

Assessment of the Institute for Research Design in Librarianship (IRDL): Impact on the Research Productivity and Careers of Academic Librarians

Frans Albarillo, Marie R. Kennedy and Kristine R. Brancolini

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Article abstract

Objective – This article reports the survey findings from a mixed-methods assessment of the six-year Institute for Research Design in Librarianship (IRDL). The Institute for Museum and Library Services (IMLS) provided funding for IRDL from 2014-2019; during this time, 124 academic and research librarians participated in a year-long continuing education program for novice researchers. This article assesses the effectiveness of IRDL in meeting short-term and long-term goals related to research productivity, job performance, and identity as a researcher. Beyond the assessment of IRDL itself, the study addresses the implications of IRDL for creating effective research continuing education programs and institutional support for librarian research.

Methods – In the first part of a two-phase study, we surveyed all 124 librarians who completed the in-person summer research workshop and year-long online follow-up program. The lead researcher invited those who completed the survey to participate in the study's second phase, a focus group or an in-depth interview.

Results – Eighty-nine participants responded to the survey, for a 72% response rate. The results show that IRDL was successful in helping a majority of participants complete their IRDL project and conduct new research. Participants reported work-related benefits of participating in the program, including tenure, rank promotion, merit-based salary increases, and new employment opportunities. IRDL contributed to developing personal learning networks, research collaborations, and a sense of identity as a researcher. IRDL increased the research confidence of the participants by providing them with research methods instruction, coupled with an opportunity to practice what they have learned during a year-long support program.

Conclusion – This assessment study confirms that IRDL is an effective program for novice librarian-researchers who want to improve their research skills, develop new research relationships among their peers, and advance in their careers. It also provides insight into the conditions for a successful continuing education and research support program. Many librarians experience anxiety about conducting and disseminating their research; IRDL demonstrates the importance of placing novice researchers in a supportive environment, where research is viewed as a positive experience that is directly related to professional success. These experiences lead to increased confidence and identity as a researcher, which contributes to increased research productivity.





Research Article

Assessment of the Institute for Research Design in Librarianship (IRDL): Impact on the Research Productivity and Careers of Academic Librarians

Frans Albarillo

Reference and Instruction Librarian

Brooklyn College, City University of New York

Brooklyn, New York, United States of America

Email: falbarillo@brooklyn.cuny.edu

Marie R. Kennedy

Serials & Electronic Resources Librarian

Loyola Marymount University

Los Angeles, California, United States of America

Email: marie.kennedy@lmu.edu

Kristine R. Brancolini

Dean of the Library

Loyola Marymount University

Los Angeles, California, United States of America

Email: kristine.brancolini@lmu.edu

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Abstract

Objective – This article reports the findings of a survey that is the initial phase of a mixed methods study to assess the first six years of a continuing education program designed for academic and research librarians, the Institute for Research Design in Librarianship (IRDL). The study is designed to assess the effectiveness of IRDL in meeting short-term and long-term

programmatic objectives related to the research productivity, job performance, and professional identities of the participants in the program.

Methods – In this first part of a two-phase study, the authors surveyed all 124 librarians who completed the in-person Summer Research Workshop and year-long online follow-up program. The authors then analyzed the participant CVs and created research productivity scores as part of the evaluation of research productivity. The results of the second phase of the study, using focus groups and in-depth interviews, will be reported in a subsequent article.

Results – Eighty-nine participants responded to the survey, for a 72% response rate. As it relates to research productivity, there is a statistically significant correlation between the participants who began their IRDL projects and then continued to do research, with higher research productivity. Participants chose to publish more in book chapters and share research findings in fewer conference presentations after their participation in IRDL. Regarding the impact IRDL may have had on any job-related factors, over 70% of respondents believed that IRDL contributed to them extending their personal learning networks. A significant proportion of participants also noted a change in their self-identification as a librarian-researcher, before and after participating in the program. This article is unique as one of the first to operationalize the variables that look at librarians as practitioner-researchers and their research persistence, while building on the work of the past literature on research productivity.

Conclusion – Two notable findings are that IRDL Scholars persist in their research by continuing to pursue research projects beyond their IRDL project, and that the program had an impact on their self-identification as librarian-researchers. These findings are unique in the evolving literature on librarians and research productivity. In examining a variety of factors, we believe that IRDL is meeting its programmatic objectives as they relate to research productivity, job performance, and professional identities of the academic and research librarians participating in the program.

Introduction

Most academic librarians are practitioners and researchers, but they usually enter the profession unprepared for their research role. As a result, many lack knowledge and confidence in their ability to conduct research. The Institute for Research Design in Librarianship (IRDL) was created to provide focused research training, coupled with a support network, to guide novice librarian-researchers through conducting a research project of their own design. The program was supported by two grants from the Institute of Museum and Library Services from 2013 to 2019. Until IRDL, there was no formal U.S.-based professional development program designed to support novice librarian-researchers in becoming confident and successful researchers.

Using an explanatory sequential mixed methods approach, we investigate two research questions in this study: What are the short-term (RQ1) and long-term impacts (RQ2) of the IRDL professional development program on the research productivity, job performance, and professional identities of IRDL participants? Our two-phase mixed methods study includes a survey, focus groups, and in-depth interviews to assess the effectiveness of IRDL over those six years in meeting the short-term and long-term objectives of the program. The short-term objectives address teaching social science research

methods, increasing research confidence, and helping each IRDL Scholar (hereafter “Scholar”) complete their research project. The long-term objectives include continuing to pursue research opportunities after the IRDL program, job performance gains attributed to IRDL, like promotions and raises, and associating Scholars’ professional identity as a researcher. This article reports only on the survey results. Due to the size of the dataset, the results from the focus groups and in-depth interviews will be reported in a forthcoming article.

We selected a mixed methods design to derive “new insights that go beyond separate quantitative and qualitative results ... to gain new knowledge that is more than just the sum of the two parts” (Creswell & Plano Clark, 2018, p. 13). The purpose was to explore both the quantitative measures of research success and productivity and the qualitative impact of the program on the research development of IRDL Scholars. The complete picture could not be gleaned from a survey alone; the quantitative data gathered from the survey and responses to open-ended questions and comments informed the qualitative phase of the project. From the annual assessments and follow-up with Scholars during their year-long IRDL experience, the co-directors realized that each Scholar’s journey is different. With this study, the research team wanted to delve more deeply into these experiences and the research success factors associated with IRDL.

IRDL brought together committed cohorts of about 20 librarians each year who met in-person at a summer research training workshop and then continued to communicate throughout the next year as they worked on their research projects. IRDL connected librarians to a growing community of like-minded researchers and collaborators through the development of personal learning networks (Kennedy et al., 2017). During their IRDL year, participants mentored and encouraged one another; these relationships often persisted long after the formal experience of IRDL. In the second phase of IRDL from 2016-2019, we added a formal mentoring component to the program, with the mentors tasked to further support and provide advice and assistance when the inevitable obstacles arise in completing a research project.

Our results suggest that research training for motivated participants affords many benefits to librarians. Brancolini & Kennedy’s (2017) past research on self-efficacy shows that the program increases researcher confidence. In this paper, our survey results show that participants perceive that IRDL also helped them achieve positive gains in research productivity, earn tenure and promotion, expand their learning communities and research collaborators, and affirm their identity as researcher-practitioners. Our analysis of the survey data shows no statistically significant barriers to finishing their IRDL project. Regarding research productivity success and IRDL project completion, we found that completing the IRDL project did not correlate to higher research productivity. Instead, we found that the better indicator of research productivity is that Scholars persevered and continued to do research regardless of the outcome of their IRDL project.

Literature Review

Librarians as Practitioner-Researchers

Librarians who conduct research have been described as *practitioner-researchers* (Watson-Boone, 2000), or *librarian-researchers*. Practitioner-researchers exist in many disciplines, including social work, medicine, nursing, and teaching. This designation comes from the work of educator Peter Jarvis. In *The Practitioner-Researcher: Developing Theory from Practice*, Jarvis (1999) documented the emergence of researchers in the workplace, new researchers who use established research methods to solve practical problems. Jarvis

(1999) regards practitioner research as an outgrowth of rapid technological change and the need for continuous learning in professional life (p. xi). Jarvis (1999) states that “practitioner-researchers are able to report aspects of practice at a depth that traditional forms of research might well not capture, precisely because they are practitioners” (p. 24). In his book, Jarvis identified five types of research most frequently employed by practitioner-researchers: case studies, action research, collaborative research, using documents, and small-scale surveys.

