

The Impact of the Research Data Management Toolkit: Assessing a RoadShow Workshop

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The “Building Your Research Data Management Toolkit” was developed to provide introductory research data management skills training to liaisons in academic libraries. This paper assesses the participants’ perceived change in knowledge, behaviors and attitudes as a result of participation in the RoadShow program. Long term changes in knowledge, skills and behaviors are suggested by the resulting data.

Introduction

As academic librarians continue to self-educate and reskill, the profession often seeks to meet their needs through the development of professional development tools and training programs. These programs and materials are seemingly created in waves, as new initiatives and trends emerge within the profession. One such wave emerged around 2013-2015 in response to the need for broad research data management upskilling throughout academic libraries. Most of the materials produced relied upon individual self-direction and efficacy. Due to the distributed nature of these interventions, there was limited opportunity to directly assess the impact of these materials.¹⁻⁹

Library professional organizations, and the field of librarianship as a whole, recognized that these materials would be insufficient to bring a critical mass of individuals up to speed on the topic. Therefore, new solutions were developed that trained large groups in one structured intervention. For example, the Institute of Museum and Library Services (IMLS) funded massive open online courses on topics of data management in 2016.^{10,11} Likewise, the Association of College and Research Libraries (ACRL) commissioned the “Building Your Research Data Management” Toolkit in 2015. It was developed to teach groups of up to 120 participants at a time about the basic principles of research data management from the perspective of liaison librarians.

Over five years, the “Building Your Research Data Management Toolkit” RoadShow, aka the Research Data Management (RDM) RoadShow, traveled to fifteen sites, including one international location. Based on data from surveys administered to participants at three points—prior to participation, and again one month and six months after participation—conclusions can be

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drawn regarding the efficacy of the RDM RoadShow as a delivery modality for research data management fundamental skills and knowledge.

Purpose of This Paper

- Assess the impact of the RoadShow on individual librarians' personal knowledge, behavior and attitudes related to research data management.

The Development of the RoadShow

To gauge interest in the topic of research data management, a pre-conference workshop was hosted by ACRL in 2014 examining the fundamental tenets of research data management. Based on the response, ACRL issued a call in 2015 for curriculum developers to develop a one-day long workshop to teach the fundamental principles of research data management to academic liaison librarians.¹² The workshop was modeled after the popular ACRL Scholarly Communications RoadShow, which featured two speakers and six interactive modules. The workshop materials were licensed under a Creative Commons CC-BY-NC license and electronically housed on the ACRL Scholarly Communication Toolkit website.¹³ Unlike previous RoadShows, the Research Data Management RoadShow was developed in tandem with a research project to investigate the efficacy of the intervention.¹⁴

The RDM Road Show was designed as a single-day, in-person professional development event. This workshop included interactive sessions on research data management, applying library liaison skills to RDM, serving different disciplinary needs, planning for data management services, and developing campus partnerships. The workshop presented the following learning objectives:

- Participants will identify data within the research process and lifecycle in order to articulate the role of the libraries in the management of data to researchers.
- Participants will learn how to develop expertise in the nuances of disciplinary requirements for data management in order to educate their faculty and students about data best practices for their discipline.
- Participants will articulate specific existing skills that they already possess as librarians, which transfer to data services in order to begin building a toolkit of research data management skills.
- Participants will identify campus partners in research data management in order to create an environment of research data management support for their faculty.
- Participants will articulate the parts of a data management plan in order to describe its role as a living document within a research project.
- Participants will apply their relevant prior knowledge of their disciplines to create a research data management interview plan in order to facilitate faculty engagement.¹⁵

Assessment of Librarians and RDM Interventions

While assessment of impact is a critical component of any educational intervention, timely and comprehensive assessment of research data management professional development has been limited. Tenopir et al. have assessed, over time, the baseline skills of librarians related to research data management; however, their work focused broadly on the uptake of data management knowledge and behaviors, and this research has not been directly related to a specific educational intervention.^{16,17} Additional evaluation research has sought to determine

the skill sets that librarians need,^{18,19} surveyed how prepared librarians feel to provide data services,²⁰ assessed how librarians are perceived by researchers in the provision of data support,²¹ or looked externally to libraries to understand faculty data needs.²²

The literature primarily focused on the techniques and methods used for the development of each of the curricula.^{23–25} Articles about assessing various curricula include a single institution case study, which only describes the implementation process, not the actual perceived impact nor use of the New England Collaborative Data Management Curriculum (NECDMC) with interdisciplinary graduate students.^{26–28}

A complementary area where librarians have needed to take on new and advanced research responsibilities has been the rise of systematic review services in health sciences libraries, which has prompted the development of several in person multi-day workshops. A recent article provides a longitudinal evaluation of the efficacy of the University of Pittsburgh Systematic Review Workshop.²⁹ However, this workshop is highly competitive, such that many institutions could only send a single individual to a training and therefore a direct comparison to a less exclusive intervention like the RoadShow is difficult to make.

At the outset of the research project, our research question was

- Did the RoadShow impact individual participant knowledge, behavior, and attitudes related to RDM Services? If so, how?

Previous RoadShows had assessments of only a few sites (single presentations), typically conducted immediately after the event, and did not follow up on long term gains. This project is therefore unique in using multi-part assessment to identify indicators of efficacy for the RoadShow professional development methodology.

RoadShow Assessment Methodology

The purpose of this RoadShow assessment was to better understand the knowledge, behaviors, and attitudes of participants prior to their attendance and then at one- and six-month intervals following the workshop in order to identify changes attributable to the intervention. To assess this, the authors developed a series of three surveys, which were reviewed by Institutional Review Boards and assigned an Exemption by Purdue University # 1603017411 and University of Illinois Chicago # 2016-1069.³⁰ These surveys consisted of seventeen questions containing sixty assessed statements addressing knowledge, behavior, and attitudes of RoadShow participants related to research data management as well as implementation of the knowledge, behavior, and attitudes after the RoadShow at their home institution. The surveys were built and conducted using the Qualtrics software. Access to the raw data was limited to the two lead authors. Question formats included Likert scales (5 point for questions, 3 point for impact of the RoadShow) and short answer related to job title and institution. Personally identifiable information for individuals was limited to institution and job title. A participant could leave any question blank.

