond survey research specifically, our experience conducting this study reminded us that one of the best ways to learn a research method is to do it.

NOTES

1. A survey can also be done by collecting data through interviews, but for this chapter we are limiting our discussion to questionnaires. We use "survey" to refer to the overall method as well as the data collection tool.
2. Peter Hernon and Candy Schwartz, "Research May Be Harder to Conduct than Some Realize," *Library & Information Science Research* 38, no. 2 (2016): 91, <https://doi.org/10.1016/j.lisr.2016.05.003>.

3. Philip Hider and Bob Pymm, "Empirical Research Methods Reported in High-Profile LIS Journal Literature," *Library and Information Science Research* 30, no. 2 (2008): 108–14, <https://doi.org/10.1016/j.lisr.2007.11.007>; Denise Koufogiannakis, Linda Slater, and Ellen Crumley, "A Content Analysis of Librarianship Research," *Journal of Information Science* 30, no. 3 (2004): 227–39, <https://doi.org/10.1177/0165551504044668>; Mirna E. Turcios, Naresh Kumar Agarwal, and Linda Watkins, "How Much of Library and Information Science Literature Qualifies as Research?," *The Journal of Academic Librarianship* 40, no. 5 (2014): 473–79, <https://doi.org/10.1016/j.acalib.2014.06.003>; Amy VanScoy and Cady Fontana, "How Reference and Information Service Is Studied: Research Approaches and Methods," *Library & Information Science Research* 38, no. 2 (2016): 95, <https://doi.org/10.1016/j.lisr.2016.04.002>.
4. Ken N. Meadows, Selinda Adelle Berg, Kristin Hoffmann, Nazi Torabi, and Margaret Martin Gardiner, "A Needs-Driven and Responsive Approach to Supporting the Research Endeavours of Academic Librarians," *Partnership: The Canadian Journal of Library and Information Practice and Research* 8, no. 2 (2013), <https://doi.org/10.21083/partnership.v8i2.2776>.
5. "Librarians' Research Institute," Canadian Association of Research Libraries, accessed October 1, 2018, <http://www.carl-abrc.ca/strengthening-capacity/workshops-and-training/librarians-research-institute/>.
6. Kristin Hoffmann, Selinda Adelle Berg, and Denise Koufogiannakis, "Examining Success: Identifying Factors That Contribute to Research Productivity across Librarianship and Other Disciplines," *Library and Information Research* 38, no. 119 (2014): 13–28, <https://doi.org/10.29173/lirg639>; Kristin Hoffmann, Selinda Adelle Berg, and Denise Koufogiannakis, "Understanding Factors That Encourage Research Productivity for Academic Librarians," *Evidence Based Library and Information Practice* 12, no. 4 (2017): 102–28, <https://doi.org/10.18438/B8G66F>.
7. In our research project we use the term "factors" to describe the possible features and elements that could impact research productivity, including the researcher's attitudes or behaviors, supports available to them, characteristics of their education or the institution where they work etc.
8. Alison Jane Pickard, *Research Methods in Information*, 2nd ed (Chicago: Neal Schuman, 2013), 207.
9. Michael Traynor and Barbara Wade, "The Development of a Measure of Job Satisfaction for Use in Monitoring the Morale of Community Nurses in Four Trusts," *Journal of Advanced Nursing* 18, no. 1 (1993): 127–36, <https://doi.org/10.1046/j.1365-2648.1993.18010127.x>.
10. Pickard, *Research Methods*, 219.
11. Juris Dilevko, "Inferential Statistics and Librarianship," *Library & Information Science Research* 29, no. 2 (2007): 216, <https://doi.org/10.1016/j.lisr.2007.04.003>.

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