Inspired by Jarvis’s book, Watson-Boone (2000) analyzed 24 articles authored by academic librarians published in *The Journal of Academic Librarianship* between 1985 and 1995. She found that this group of practitioner-researchers who are academic librarians employed similar research methods: case study, evaluation, experimental, secondary data analysis, and survey research. Watson-Boone elaborates upon the importance of librarians conducting research and sharing their results. Like Jarvis, she observes that professional practice requires continuous learning and that employing research methods to problem-solving improves practice. The authors whose articles she analyzed first problematized and studied issues related to everyday academic library practice, then shared what they found through publications, advancing knowledge of librarianship. Virginia Wilson (2013) draws a parallel between practitioner research in healthcare and librarianship. Patient-oriented clinician researchers facilitate the development of clinically relevant research and the dissemination of evidence based treatments in clinical practice (Yanos & Ziedonis, 2006). A librarian-researcher plays a similar role in library and information science (LIS), bridging the LIS faculty research community and the practitioner research community.

Institute for Research Design in Librarianship (IRDL)

IRDL is designed to meet the needs of the novice academic librarian-researcher. The rationale for IRDL is rooted in the observation that most academic librarians enter the profession without realizing that librarians conduct and share the results of their research (Matusiak & Bright, 2020). For librarians on the tenure track, scholarship is usually required for tenure and promotion, but even at research libraries where librarians are not eligible for tenure, they are usually expected to conduct research (Sassen & Wahl, 2014). Librarians author the majority of articles in LIS journals (Chang, 2016), including our profession's most highly-regarded journals (Galbraith et al., 2014), such as *The Journal of Academic Librarianship* (Luo & McKinney, 2015). In a recent study of single- and co-authorship in selected LIS research journals, Chang (2021) found no statistically significant differences in the citation rates of librarian-researchers compared with LIS academics. However, numerous studies have revealed the barriers many librarians face in conducting research, often starting with inadequate research training during graduate school (Luo, 2011; Vilz & Poremski, 2015). Over nearly 20 years, studies have found a declining belief among academic librarians that their LIS master’s programs have prepared them to conduct research, from 30% to 17% (Kennedy & Brancolini, 2018, p. 834; Powell et al., 2002, p. 70). A recent study of research methods curricula in master’s level LIS programs found that the courses focus on teaching students to understand and evaluate research literature, rather than preparing them to conduct their own studies (Matusiak & Bright, 2020).

IRDL was developed from the results of a national survey of librarians working in an academic setting conducted in late 2010, designed to gather evidence on librarian attitudes, involvement, and capabilities for engaging in research activities (Kennedy & Brancolini, 2012). Two of the most significant findings directly influenced the form and design of IRDL. First, the researchers found that most academic librarians do not believe that their MLIS programs prepared them to conduct research. The second significant finding was that most librarians lack confidence in their research abilities. This is important because the 2012 survey also found that research confidence may be a predictor of research success. The

co-directors designed IRDL to maximize two of the four main sources that influence self-efficacy, as described by the psychologist Albert Bandura (1993): mastery experiences and social persuasion. This theoretical foundation influenced the decision to focus on a hands-on workshop format to teach social science research methods (gaining mastery of a process through practice) within a supportive community environment (receiving positive verbal feedback throughout the steps in the research process) and the objective of completing a research study within a year. IRDL includes research support mechanisms such as monthly communication with the cohort and co-directors through online check-in sessions, a closed Facebook group that includes Scholars from all cohorts, and during the last three years of the program, formal mentoring by an experienced LIS researcher. The centerpiece of IRDL is the Summer Research Workshop; it lays the foundation for the rest of the year-long research support. The nine-day workshop focuses on social science research design and methods training through expert instruction, small-group hands-on activities, and one-on-one proposal consultations with the workshop faculty and other researchers. The curriculum steps through the process of conducting a social science research study, with a focus on the three most commonly used data collection methods: survey, in-depth interviews, and focus groups. See Appendix A for the course learning objectives.

Assessing Learning and Research Self-Efficacy in IRDL

The effectiveness of the workshop curriculum is assessed through two measures: a pre- and post-workshop research self-efficacy scale and a rubric-based evaluation conducted by academic librarians to measure improvements in the research proposals. Upon completion of the research workshop, librarians' confidence increased in all the areas covered in the curriculum: turning a topic into a research question, designing a project to address their question, performing a literature review, gathering quantitative and qualitative data, analyzing data, reporting the results, and identifying appropriate places to share the results (e.g., publications and conferences; Brancolini & Kennedy, 2017). The results of these assessments resulted in revisions to the workshop for the first three years of the program.

To ensure that IRDL continues to address the research concerns of the academic library community, the 2010 survey, with slight modifications, was re-administered in 2015 (Kennedy & Brancolini, 2018), and the data used to make updates to the program. The most significant change to IRDL-2 (2016–2019) was the addition of formal research mentoring, which paired each scholar with an experienced researcher (Jason et al., 2021).

Research Success Factors and Productivity

The development of IRDL has been influenced by two studies by Canadian researchers who have looked at research success factors among academic librarians (Hoffmann et al., 2014; Hoffmann et al., 2017). In the first article of its kind, Hoffmann et al. (2014) conducted a comprehensive literature review of empirical studies focused on research success factors, both in librarianship and in other applied fields. They found that research success requires a number of interrelated conditions. They grouped 16 factors into three categories: "individual attributes, peers and community, and institutional structures and supports" (Hoffmann et al., 2014, p. 19), with many factors occurring in more than one category. Individual attributes included research confidence (self-efficacy), which had already been incorporated into IRDL and the assessments of its effectiveness. Within the category of peers and community, mentoring was the only factor identified as showing a positive effect on research productivity. However, none of the 12 papers that measured the effect of mentoring was focused on librarians. This finding provided the impetus for the co-directors to create a formal mentoring program for IRDL-2 (Jason et al., 2021). Hoffmann et al. (2017) conducted a follow-up study to measure the relationship between the

research success categories and individual factors they found in the literature and the research productivity of Canadian academic librarians. They surveyed 1,653 librarians and received 453 complete responses. Respondents were asked to provide data on their research output over the previous five years in eight categories. The research productivity scores were then correlated with answers to “Yes/No” statements that were mapped to the 11 success factors within the three categories. The authors found that all categories have an impact on research productivity, including the scores across all types of research output and for peer-reviewed articles, which were analyzed separately. No single category was dominant, suggesting that research productivity is affected by a constellation of factors.

The completion of six years of IRDL provided this research team with a unique opportunity to study the 124 academic and research librarians who participated in IRDL (2013–2016) and IRDL-2 (2016–2019), examining both the short-term effects of the program on all participants and the longer-term effects on the first cohorts of Scholars. Hoffmann et al. (2017) noted that the follow-up to their quantitative study would include qualitative data. Their work and earlier studies conducted by the IRDL co-directors (Brancolini & Kennedy, 2017; Kennedy & Brancolini, 2012; Kennedy & Brancolini, 2018; Kennedy et al., 2017; Kennedy et al., 2020) influenced the decision to conduct a mixed methods study, starting with a survey and following up with focus groups and in-depth interviews.

Methods

In fall 2019 and summer 2020, we conducted a mixed methods assessment of the short-term and long-term impacts of the IRDL continuing education program. We used survey, focus group, and semi-structured interview instruments to gather data to measure the impact of IRDL on three primary areas of concern: research productivity, job performance, and identity as a researcher. We employed an explanatory sequential mixed methods approach; survey data was collected first, and the interview data was collected after the survey. “The overall intent of this design is to have the qualitative data help explain in more detail the initial quantitative results; thus, it is important to tie together or to connect the quantitative results to the qualitative data collection” (Creswell & Creswell, 2018, p. 13). In this section, we describe the process of developing, administering, and analyzing the data collected from the survey, the first part of the assessment. The findings from the focus groups and in-depth interviews from the second part of the study will be reported in a separate article.

Study Population

We included 124 Scholars in the study. Of those, 10 were employed at four-year colleges, 9 at two-year community colleges, 3 at research institutions (non-academic), and 102 at universities. The Scholars are employed in a variety of functional areas within their libraries and archives and represent a range of levels of academic rank. About thirty-five percent of the Scholar population identifies as Hispanic and/or non-white.

Recruitment and Survey Dissemination

After receiving approval of the survey protocol from the Institutional Review Boards from our two institutions, two Scholars pilot tested it. After incorporating their feedback, we sent an email to the population of Scholars from Cohorts 1-5 in September 2019, informing them about the project and asking them to look for a forthcoming email with the invitation from Albarillo to participate in the assessment. Albarillo contacted the group with the survey invitation in October 2019, with one follow-up email sent. Albarillo contacted Scholars from Cohort 6 in July 2020, after they had completed their full IRDL

program. We offered a \$50 USD gift card to each Scholar who completed the survey and supplied their CV.