All pre-registered participants received the first survey invitation in advance of participating in the workshop. De-identified summary data from the preliminary survey was provided to the workshop instructors to assist in their instruction preparation. Participants were then invited during the workshop to provide their email address separately if they wished to participate in the one- and six-month interval surveys. Respondents who provided their contact information received one notification email and one follow up email for each of the one- and six-month surveys. In order to limit participant re-identification, responses were not

correlated by any form of demographic information across the three surveys.

Data was organized into Summary Tables, and summary statistics were performed on all data. Data analysis was conducted in R, using the packages readxl, dplyr, and likert. Likert charts were then created using Excel, Google Sheets, and ChartExpo.

Results

Summary Statistics

Data was captured over the course of four years from a total of 15 Roadshows. At least 558 participants attended the RoadShows, with 216 participating in the pre-survey, 202 participating in the one-month post-survey and forty-five participating in the six-month post-survey. As personal identifiers were deliberately not captured, individual reported change over time is not traced through the data. Due to the limitations of the data and the small overall sample sizes, responses are provided in percentages rather than absolute value counts.

Individual Impact of the RoadShow

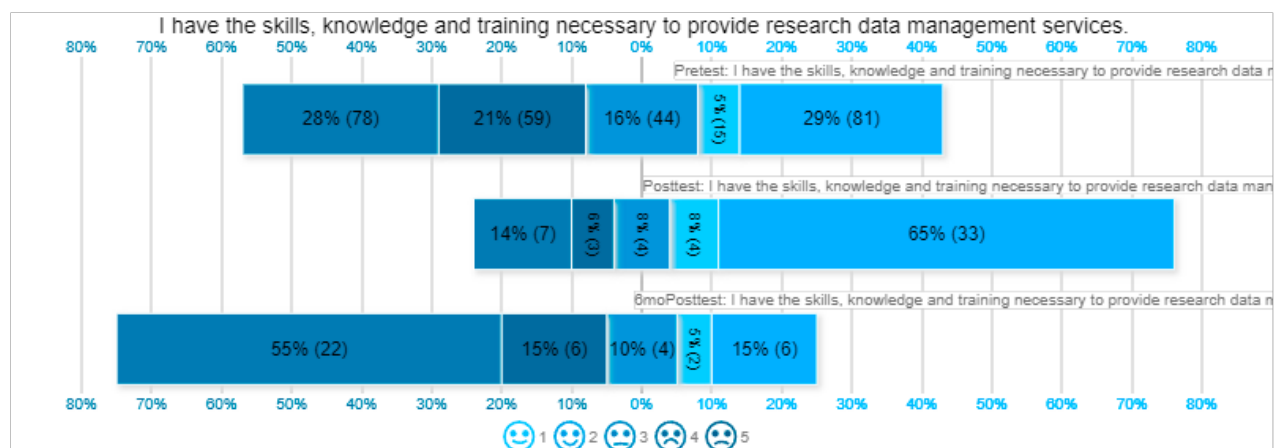
This paper focuses on the responses specifically from nine survey questions related to: the knowledge and skills of the target workshop audience (i.e., liaison librarians); their perceptions of opportunities for engagement; and their beliefs about the necessity of providing data services.

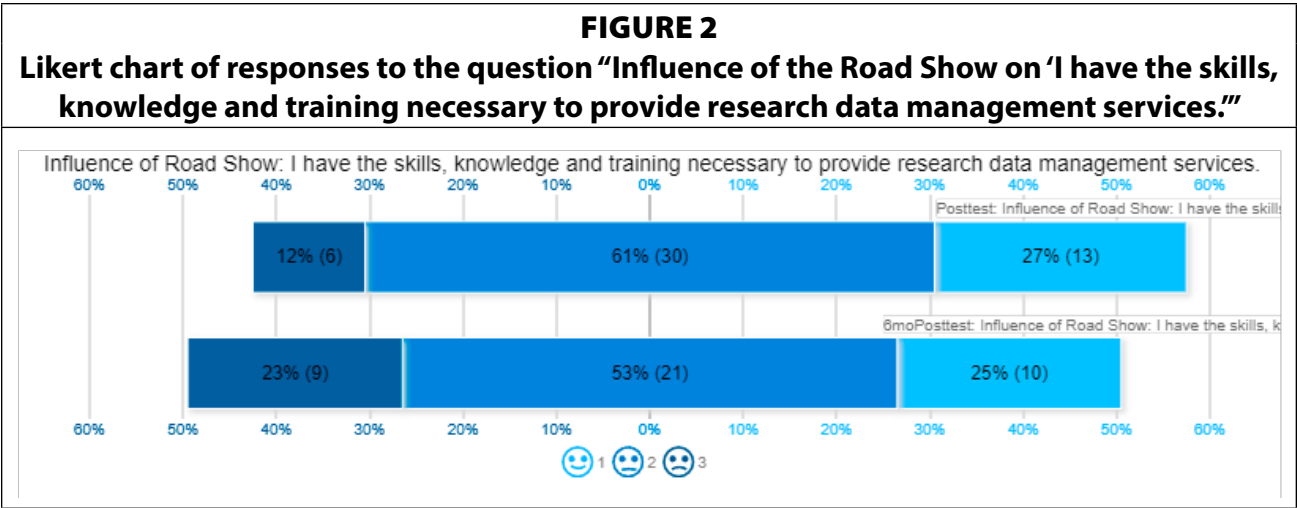
Participants were asked to rate their agreement to questions on a 5-point likert scale and the impact of the RoadShow on their agreement in one- and six-month post-surveys on a 3-point scale. Here, results for agreement are grouped for Agreement, Neutral, or Disagreement to assess overall trends, while results for impact are grouped by Very/Some Influence and Not Influential. Research data management, which was spelled out in each question, is abbreviated here to RDM.