Survey Design and Measures

We designed the survey around three areas of interest related to the short-term and long-term objectives of IRDL on the professional lives of the Scholars:

- research productivity, as it relates to both progress on completion of their IRDL research project and additional research completed and shared in some format;
- job performance, including how they believe participating in IRDL may have impacted their professional trajectories; and
- identity as a researcher, including how IRDL may have impacted how they think of themselves as researchers.

Sections of the Survey

Research Productivity

We posed several questions to capture data about the progress of the Scholar's IRDL research project and projects completed since, such as: How much of your IRDL project were you able to complete? Choose the step that best describes the current state of your IRDL project; How did you disseminate or attempt to disseminate your IRDL project findings? Have you conducted other research projects since IRDL? and How did you disseminate or attempt to disseminate your post-IRDL project(s) findings? We included a question for the Scholar to identify any barriers encountered during their IRDL research project, as well as supports promised and available from their library and institution in completing their project. We collected and analyzed Scholars' CVs to create research productivity scores to use as continuous variables.

Job Performance

In this section of the survey, we included questions about job performance indicators, such as status (whether employed in a tenure-track, continuing appointment, or promotion-eligible position), academic rank, and research support options provided by the library and institution. We included a question that asked if the Scholar believed that IRDL contributed to any of a list of job-related factors.

Professional Identity

In this section, we asked five questions, including two to identify if the Scholar was pursuing or had achieved an additional degree. We had heard from Scholars over the years that their participation in IRDL had prompted them to pursue continuing education and wanted to better understand how many had pursued it. We included three questions to explore the concept of what it means to be a "librarian-researcher." In the last question of the survey, we requested that respondents tell us anything about the impact (both short-term and long-term) of their experience as Scholar on their research productivity, job performance, or identity as a researcher that we had not asked, but that they thought was important for

us to know. At the close of the survey, the Scholar could choose to enter their email address to be contacted for participation in a focus group or interview.

The survey and recruitment email are included as Appendices B and C.

Results

The survey did not collect cohort and demographic data since the lead author already had access to those data, collected previously as part of participation in the IRDL program. All three authors made an earlier commitment to our study population that any analysis presented would be at the aggregate level; presenting results by cohort and demographic levels could compromise the anonymity of participants. This section presents the results of the survey in the same order as they appear in the survey, except for the analysis of the CVs (Survey Question 13), which will appear last. We have included inferential analysis in the results to complement the descriptive statistics where the survey design contained variables at the appropriate level of measurement and the survey data met the assumptions of the chosen statistical test with a $p < .05$.

We present here the results of the survey, followed by a brief analysis of the CVs and the measures of research productivity. The statistical analysis was performed using IBM SPSS (Statistical Package for the Social Sciences) statistical software, Version 27. We calculated descriptive statistics (counts and percentages for categorical/nominal responses, means and standard deviations for continuous measures) for survey items.

A total of 89 Scholars (of 124 recruited) completed the survey and provided their CVs, for a 72% survey response rate, with an equal distribution of respondents across the six cohorts. To check for possible cohort bias in the response rate, we conducted a Cochran-Armitage Test of Trend (Laerd Statistics, 2016) to see if response rates to the survey were uneven across the six cohort populations. The responses by cohort are Cohort 1 ($n = 15$), Cohort 2 ($n = 9$), Cohort 3 ($n = 15$), Cohort 4 ($n = 13$), Cohort 5 ($n = 18$), and Cohort 6 ($n = 19$). The test did not show a statistically significant linear trend between survey responses in the proportion of respondents from each cohort, $p = .05$.

Research Productivity

As part of the curriculum, the Scholars hone the design of their research project at the Summer Research Workshop and execute it in the following year. In answer to Question 1 of the survey, "What research method(s) did you use in your IRDL project," 42 Scholars reported that they chose a qualitative research design (47.2% of the projects), 22 chose a quantitative design (24.7%), 20 used a mixed methods design (22.5%), and 5 did not report their research design. In responding to Question 2 of the survey, "How much of your IRDL research project were you able to complete?" we see that 47.2% reported or published the results (as shown in Table 1); for our purposes we are classifying these 42 projects as complete at the time the survey was administered.

Table 1

Stages of IRDL Project Completion

Question 2: How much of your IRDL project were you able to complete? Choose the step that best describes the current state of your IRDL project.	N	Percent
I completed the revised written proposal	6	6.7
I received IRB approval	3	3.4
I started data collection	5	5.6
I completed data collection	4	4.5
I started organizing the data I collected for analysis	11	12.4
I completed a preliminary analysis of the data I collected	11	12.4
I completed a full analysis of the data I collected	7	7.9
I reported the results of the data I collected	16	18.0
I published the results of the data I collected	26	29.2
Total	89	100

Knowing that some Scholars were likely continuing work on their IRDL projects, we asked a follow-up question. Of the projects that had not yet reached the stage of completion at the time the survey was administered, we wanted to know how likely they were to be completed. Of the 18 Scholars who reached the stage of completing a preliminary or full analysis of the data they collected, 14 noted that they were extremely likely to disseminate the results of their IRDL project through presentation or publication.

Question 7 prompted those Scholars who reached the step of data analysis or completion to report how they shared or attempted to share their IRDL project findings. Submitting a proposal to present results as a presentation, paper, or panel at a regional, national, or an international conference was the most frequently mentioned, with 36 attempts noted. Presenting results at their own library or institution was the second most frequently noted mechanism, with 35 presentations.

With Question 8 we were interested in learning what barriers the Scholars may have encountered while conducting their IRDL research project. In Table 2, we report the number of responses received for each barrier listed and how the Scholars rated them in severity, using a four-point Likert scale: Not a barrier (1); Somewhat of a barrier (2); Moderate barrier (3); Extreme barrier (4). Overall, the Scholars responded to the list of possible barriers as “not a barrier” or “somewhat of a barrier.” It is notable that two barriers related to job performance, “Given new job responsibilities in the same position” and “Changed jobs,” received the largest number of reports of being an extreme barrier in completing their project.

We were interested in determining if any of the self-reported IRDL project barriers listed in Table 2 had a linear, statistically significant correlation with the Scholars' ability to complete their IRDL project. Using data from the second survey question, we created a dependent dichotomous variable, the IRDL Project Completed variable, hereafter IRDLPROJCOMP. The variable was constructed by collapsing the last two survey response options, “I reported the results of the data I collected” and “I published the results of the data I collected,” into a new value called “completed”; the other response options were collapsed into a value called “not completed.” The values for this dichotomous variable show 42 Scholars (47.2%) did complete their IRDL project, and 47 Scholars (52.8%) did not complete their project. We conducted a binomial logistic regression, as outlined in Laerd Statistics (2017). With IRDLPROJCOMP as the dependent variable and Table 2 barriers as dummy variables, we found no statistically significant relationship between any of the Table 2 barriers and IRDL project completion.

Table 2

Barriers to Completing the IRDL Project, Measured on a 4-Point Likert Scale: Not a Barrier (1); Somewhat of a Barrier (2); Moderate Barrier (3); Extreme Barrier (4)

Question 8: Of the barriers listed below, please indicate how intense that barrier was in completing your IRDL project	N	Not a barrier	Somewhat of a barrier	Moderate barrier	Extreme barrier
Lack of experience using specific research methods	89	26	45	17	1
Given new job responsibilities in the same position	89	51	12	13	13
Changed jobs	89	64	2	7	16
Lack of access to needed research-based literature	89	79	10	-	-
Receiving Institutional Review Board (IRB) approval	88	70	11	7	-
Access to the study population	89	54	20	9	6
Access to online survey software	88	82	5	1	-
Knowing how to use online survey software	88	75	8	4	1
Organizing and preparing quantitative data for analysis	84	49	19	14	2
Analyzing quantitative data	84	45	18	15	6
Organizing and preparing qualitative data for analysis	87	41	33	11	2
Analyzing qualitative data	87	37	33	12	5
Low response rates from study participants	86	56	14	6	10
I collected unusable data	87	65	15	4	3
Reporting results in a written format	88	53	27	4	4
Reporting results in a webinar format	86	80	4	1	1
Reporting results as a poster presentation, presentation, or panel in a meeting, conference, or workshop format	86	77	7	1	1

We were also interested to learn from the Scholars which research supports had been made available to them, as promised in a letter of support from the Dean or Director that was required during the application process. Of the five options noted in Question 9, moral support from a supervisor was the most frequently received support, with 76% of the respondents reporting that it had been made available to them. Sixty-four percent received at least half a day per week release from work duties to conduct their IRDL projects. Using the IRDLPROJCOMP variable again, and now testing with supports as dummy variables, we found no statistically significant relationship between any of the supports and IRDL project completion.