Participant RDM Knowledge

Three questions were assessed to identify participant RDM knowledge and the participants' perceived impact of the RoadShow.

FIGURE 1
Likert chart of responses to the question "I have the skills, knowledge and training necessary to provide research data management services."





As an RDM knowledge content baseline, participants considered the question “I have the skills, knowledge and training necessary to provide research data management services.” Figure 1 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 34 percent of RoadShow participants agreed, 16 percent were neutral, and 49 percent disagreed. In the one-month post-survey, 73 percent agreed that they had the skills, knowledge and training, 8 percent were neutral, and 20 percent disagreed. At the six-month post-survey, 20 percent agreed, 10 percent were neutral, and 70 percent disagreed.

Participants were also asked to assess the impact of the RoadShow on if they had the skills, knowledge and training necessary. Figure 2 shows the perceived influence broken out by the one- and six-month surveys. In the one-month survey, 88 percent said that the RoadShow was very/somewhat influential and 12 percent not influential. In the six-month post-survey, 78 percent reported that the RoadShow was very/somewhat influential and 23 percent reported that it was not influential.

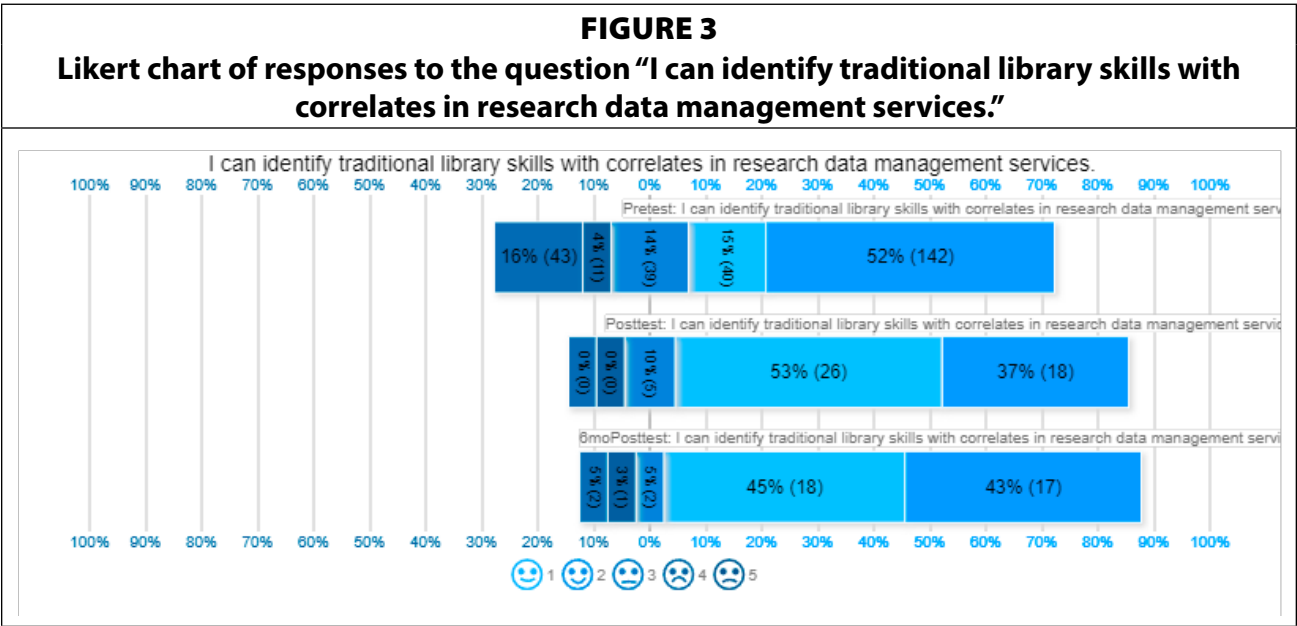
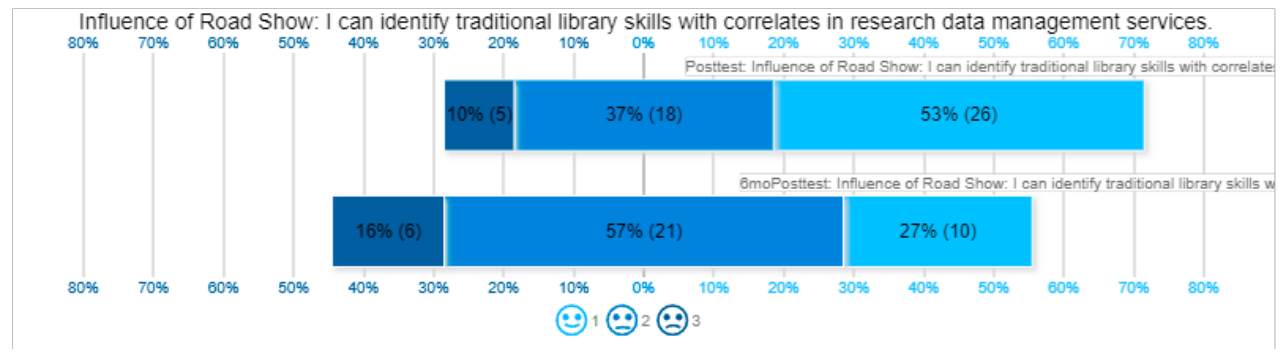


FIGURE 4
Likert chart of responses to the question “Influence of the Road Show: I can identify traditional library skills with correlates in research data management services.”

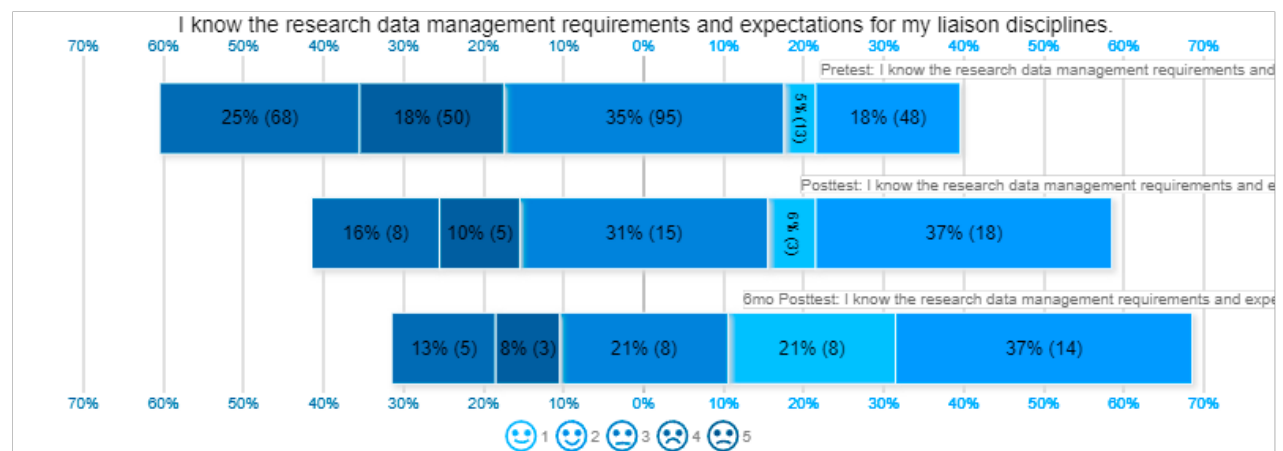


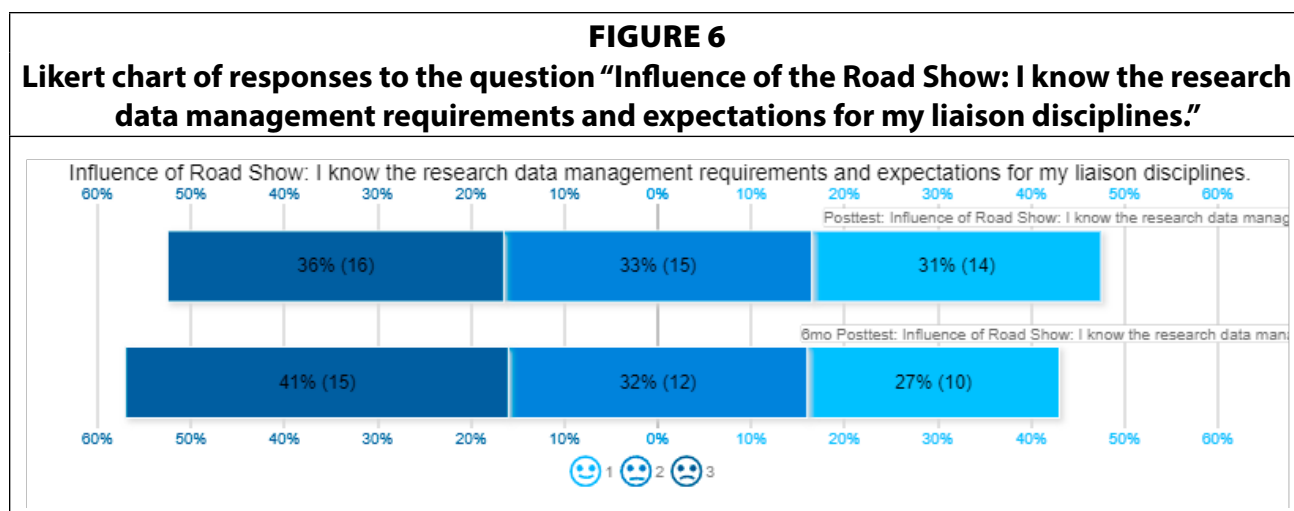
The second knowledge question asked was: “I can identify traditional library skills with correlates in research data management services.” Figure 3 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 67 percent agreed, 14 percent were neutral, and 15 percent disagreed. In the one-month post-survey, 90 percent agreed, 10 percent were neutral and 0 percent disagreed. At the six-month post-survey, 88 percent agreed, 5 percent were neutral, and 8 percent disagreed.

Participants were asked to assess the impact of the RoadShow on their ability to correlate traditional library skills and RDM. Figure 4 shows the perceived influence broken out by the one- and six-month surveys. In the one-month survey, 90 percent said the RoadShow was very/somewhat influential and 10 percent said it was not influential. In the six-month post-survey, 84 percent reported that the RoadShow was very/somewhat influential and 16 percent reported that it was not influential.

The final knowledge question asked participants to assess whether, “I know the research data management requirements and expectations for my liaison disciplines.” Figure 5 presents the agreement of participants with these statements in the pre-survey, the one-month post-

FIGURE 5
Likert chart of responses to the question “I know the research data management requirements and expectations for my liaison discipline.”





survey, and the six-month post-survey. In the pre-survey, 23 percent of RoadShow participants agreed, 35 percent were neutral, and 43 percent disagreed. In the one-month post-survey, 43 percent agreed that they knew the RDM requirements for their disciplines, 31 percent were neutral, and 26 percent disagreed. At the six-month post-survey, 58 percent of RoadShow participants agreed, 21 percent were neutral, and 21 percent disagreed.

Participants were asked to assess the impact of the RoadShow on if they knew the RDM requirements and expectations for their liaison disciplines. Figure 6 shows the perceived influence broken out by the one- and six-month surveys. In the one-month post-survey, 64 percent said the RoadShow was very/somewhat influential and 36 percent said it was not influential. In the six-month post-survey, 59 percent said the RoadShow was very/somewhat influential and 41 percent said it was not influential.

Opportunities for Engagement

As a learning objective of the RoadShow, the instructors sought to assist participants in finding ways to engage with RDM. Four questions addressed whether participants felt able to assess opportunities to engage in RDM activities.