Almost three-fourths of the respondents ($n = 65$, 73%) reported in Question 10 that they continued to do research after their IRDL project, either currently conducting a project or having conducted one or more other projects. Twenty-three reported having neither attempted nor completed another research project since their IRDL project. Of those 47 who reported sharing or attempting to share the results of new research projects since IRDL, the most often reported mechanism was submitting a proposal to present

results as a presentation, paper, or panel at a regional, national, or an international conference (with Scholars having reported 30 proposals submitted).

Given the significant number of Scholars continuing to do research after their IRDL project, we wanted to explore whether continuing to do research may be a better indicator of program effectiveness than completing the IRDL project. As library practitioners, we understand that research makes up only a small percentage of our professional responsibilities, with those research projects overlapping to some extent with job responsibilities. We also maintain that research is subject to the ebb and flow of the work year priorities familiar to *Evidence Based Library and Information Practice* readers. Therefore, using data from Question 10, we created a dichotomous variable on Scholars who continued to do research, hereafter called RESCONT. It collapses four response options that indicate the Scholar continued to do research into one value, “continuing,” and the other response option into another value, “not continuing.” A crosstabulation revealed that there were 34 Scholars (38.2%) who didn’t finish their IRDL project but continued to do research.

We then created another variable, called AVGSUM. It is a continuous research productivity score that represents the sum total number of weighted research outputs from 2010–2020, as indicated on the Scholar CVs, divided by the number of years they have been actively disseminating research. Using the AVGSUM as the dependent variable and RESCONT and IRDLPROJCOMP as independent variables, we conducted a multiple linear regression, as outlined in Cohen et al. (2003, pp. 64–99), to test if continuing to conduct research or completing the IRDL project were correlated with higher research productivity.

RESCONT and IRDLPROJCOMP statistically predicted research AVGSUM with $F(2,85) = 5.031, p < .001$. The R^2 for the model was 10.6 %, with an adjusted R^2 of 8.5%, a small effect size. Examining the coefficients of our dichotomous dependent variables shows that the RESCONT variable is statistically significant ($n = 65, p = .002$) with a B slope coefficient = 7.430, while the IRDLPROJCOMP was not statistically significant ($n = 42, p = .747$). We interpret the results of this test as evidence that looking at whether or not a Scholar continues to do research after their IRDL project, as shown by RESCONT Scholars ($n = 65, 73\%$), is a better measure of IRDL’s long-term impact on research productivity than completion of the IRDL project, since the variable is positively correlated to higher research productivity scores. On the other hand, IRDLPROJCOMP scores show no positive and statistically significant correlation with research productivity.

Job Performance

In this section of the survey, we explored job performance indicators and the current research environments of the Scholars. In responding to Question 14 about which research support options are provided at the Scholar’s institution or library, 48 respondents (53%) noted that travel funds with full reimbursement are available to them. Workshops or other forms of continuing education were also prevalent, with 39 Scholars noting this type of support. The least available support offered by their institutions or library was formal research mentors, with only seven Scholars noting it as an option.

To understand promotion and tenure pressures, Question 15 asked the job status of each Scholar during their IRDL year. About half of the Scholars ($n = 49$) were in positions on the tenure track, with the possibility of promotion. Using the variables created previously (IRDLPROJCOMP, RESCONT, and AVGSUM), we used a binomial logistic regression (Laerd, 2017) to examine whether completing the IRDL project, continuing to do research after the IRDL project, or the average research output was correlated with Scholars on the tenure track, and found that the resulting model was not statistically significant,

$\chi^2(3) = 5.04, p < .17$. Being on the tenure track did not significantly correlate with higher research productivity, IRDL project completion, or the scholar continuing to pursue research projects. We asked if the Scholars attained a continuing appointment, tenure, or promotion at the institution where they were employed during their IRDL year, and 13 noted that they attained a continuing appointment, but not promotion. Five noted that they achieved tenure during their IRDL year. The current academic rank attained by the Scholars is dispersed among the options presented in the survey, with Assistant Professor ($n = 22$) being the most reported rank.

In order to consider the impact IRDL may have had on any job-related factors as perceived by the Scholars, we asked them to choose applicable factors from a list (as shown in Table 3). The most frequently selected factor in Question 18 was extending their personal learning networks, with 70.8% of the Scholars choosing it. Fifty-five Scholars (61.8%) chose that they believe IRDL contributed to them advising other librarians on their research projects. Forty-three (48.3%) said that due to IRDL they gained research collaborators.

Table 3
Factors Contributing to Job Performance

Question 18: Do you believe IRDL contributed to any of the following job-related factors? Choose all that apply.	N	Percent
I earned a promotion in rank	17	19.10
I received a promotion to a higher-level position at my institution	7	7.90
I achieved tenure	9	10.10
I received a certificate of continuous employment or a similar guarantee of job security	6	6.70
I received a new job title at my institution	7	7.90
I received a one-time monetary salary award (e.g., a merit increase)	5	5.60
I received a permanent raise in my base salary	11	12.40
I acquired new job responsibilities related to my skills as a social science researcher at my institution (e.g., assessment)	14	15.70
My research skills helped me secure a job at a new institution	12	13.50
I started a local writing or research group	4	4.50
I have advised other librarians about their research projects	55	61.80
I made presentation(s) based on the skills I gained during the IRDL workshop	32	36.00
I have given workshops based on the skills I gained during the IRDL workshop	16	18.00
I extended my personal learning network	63	70.80
I gained research collaborators	43	48.30

Professional Identity

The third section of the survey covered professional identity. The first set of questions asked about additional formal education and the second set asked about identity as a researcher.

Questions 19 and 20 asked about pursuing additional formal education. We found five were working on a PhD/EdD/JD and five were working on a non-thesis-based master's degree at the time they responded to the survey. Eight noted that they had completed additional degrees since their IRDL year.

We were interested to learn how participating in IRDL may have affected their perception of librarians as researchers and of themselves as librarian-researchers. Question 21 asked them to describe what it means to be a "librarian-researcher." Although we did not formally code the responses to this question, the 86 responses reflect many aspects of research conducted by practitioners. The open-text question elicited a wide range of responses, with two major themes emerging: Librarian-researchers 1) conduct research to improve the quality of their work, including the effectiveness of library programs and services, such as support for the academic researchers at their institutions; and 2) contribute to advancing knowledge in library and information science. Although most responses were positive about the relationship between librarianship and research, some noted the difficulty of juggling job responsibilities and the many activities associated with conducting and sharing the results of research. These are four representative examples:

A librarian-researcher wears two symbiotic hats -- one is the librarian who implements services and practices that contribute towards access to information, and the other conducts research that informs the most effective ways to do so. Each should facilitate the other.

Being a librarian-researcher means that I have first-hand experience conducting my own research and employing various research methods. This gives me the opportunity to better relate to the community of researchers I serve, while allowing me to advance the body of knowledge in my profession.

I identify as a "librarian-researcher" and for me that means that my work as a practitioner is as valuable as my work as a researcher, particularly because my practice is influenced by my research and my research is inspired by my practice.

A librarian-researcher has the dual task of conducting research and performing their daily work as a librarian. Librarian researchers take the initiative to start new research projects, advise on others' research projects (e.g., other librarians doing library-related research, users that need methodological help), and see the potential for collaborations across their institutions as well as new ideas for research to be involved in.

Twenty-eight of the respondents (31.5%) noted that they identified as a librarian-researcher before their IRDL year (Question 22) and seventy (78.7%) reported that they currently identify as a librarian-researcher (Question 23). We used McNemar's test procedures as outlined in Laerd (2015a) and found that there was a statistically significant difference ($p = .001$) in the proportion of Scholars who self-identified as librarian-researchers pre-IRDL (.19) and post-IRDL (.29).

The last question of the survey (Question 24) was an open-text prompt to tell us anything "about the impact (both short-term and long-term) of your experience as a Scholar on your research productivity, job performance, or identity as a researcher that we have not asked but you think is important for us to know." Fifty-five respondents offered their comments. Responses to this question included multiple comments about an increase of confidence leading participants to stretch their professional goals, and many comments about the satisfaction of finding connections to other like-minded librarians in building a community. The most common word in these comments was "confidence" or "confident," noted by 20

respondents. This representative example addresses multiple objectives of IRDL; other responses are included in the discussion section.