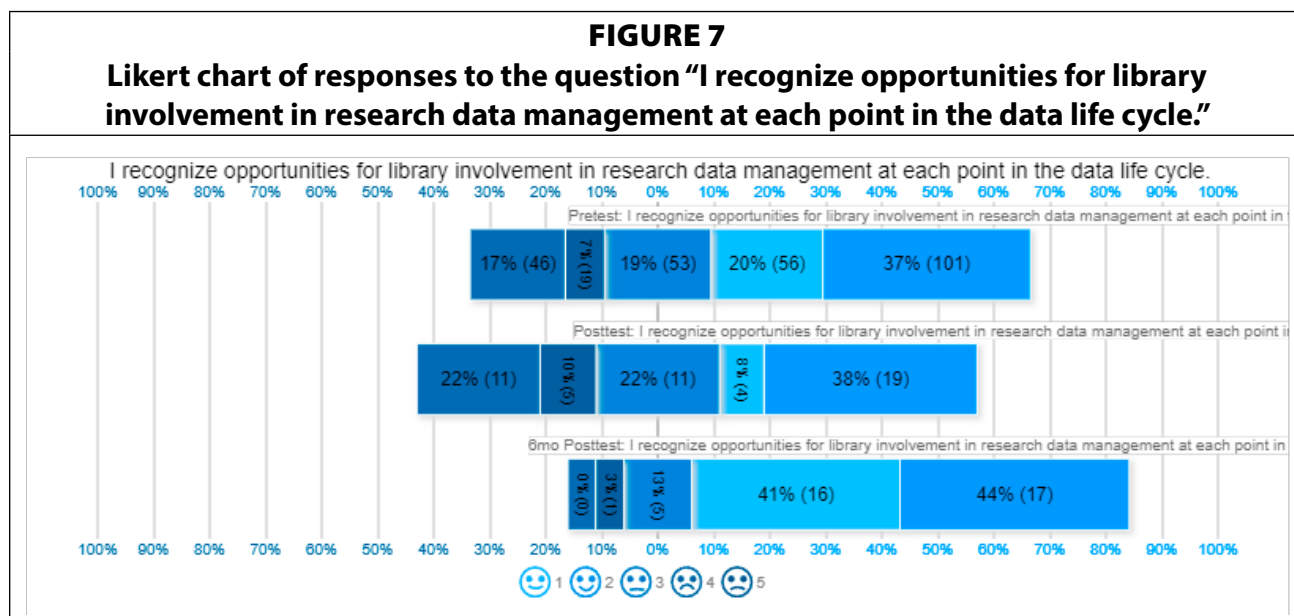
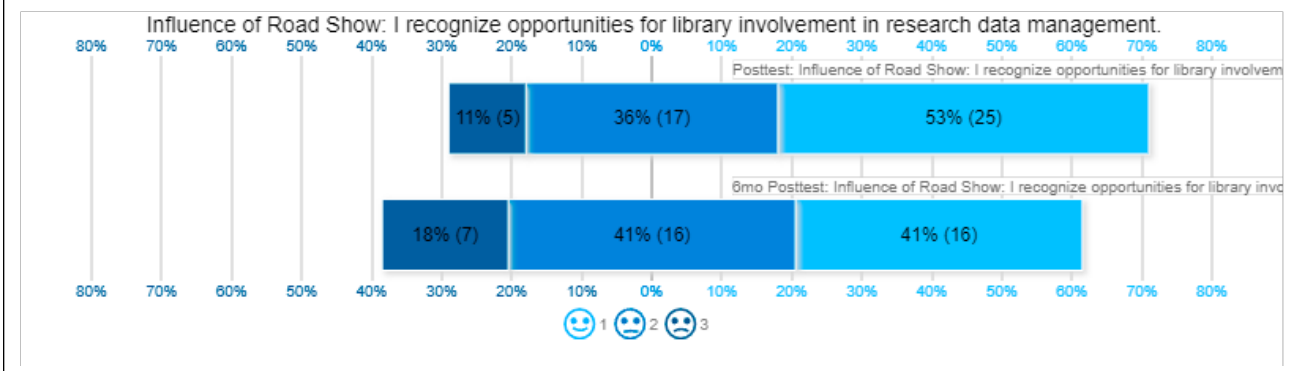


FIGURE 8

Likert chart of responses to the question “Influence of the Road Show: I recognize opportunities for library involvement in research data management at each point in the data life cycle.”

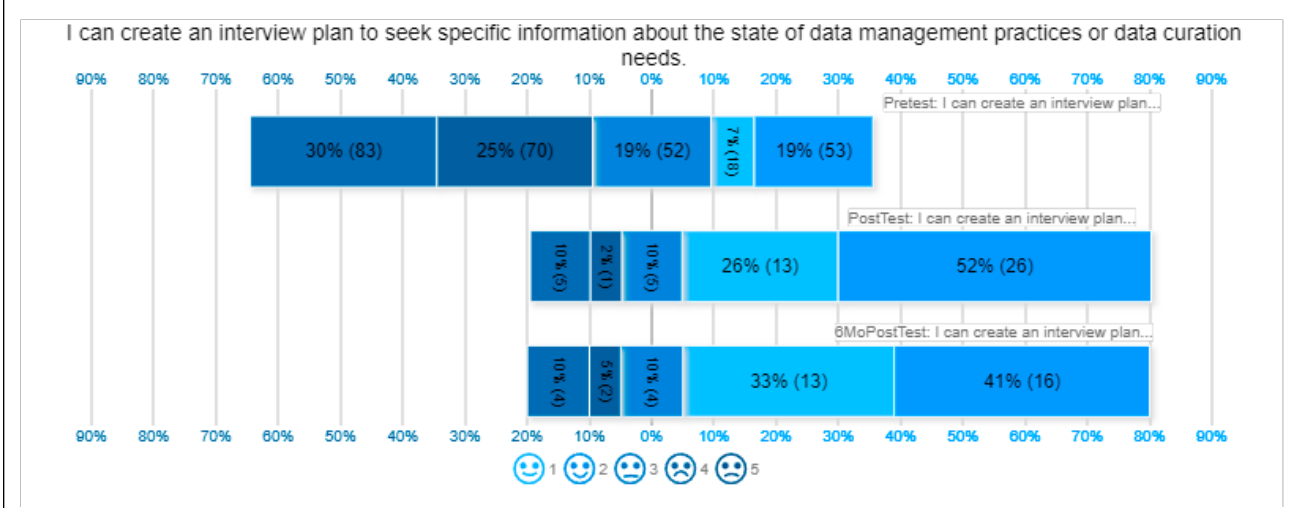


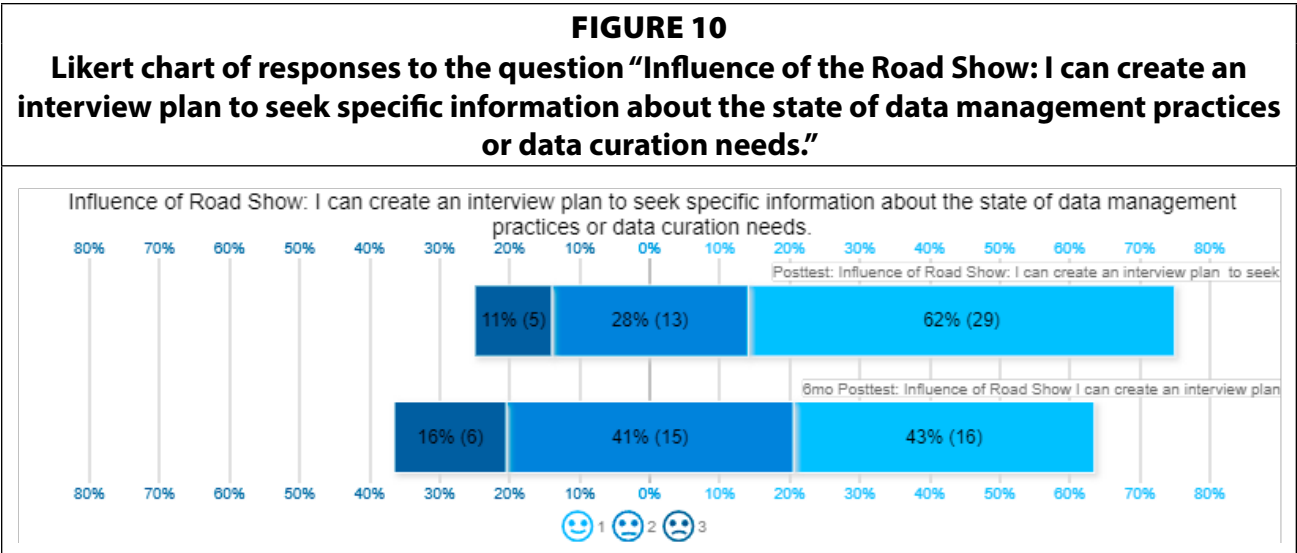
As a baseline for gauging library engagement, participants considered the question: “I recognize opportunities for library involvement in research data management at each point in the data life cycle.” Figure 7 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 57 percent of RoadShow participants agreed, 19 percent were neutral, and 24 percent disagreed. In the one-month post-survey, 46 percent agreed that they recognized opportunities for library involvement in RDM, 22 percent were neutral, and 32 percent disagreed. At the six-month post-survey, 89 percent agreed, 13 percent were neutral, and 3 percent disagreed.

Participants assessed their perceived impact of the RoadShow with the question: “I recognize opportunities for library involvement in research data management at each point in the data life cycle.” At the one-month post-survey 89 percent said the RoadShow was very/somewhat influential and 10 percent said it was not influential. In the six-month post-survey, 82 percent reported that the RoadShow was very/somewhat influential and 18 percent said it was not influential.

FIGURE 9

Likert chart of responses to the question: “As a librarian, I can create an interview plan to seek specific information about the state of data management practices or data curation needs.”





The next engagement opportunity question asked participants to consider if they felt they could agree that “I can create an interview plan to seek specific information about the state of data management practices or data curation needs.” Figure 9 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 26 percent of participants agreed, 19 percent were neutral, and 55 percent disagreed. In the one-month post-survey, 76 percent agreed that they could create an interview plan, 9 percent were neutral, and 15 percent disagreed. At the six-month post-survey, 74 percent agreed, 10 percent were neutral, and 15 percent disagreed.

Participants indicated their own perception of the impact of the Road Show with the question: “I can create an interview plan to seek specific information about the state of data management practices or data curation needs.” Figure 10 shows the perceived influence broken out by the one- and six-month surveys. At the one-month post-survey 90 percent said the RoadShow was very/somewhat influential and 11 percent said it was not influential. In the six-month post-survey, 84 percent reported that the RoadShow was very/somewhat influential and 16 percent said it was not influential.