IRDL has instilled in me a greater sense of confidence. I feel more comfortable asking my colleagues for help and reaching out to others to seek collaborative research opportunities. I have participated in conversations with non-library faculty in which I have felt part of the discussion (regarding data analysis) because I have conducted original research (via my IRDL project). I now feel more creatively inspired and can generate ideas for potential research projects more readily since attending IRDL, and I feel that I have gained enough experience from IRDL to attempt such projects. My IRDL experience – as well as projects that develop post-IRDL – can serve as talking points with non-library faculty, with librarians, and with future potential employers. IRDL has opened the door to a professional pathway that did not feel attainable to me prior to my participation. I am grateful for the opportunity.

The Scholars could opt in to participating further, in a focus group or one-on-one interview, by inserting their email address to acknowledge interest.

Analysis of CVs and Research Productivity Scores

We used the CV of each Scholar as evidence of research productivity. Albarillo reviewed each CV to count the type of output produced. Since our focus is to examine research output, we did not include in our count the following written outputs, which may be scholarly in nature but not necessarily a result of original research: blog posts, conference reports, newsletters, book reviews, blurbs, editorials, zines, and articles in trade journals (examples of which include *College & Research Libraries News*, *Library Journal*, *American Libraries*, and *Magazines for Libraries*). We also did not include in our count oral presentations that are work-related and part of job responsibilities (such as database demonstrations and career presentations to LIS classes) or presentations that are very brief in nature (lightning talks, for example). In Table 4, we show a summary of the Scholars' research output over the past ten years (2010–2020), the type of output mechanism used, and the number of each. Overall, the most popular mechanism for sharing the results of their IRDL projects is presentations (61.3%), then peer review articles (18.3%), followed by book chapters (6.6%).

We examined the research output of the Scholars from before their participation in IRDL and then compared their output to after their IRDL year. We found that there appears to be a mean increase for some outputs: books, edited volumes, peer-reviewed papers, and book chapters. We also found a mean decrease for other outputs, as shown in Table 5. To help us understand this shift in the choice of output mechanisms, we consulted the weighted research output scheme developed by Hoffmann et al. (2017, p. 107). In that scheme, the four most heavily weighted outputs are book chapters, edited books, peer-reviewed articles, and authored books. This article builds on the use of Hoffmann's research output scheme, which was also applied in Kennedy et al. (2020), as a way to quantify research productivity of accomplished librarian-researchers. From that scheme we see that following their IRDL participation, Scholars began disseminating their research through more sophisticated and prized outputs.

Table 4
Scholars' Research Output Over the Past Ten Years (2010–2020, $n = 89$)

Output type	Min	Max	Mean	Median	SD	Total number reported	% of output reported
Poster	0	14	0.89	0.00	1.91	80	5.68
Presentation	0	141	9.79	6.00	15.74	864	61.32
Conference proceeding	0	15	0.57	0.00	1.82	51	3.62
Non-peer-reviewed article	0	5	0.51	0.00	1.04	46	3.26
Book chapter	0	6	1.05	1.00	1.29	94	6.67
Edited book	0	5	0.12	0.00	0.59	11	0.78
Peer-reviewed article	0	19	2.89	2.00	3.40	258	18.31
Authored book	0	2	0.05	0.00	0.27	5	0.35
Totals						1,409	100

Table 5
Research Productivity Formats: Measures of Central Tendency, Pre and Post IRDL ($n = 89$)

Output types, before and after IRDL	Total number reported	Min	Max	Mean	Median	SD	Variance	Range
Poster (pre)	49	0	6	0.55	0	1.138	1.296	6
Poster (post)	31	0	14	0.35	0	1.538	2.366	14
Presentation (pre)	458	0	75	5.15	2	8.725	76.126	75
Presentation (post)	406	0	66	4.56	2	8.316	69.158	66
Conference proceeding (pre)	31	0	5	0.35	0	0.943	0.889	5
Conference proceeding (post)	20	0	10	0.22	0	1.136	1.29	10
Non-peer-reviewed article (pre)	27	0	3	0.3	0	0.775	0.6	3
Non-peer-reviewed article (post)	19	0	3	0.21	0	0.593	0.352	3
Book chapter (pre)	29	0	5	0.33	0	0.75	0.563	5
Book chapter (post)	65	0	4	0.73	0	1.053	1.108	4
Edited book (pre)	4	0	2	0.04	0	0.257	0.066	2
Edited book (post)	7	0	3	0.08	0	0.405	0.164	3
Peer-reviewed article (pre)	103	0	9	1.16	0	1.876	3.52	9
Peer-reviewed article (post)	155	0	13	1.74	1	2.259	5.103	13
Authored book (pre)	2	0	1	0.02	0	0.149	0.022	1
Authored book (post)	3	0	1	0.03	0	0.181	0.033	1

Table 5 shows an increase in scholarly output by IRDL participants in the form of book chapters and peer-reviewed articles. We wanted to run an inferential statistical test to see if this increase in publications after IRDL was statistically significant. Initially our original plan was to run a Paired-Sample t-Test, comparing the research productivity scores of IRDL participants before and after IRDL.

As part of our calculations, we realized that the research productivity scores alone as represented in Table 5 did not account for the variation in years that Scholars have been active researchers. For example, some Scholars have been very productive researchers from right after library school. Other CVs showed that there were many Scholars who have worked and steadily published and presented in the library profession for a longer period, and of course there were many new Scholars who were just beginning their research and publication journey. We developed a formula to account for the variation in Scholar publishing years before participation in IRDL:

$$PRE\ AVG = \frac{a}{(b - c) + 1}$$

Let a = represent the number of publications multiplied by the publication weight assigned in Hoffmann et al. (2017, p. 107).

Let b = represent the year the Scholar participated in IRDL.

Let c = represent the date of the first scholarly output indicated in the CV as determined by the lead author. Scholarly output in the form of posters, presentations, and publications before 2010 is not counted.

NB, the "+1" accounts for the year the Scholar participated in IRDL

We created the following formula to calculate the research productivity score after IRDL, which we call POST AVG:

$$POST\ AVG = \frac{a}{(d - e)}$$

Let d = represent the year and the last date scholarly output indicated in the CV as determined by the lead author. Publications after 2020 are not counted.

Let e = represent the year after the Scholar participated in IRDL.

NB, if the Scholar attended the Summer Research Workshop in 2018, then only research output in the beginning of 2019 to the end of 2020 was counted.

By dividing Scholars' research output scores, as represented by the variable "a", by the number of active research years, represented by scholarly output in their CVs, we were able to test the hypothesis: Is there a statistically significant difference in research productivity before and after IRDL?

Unfortunately, our PRE AVG and POST AVG scores were not normally distributed, an assumption our data needed to meet to be able to conduct a Paired Samples t-Test according to Laerd (2015b); the Shapiro-Wilk statistic (0.77, $p = 0$) and (0.82, $p = 0$) for the PRE AVG and POST AVG respectively. We decided to employ the Wilcoxon Signed-Rank Test, a nonparametric test equivalent to the Paired Samples t-Test. We examined the procedure and criteria for running the test (Pett, 2016, pp. 113–114) and found that the PRE AVG and POST AVG research productivity scores met all three criteria.

In addition to the total productivity scores, we ran the test to look for paired differences between the main research output formats like peer-reviewed articles, book chapters, and professional conferences.

Table 6 shows the results of the Wilcoxon Signed-Rank Test. The first result shows that there were no statistically significant differences in research productivity scores for Scholars before and after IRDL. The second result showed that there were no statistically significant differences before and after IRDL for the format peer-reviewed papers. There were small, statistically significant increases in the median scores for book chapters, and a small and statistically significant decrease in conference presentations at $p < .05$. We believe that these scores, while statistically significant, represent too small a value to be meaningful.