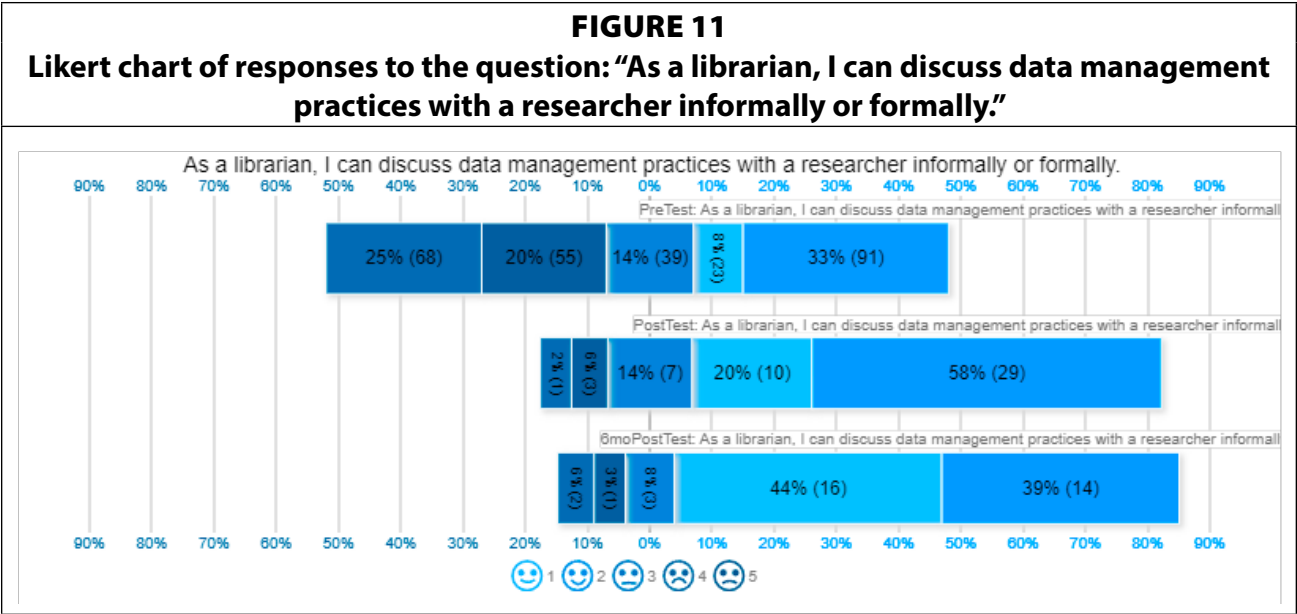
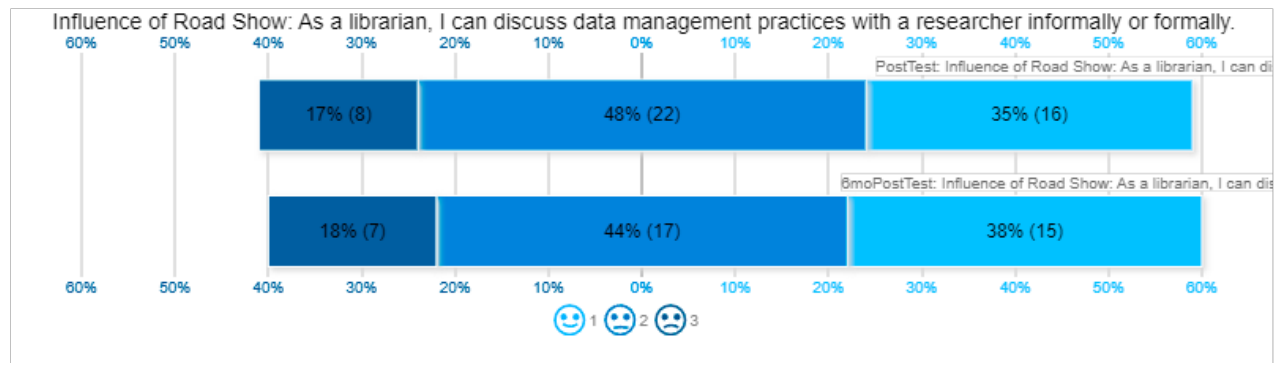


FIGURE 12

Likert chart of responses to the question “Influence of the Road Show: As a librarian, I can discuss data management practices with a researcher informally or formally.”



Next, participants were asked about identifying their own potential for involvement working with a researcher, in answer to the question: “As a librarian, I can discuss data management practices with a researcher informally or formally.” Figure 11 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 41 percent of RoadShow participants agreed, 14 percent were neutral, and 45 percent disagreed. In the one-month post-survey, 78 percent agreed that they could discuss RDM with a researcher, 14 percent were neutral, and 8 percent disagreed. At the six-month post-survey, 83 percent agreed, 8 percent were neutral, and 9 percent disagreed.

For the statement: “As a librarian, I can discuss data management practices with a researcher informally or formally,” in the pre-survey 42 percent of participants agreed, 14 percent were neutral, and 44 percent disagreed. In the one-month post-survey, 77 percent agreed, 15 percent were neutral, and 8 percent disagreed; 84 percent said the RoadShow was very/somewhat influential and 17 percent said it was not influential. In the six-month post-

FIGURE 13

Likert chart of responses to the question “I can make referrals to specific campus partners in research data management to solve researchers’ problems in RDM.”