Table 6
Results of the Wilcoxon Signed-Rank Test

Wilcoxon Signed-Rank Test				
<i>Md</i>	Null Hypothesis	Test	Sig	Decision
0.602	The median of differences between the PRE AVG and the POST AVG Total Research Productivity Scores equals 0.	Related Samples Wilcoxon Signed-Rank Test	.167	Retain the Null
0.711	The median of differences between the PRE AVG Peer Review Papers and the POST AVG Peer Review Papers equals 0.	Related Samples Wilcoxon Signed-Rank Test	0.072	Retain the Null
0.4621	The median of differences between the PRE AVG Book Chapters and the POST AVG Book Chapter equals 0.	Related Samples Wilcoxon Signed-Rank Test	0.004	Reject the Null
-0.4713	The median of differences between the PRE AVG Conferences and the POST AVG Conferences equals 0.	Related Samples Wilcoxon Signed-Rank Test	0.004	Reject the Null

Discussion

The present study focuses on the short-term and long-term impacts of IRDL on the research productivity, job performance, and professional identity of the librarians who participated in the program. The first part of the study was a survey, intended to measure the impact of various personal and environmental factors on the ability of the Scholar to complete their IRDL research study and to go on to new research endeavors.

Short-Term and Long-Term Research Productivity

The first objective for each Scholar is to complete their proposed research project, defined as reaching the stage of disseminating research results, either through presentation or publication. The results of the survey indicate that 42 respondents (47%) were successful. Of the 18 who had completed preliminary or final data analysis, 14 reported that they were extremely likely to complete their project. The longer-term goal of IRDL is to set participants on a path of research success. Seventy-three percent of respondents reported that they had completed another research project, either instead of or in addition to their IRDL

project, indicating a disposition toward conducting and disseminating research in the future. We believe that our survey data demonstrates a new concept we call “research persistence.” This variable, based on the RESCONT (research continuer) data, is an important finding related to the outcome of attending IRDL. We looked at many factors, and we believe that this data shows that despite past failures or successes — for example, the 34 Scholars (38.2%) who didn’t finish their IRDL project but continued to do research — many IRDL Scholars have chosen to persist and seek community and opportunities to improve their ability to conduct research. More research needs to be done to better understand this concept of “research persistence.”

The analysis of CVs to determine the number and types of research output for each respondent revealed that the effects on research productivity have persisted following the single IRDL year. Although the average productivity of Scholars increased slightly post-IRDL, the important finding is that dissemination patterns changed. The number of books, edited volumes, peer-reviewed articles, and book chapters increased, while the number of posters, presentations, conference proceedings, and articles in non-peer-reviewed publications decreased. This is unsurprising but also encouraging, as many Scholars expressed a desire to disseminate their research in peer-reviewed journals, books, and other high-impact research formats. We did not find any meaningful, statistically significant increases or decreases in the inferential and non-parametric tests that we conducted related to research productivity. This was very surprising because the descriptive data in Table 5 showed positive increases for particular formats. In our efforts to understand tenure pressure, we found it unusual that there was no significant correlation between being on the tenure track, higher research productivity, IRDL project completion, or the Scholar continuing to pursue research projects. We believe that this is due to the variability of tenure requirements across institutions. The cross-institutional variability of tenure requirements would make an interesting future study and contribute to our understanding of librarians and tenure status.

Research Barriers

The second objective of IRDL is to remove or reduce barriers to completing their IRDL research project. The results support the effectiveness of IRDL in this regard. Asked about barriers to completing their study that may have been encountered during their IRDL year, the most frequent response was “not a barrier.” The most prevalent research barrier was lack of experience using specific research methods, with 45 reporting it as “somewhat of a barrier,” 17 as a “moderate barrier,” and 1 as an “extreme barrier” (NB: 26 report it as “not a problem”). All participants are novice researchers, so the IRDL curriculum includes an introduction to three of the most prevalent quantitative and qualitative research methods: surveys, in-depth interviews, and focus groups (See Appendix A for course learning objectives). However, IRDL encourages participants to try new and more innovative research methods. For example, two Scholars used vignettes in their studies (Benedetti et al., 2018), which participants were not taught to use in the workshop; they discovered this method during their literature reviews and wanted to try it. Despite 63 Scholars reporting that lack of familiarity with specific research methods was a barrier, the barrier did not stop them from conducting their studies. Sixty-five conducted their studies, 16 presented their results, and 26 published their results. Twenty-nine Scholars, however, responded that two work-related factors were extreme barriers: being given new responsibilities on the job and changing jobs. As fully summarized in the Results section, we did not find any meaningful, statistically significant correlations between the barriers and the completion of the IRDL project. Barriers and strategies to overcome them were explored more fully in the qualitative phase of the research project.

Research Supports

The third objective of IRDL is to ensure that Scholars are provided with appropriate research support by their library or institution while conducting their IRDL project. In addition to removing barriers, IRDL provides a number of supports designed to foster research success. The most important support is time to focus on research, without work or family pressures, during the Summer Research Workshop. However, it is also important to ensure that Scholars have ample research support during the coming project year, including a half-day per week to devote to research activity. As part of the application process, librarians supplied a letter from their library dean or director outlining the availability of a variety of research supports. The survey found that these supports were provided as promised in the vast majority of cases. Sixty-four percent received at least a half-day per week for research. Respondents also reported on the availability of additional research supports. The least prevalent research support was formal mentoring, available to only seven of the respondents. However, this finding affirms the addition of formal research mentoring during the last three years of IRDL. As similarly reported above, we did not find that any research supports were statistically related to completing the IRDL project.

Professional Identity

Following their IRDL experience, a number of librarians have pursued additional education related to research proficiency, including five who at the time of the survey were currently working on a PhD and three others who were applying to a PhD program or considering doing so. One commented that “IRDL was critical” in giving them the confidence to pursue a PhD. Another commented, “Had I not attended IRDL, I would not have pursued a PhD.”

Eighty-six participants responded to Question 21, which asked for a definition of what it means to be a “librarian-researcher.” These responses reflect deep thinking about the relationship between their roles as academic and research librarians and their scholarship. Before participating in IRDL, 31.5% identified as a librarian-researcher, but 78.7% stated that they currently identify as a librarian-researcher, an increase of more than 47%. As noted in the Results section, this change in professional identity is statistically significant and is especially meaningful since other research suggests that identifying as a researcher may be related to productivity (Brew et al., 2016).

IRDL provides an opportunity for librarians to form relationships and become part of a research community. We believe that the cohort model and the cross-cohort collaborations contribute greatly to the sense of identity and community. While we found no statistically significant correlations related to research productivity, these descriptive statistics suggest that building a research community is a complex phenomenon that merits more research. Participation in IRDL had positive social consequences for many librarians. About 71% of the Scholars noted that they extended their personal learning networks (see Table 3 for a summary of Question 18). Fifty-five Scholars (61.8%) reported that they believed IRDL contributed to them advising other librarians about their research projects. Forty-three (48.3%) said that they gained research collaborators thanks to IRDL. The development of a research community, through cohorts, is an important aspect of the IRDL experience. There is evidence that some Scholars are also part of a cross-cohort research community. The survey did not explore this phenomenon, but we believe that the qualitative interviews may give us a clearer picture of IRDL-based research relationships. In response to Question 24, a number of Scholars commented about research community, as illustrated in the following four quotes:

I have found other like-minded librarians through IRDL. A couple of them have become close research partners.

I think I would have found a way to educate myself about research methods, but finding like-minded people was one of the most valuable aspects of attending IRDL. I found that I wasn't alone and that there were other research nerds like me, which gave me the confidence to continue my work.

I've established networks of researchers who are amazing collaborators and we will be exploring more projects together.

The connections to other librarians who do research has [sic] been invaluable – even more so than the mentor relationship (though that was valuable too). This has been particularly important for me since I have no such connections at my own institution or even in my region.

Limitations

We acknowledge some limitations to this research, the main one being the special population studied. The population of Scholars is a selected group of librarian-researchers. They were chosen for the program based upon a number of factors, including their desire to learn and their enthusiasm for research. Therefore, Scholars do not represent the range of attitudes toward research among academic librarians. Exner (2019) found in her qualitative study of novice researchers that even in libraries with supportive research environments, some librarian researchers are fearful and uncertain about conducting research, characterized as “extreme dislike” (pp. 64–65). The Scholars do, however, represent the range of work environments and types of jobs in the higher education arena. Cohorts are built from librarians and archivists working in traditional academic library settings as well as special libraries; their job functions demonstrate the full range of library and archive activities.

We also acknowledge a time bias built into the research design, using a cross-sectional design (data gathered at one point in time) of the six cohorts. This design naturally favors the responses that the Scholars from the earlier cohorts are able to give, for example, to the question about their progress in their IRDL research project. Participants from the earlier cohorts should be further along in their projects than the later cohorts. We waited to survey the sixth cohort until they had completed their full IRDL year, and that delay pushed their survey to during COVID lockdown, which may have impacted some of the responses from that group.

The last limitation to note is based on our review of the CVs submitted by the Scholars. The CVs were not standardized in any way prior to submission; they varied in formatting and categories. So that we were internally consistent in categorizing the types of research output, we often turned to locating the original article, presentation, or program and verifying the nature of the research output in *Ulrich's Periodicals Directory* (ProQuest) and *The Serials Directory* (EBSCO).

Our survey produced significant findings, many of which are aligned with the findings of Hoffmann et. al (2017), that research productivity is affected by overlapping and reinforcing factors. We have attempted to operationalize these factors and acknowledge their limits. We also believe that limits are good occasions to suggest directions, where appropriate, for future research into this complex topic of librarians as research-practitioners. A survey alone cannot describe the full impact a program like IRDL may have on its participants. The findings here are presented in aggregate, which likely masked

differences in the individual experiences of Scholars. In the next phase of the study, we examine the impact on the personal level, as it relates to research productivity, job performance, and researcher identity. We look forward to presenting the results of the following phase of this mixed methods study, based upon the individual in-depth interviews and focus groups with the participants.

Conclusion

This phase of our study, designed to assess the effectiveness of the IRDL program, provides compelling evidence that a continuing education program designed like IRDL can have an impact on the research productivity, job performance, and professional identity of its participants. Significant findings from this study demonstrate research persistence: an ongoing commitment to conducting and sharing the results of research beyond the program. We found that Scholars chose more sophisticated and desirable research output formats after IRDL, enjoyed an expanded peer and community group related to research activities, and demonstrated a meaningful increase in their professional identity as a librarian-researcher.

Author Contributions

Frans Albarillo: Investigation, Formal analysis (lead), Data curation, Methodology (lead), Writing – review & editing **Marie R. Kennedy:** Conceptualization, Formal analysis (supporting), Funding acquisition (lead), Investigation, Methodology (supporting), Project administration, Supervision, Writing – original draft, Writing – review & editing **Kristine R. Brancolini:** Conceptualization, Funding acquisition (supporting), Methodology (supporting), Writing – original draft, Writing – review & editing

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Appendix A: Learning Objectives for IRDL Summer Research Workshop

Course Objectives

At the end of this 10-day workshop, you will be able to:

- Write effective research questions and hypotheses
- Choose an appropriate research design for a library science study
- Explain the conceptual logic behind various data collection approaches and describe the rationale for selection of specific methods
- Identify appropriate sampling strategies for research projects
- Use and apply commonly used qualitative data collection methods – focus groups and in-depth interviews
- Assess and apply different qualitative data analysis options
- Design and implement a survey
- Understand survey data management
- Explain various analytic options for surveys

Appendix B: Survey Instrument

There are three thematic sections: research productivity, job performance, and professional identity. The survey should take around 30 - 40 minutes. You can return to the survey at any time by clicking on the invitation link to your email. Please note that the survey will save the last answer you submit by clicking "ok" if it appears and advancing to the next question.

Section 1: Research Productivity

1. What research method(s) did you use in your IRDL project?
[Text Box Response] *skip to 2*
2. How much of your IRDL project were you able to complete? Choose the step that best describes the current state of your IRDL project. [Multiple Choice]
 - I completed the revised written proposal (*skip to 3*)
 - I submitted an IRB application (*skip to 3*)
 - I received IRB approval (*skip to 4*)
 - I started data collection (*skip to 4*)
 - I completed data collection (*skip to 5*)
 - I started organizing the data I collected for analysis (*skip to 5*)
 - I completed a preliminary analysis of the data I collected (*skip to 6*)
 - I completed a full analysis of the data I collected (*skip to 6*)
 - I reported the results of the data I collected (*skip to 7*)
 - I published the results of the data I collected (*skip to 7*)
3. How likely are you to receive IRB approval for your project? [Dropdown]
 - Extremely unlikely (*skip to 8*)
 - Unlikely (*skip to 8*)
 - Likely (*skip to 4*)
 - Extremely likely (*skip to 4*)
4. How likely are you to complete the data collection for your project? [Dropdown]
 - Extremely unlikely (*skip to 8*)
 - Unlikely (*skip to 8*)
 - Likely (*skip to 5*)
 - Extremely likely (*skip to 5*)
5. How likely are you to complete the data analysis for your project? [Dropdown]
 - Extremely unlikely (*skip to 8*)
 - Unlikely (*skip to 8*)
 - Likely (*skip to 6*)
 - Extremely likely (*skip to 6*)
6. How likely are you to disseminate the results of your IRDL project through presentation or publication? [Dropdown]
 - Extremely unlikely (*skip to 8*)
 - Unlikely (*skip to 8*)
 - Likely (*skip to 7*)

– Extremely likely (*skip to 7*)

7. How did you disseminate or attempt to disseminate your IRDL project findings? Please use the adjacent column to indicate the number of times you disseminated your results for that particular format. (*skip to 8*)

	How many times?
I presented my results at my library or institution	[Dropdown] 0-10; more than 10
I published results at my library or local institution (for example in a library meeting, newsletter, report, or another kind of local publication)	[Dropdown] 0-10; more than 10
I submitted a proposal to present results in a webinar (Adobe Connect, Webex, etc.)	[Dropdown] 0-10; more than 10
I presented results in a webinar (Adobe Connect, Webex, etc.)	[Dropdown] 0-10; more than 10
I submitted a proposal to present results as a poster at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I presented results as a poster at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I submitted a proposal to present results as a presentation, paper, or panel at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I presented results as a presentation, paper, or panel at a regional, national, or in an international conference	[Dropdown] 0-10; more than 10
I submitted an article to a non-peer reviewed journal or non-peer reviewed professional publication	[Dropdown] 0-10; more than 10
I published an article in a non-peer reviewed journal or a non-peer reviewed professional publication	[Dropdown] 0-10; more than 10
I submitted an article to a peer-reviewed journal	[Dropdown] 0-10; more than 10
I published an article in a peer-reviewed journal	[Dropdown] 0-10; more than 10
I submitted a chapter for inclusion in an edited volume	[Dropdown] 0-10; more than 10
I published a book chapter	[Dropdown] 0-10; more than 10
I submitted an edited volume proposal to a publisher	[Dropdown] 0-10; more than 10
I published an edited volume	[Dropdown] 0-10; more than 10
I submitted a book or monograph proposal to a publisher	[Dropdown] 0-10; more than 10
I published a book or monograph	[Dropdown] 0-10; more than 10

8. Of the barriers listed below, please indicate how intense that barrier was in completing your IRDL project. (*skip to 9*)

	Not a barrier	Somewhat of a barrier	Moderate barrier	Extreme barrier
Lack of experience using specific research methods				
Given new job responsibilities in the same position				
Changed jobs				
Lack of access to needed research-based literature				
Receiving Institutional Review Board (IRB) approval				
Access to the study population				
Access to online survey software				
Knowing how to use online survey software				
Organizing and preparing quantitative data for analysis				
Analyzing quantitative data				
Organizing and preparing qualitative data for analysis				
Analyzing qualitative data				
Low response rates from study participants				
I collected unusable data				
Reporting results in a written format				
Reporting results in a webinar format				
Reporting results as a poster presentation, presentation, or panel in a meeting, conference, or workshop format				

9. In relation to the letter of support written by your Dean or Director, did you receive any of the following supports from your library or institution while conducting your IRDL project? (*skip to 10*)

	[Dropdown]
At least half a day a week release from work duties to conduct your IRDL project	Yes/No
Financial support	Yes/No
Moral support from my supervisor	Yes/No
Mentorship from my supervisor	Yes/No
Mentorship from someone other than my supervisor	Yes/No

10. Have you conducted other research projects since IRDL? [Multiple Choice]
- Yes, I am currently conducting one other research project (*skip to 11*)
 - Yes, I conducted one other research project (*skip to 11*)
 - Yes, I am currently conducting more than one other research project (*skip to 11*)
 - Yes, I conducted more than one other research project (*skip to 11*)
 - No (*skip to 13*)
11. Have you disseminated or attempted to disseminate the results of your non-IRDL research? [Dropdown]
- Yes (*skip to 12*)
 - No (*skip to 13*)
12. How did you disseminate or attempt to disseminate your **non-IRDL** project(s) findings? Please use the adjacent column to indicate the number of times you disseminated your results for that particular format.

	How many times?
I presented my results at my library or institution	[Dropdown] 0-10; more than 10
I published results at my library or local institution (for example in a library meeting, newsletter, report, or another kind of local publication)	[Dropdown] 0-10; more than 10
I submitted a proposal to present results in a webinar (Adobe Connect, Webex, etc.)	[Dropdown] 0-10; more than 10
I presented results in a webinar (Adobe Connect, Webex, etc.)	[Dropdown] 0-10; more than 10
I submitted a proposal to present results as a poster at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I presented results as a poster at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I submitted a proposal to present results as a presentation, paper, or panel at a regional, national, or an international conference	[Dropdown] 0-10; more than 10
I presented results as a presentation, paper, or panel at a regional, national, or in an international conference	[Dropdown] 0-10; more than 10
I submitted an article to a non-peer reviewed journal or non-peer reviewed professional publication	[Dropdown] 0-10; more than 10
I published an article in a non-peer reviewed journal or a non-peer reviewed professional publication	[Dropdown] 0-10; more than 10
I submitted an article to a peer-reviewed journal	[Dropdown] 0-10; more than 10
I published an article in a peer-reviewed journal	[Dropdown] 0-10; more than 10
I submitted a chapter for inclusion in an edited volume	[Dropdown] 0-10; more than 10
I published a book chapter	[Dropdown] 0-10; more than 10
I submitted an edited volume proposal to a publisher	[Dropdown] 0-10; more than 10

I published an edited volume	[Dropdown] 0-10; more than 10
I submitted a book or monograph proposal to a publisher	[Dropdown] 0-10; more than 10
I published a book or monograph	[Dropdown] 0-10; more than 10

13. Please upload your current CV.

Section 2 Job Performance

14. Please select all that apply from the following research support options that your current institution or library provides for librarians. [Checkboxes] (*skip to 15*)

- ☐ Release time during the work week
- ☐ Short-term or pre-tenure research leave
- ☐ Sabbaticals
- ☐ Travel funds (full reimbursement)
- ☐ Travel funds (partial reimbursement)
- ☐ Research design consultant or statistical consultant
- ☐ Research grants
- ☐ Research assistants (e.g., student workers or short-term project hires)
- ☐ Formal research mentors
- ☐ Workshops or other forms of continuing education
- ☐ No research support
- ☐ Other (Please Specify)

15. During your IRDL year, were you employed in a tenure-track, continuing appointment, or promotion-eligible position? [Multiple Choice]

- ☐ Tenure track with the possibility of promotion (*skip to 16*)
- ☐ Continuing appointment with the possibility promotion (*skip to 16*)
- ☐ Continuing appointment without the possibility of promotion (*skip to 16*)
- ☐ Promotion only (*skip to 16*)
- ☐ Neither continuing appointment, tenure, or promotion (*skip to 17*)
- ☐ Other, please let us know about your institution's appointments and promotion status during your IRDL project year. (*skip to 17*)

16. Did you attain a continuing appointment, tenure, or promotion at the institution where you were employed during your IRDL year? [Multiple Choice]

- ☐ Yes, tenure, but not promotion (*skip to 17*)
- ☐ Yes, tenure and promotion (*skip to 17*)
- ☐ Yes, a continuing appointment, but not promotion (*skip to 17*)
- ☐ Yes, a continuing appointment and promotion (*skip to 17*)
- ☐ Yes, promotion (*skip to 17*)
- ☐ No (*skip to 17*)

17. What is your current academic rank? (*skip to 18*)

- ☐ Librarian 1
- ☐ Librarian 2
- ☐ Librarian 3

- Librarian 4
- Librarian 5
- Instructor
- Lecturer
- Assistant Professor
- Associate Professor
- Professor
- Assistant Librarian
- Associate Librarian
- Librarian
- Senior Librarian
- Adjunct or Visiting Instructor
- Adjunct or Visiting Lecturer
- Adjunct or Visiting Assistant Professor
- Adjunct or Visiting Associate Professor
- Adjunct or Visiting Professor
- Visiting Assistant Librarian
- Visiting Librarian
- Visiting Associate Librarian
- Visiting Senior Librarian
- Other

18. Do you believe IRDL contributed to any of these following job-related factors? Choose all that apply. (*skip to 19*)

- ☐ I earned a promotion in rank
- ☐ I received a promotion to a higher-level position at my institution
- ☐ I achieved tenure
- ☐ I received a certificate of continuous employment or a similar guarantee of job security
- ☐ I received new job title at my institution
- ☐ I got a one-time monetary salary award (e.g., a merit increase)
- ☐ I got a permanent raise in my base salary
- ☐ I acquired new job responsibilities related to my skills as a social science researcher at my institution (e.g., assessment projects, or projects that measure the impact of services)
- ☐ My research skills helped me secure a job at a new institution
- ☐ I started a local writing or research group
- ☐ I became a member of the IRB
- ☐ I have advised other librarians about their research projects
- ☐ I made presentation(s) based on the skills I gained during the IRDL workshop
- ☐ I have given workshops based on the skills I gained during the IRDL workshop
- ☐ I extended my personal learning network
- ☐ I gained research collaborators
- ☐ Other (Please Specify)

Section: 3 Professional Identity

19. Are you currently working towards a certificate or an additional degree? Check all that apply.

[Checkboxes]

- ☐ Yes, a certificate

- ☐ Yes, a thesis-based Masters
 - ☐ Yes, a non-thesis-based Masters
 - ☐ Yes, a PhD, EdD, or JD
 - ☐ No, I am not working towards an additional certificate or degree
20. Have you completed an additional certificate or degree since your IRDL year? Check all that apply. [Checkboxes]
- ☐ Yes, a certificate
 - ☐ Yes, a thesis-based Masters
 - ☐ Yes, a non-thesis-based Masters
 - ☐ Yes, a PhD, EdD, or JD
 - ☐ No, I am not working towards an additional certificate or degree
21. In your own words, please describe what it means to be a “librarian-researcher.”
[Textbox]
22. Before your IRDL year did you identify as a librarian-researcher? [Multiple Choice]
- ☐ Yes
 - ☐ No
23. Do you currently identify as a librarian-researcher?” [Multiple Choice]
- ☐ Yes
 - ☐ No
24. Is there anything about the impact (both short-term and long-term) of your experience as an IRDL Scholar on your research productivity, job performance, or identity as a researcher that we have not asked but you think is important for us to know?
[Textbox]
25. Are you interested in participating in a focus group or an interview for a further monetary incentive? The focus group and in-depth interview incentive is a \$100 Amazon gift card. Focus groups and in-depth interviews will take place between January 6 to May 3, 2020. [Multiple Choice]
- ☐ Yes
 - ☐ No
26. Please provide an email where [name deleted] may contact you to schedule your participation in a focus group or interview. These will take place from January 6 to May 3, 2020.
[Textbox]

End of Survey

Appendix C: Recruitment Email

Dear IRDL Scholar:

I am inviting you to participate in a survey of past participants of the Institute for Research Design in Librarianship.

The purpose of this survey is to measure the impact of IRDL on your research productivity, job performance, and professional identity. I designed this survey in collaboration with IRDL co-directors Kristine Brancolini and Marie Kennedy. We plan to publish and present the results of this study.

Only Frans Albarillo, the Lead Principal Investigator, will have access to the raw data, which he will anonymize. All data in reports, publication, and presentation of the data will be anonymous and analyzed in aggregate.

What will happen during the study

We will ask you to take two actions:

1. Upload or send your current CV to Frans Albarillo at Falbarillo@brooklyn.cuny.edu, so that we may examine your scholarly productivity since IRDL.
2. Complete a web-based survey. In the survey we will ask you to click through a series of questions with options for response. The survey is expected to take 15 to 20 minutes to complete.

Your privacy is important

We will make every effort to protect your privacy. No sensitive information will be gathered as part of this survey. Any information you provide will remain confidential. Only Frans Albarillo will view the results of the survey in their raw form.

Your rights

Your participation in this study is completely voluntary and no risks are anticipated for you as a result of participating.

If you decide to be in the study, you will have the right to stop participating at any time.

Incentive

When [name deleted] has confirmed that your CV has been received and the survey completed, you will be sent a \$50 Amazon electronic gift card.

Institutional Review Board approval

This is an IRB-approved study, HRPP file number 2019-0747. Brooklyn College, City University of New York is the IRB of record. The IRB coordinator is Twyla Tate, Research Compliance Manager, and can be reached by email at twyla.tate@brooklyn.cuny.edu or by telephone at 718.951.500 ext. 3829. Please don't hesitate to contact me or the IRB if you have any questions or concerns about the survey.

If you agree with all of the above statements, provide your consent to participate by clicking on the survey link below.

Sincerely,
Frans Albarillo
2014 IRDL Scholar
Reference and Instruction Librarian
Associate Professor
Brooklyn College, City University of New York
Email: Falbarillo@brooklyn.cuny.edu
Phone: (718)758-8213