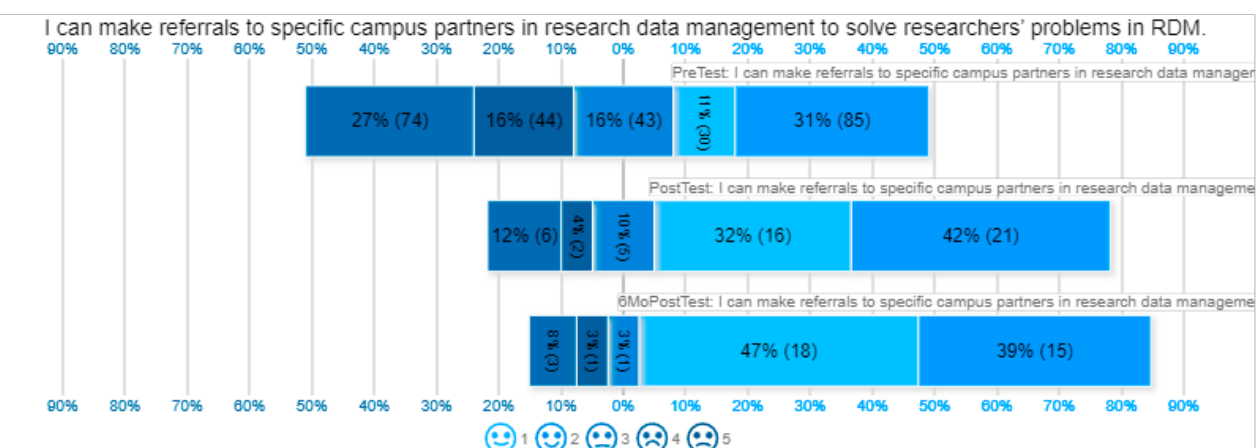
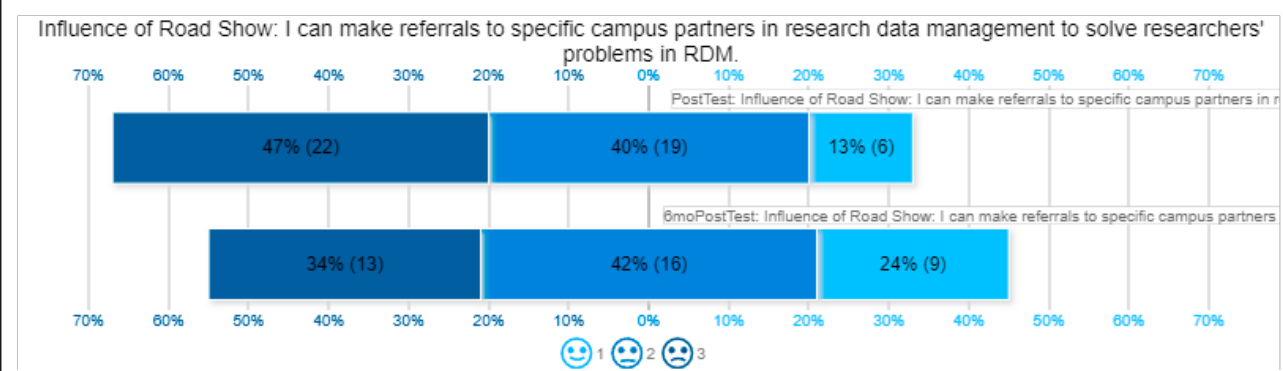


FIGURE 14

Likert chart of responses to the question “Influence of the Road Show: I can make referrals to specific campus partners in research data management to solve researchers’ problems in RDM.”



survey, 74 percent agreed, 10 percent were neutral, and 15 percent disagreed; 79 percent said the RoadShow was very/somewhat influential and 21 percent said it was not influential.

Another opportunity for an engagement question was whether participants felt they could agree with the question: “I can make referrals to specific campus partners in research data management to solve researchers’ problems in RDM.” Figure 13 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 32 percent of RoadShow participants agreed, 16 percent were neutral, and 43 percent disagreed. In the one-month post-survey, 74 percent agreed that they had the skills, knowledge, and training, 10 percent were neutral, and 16 percent disagreed. At the six-month post-survey, 86 percent agreed, 3 percent were neutral, and 11 percent disagreed.

Participants assessed the impact of the Road Show with the question: “I can make referrals to specific campus partners in research data management to solve researchers’ problems in RDM.” Figure 14 shows the perceived influence broken out by the one-month and six-month surveys. At the one-month post-survey 53 percent said the RoadShow was very/somewhat influential and 47 percent said it was not influential. In the six-month post-survey, 66 percent reported that the RoadShow was very/somewhat influential and 33 percent said it was not influential.

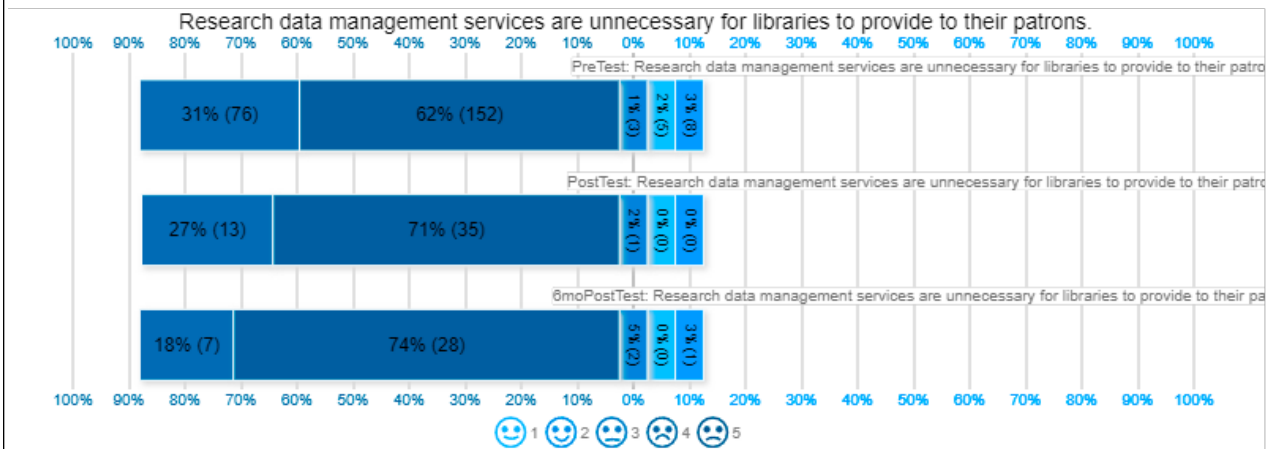
Necessary for the Library

The final set of questions asked participants in the RoadShow events to assess whether they felt that RDM was unnecessary for libraries or as something for them, as individuals, to provide to patrons.

In the first questions about RDM necessity, participants considered the question: “Research data management services are unnecessary for libraries to provide to their patrons.” Figure 15 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 5 percent of RoadShow participants agreed, 1 percent were neutral, and 93 percent disagreed. In the one-month post-survey, 0 percent agreed that RDM was unnecessary for libraries to provide, 2 percent were neutral, and 98 percent disagreed. At the six-month post-survey, 3 percent agreed, 5 percent were neutral, and 92 percent disagreed.

FIGURE 15

Likert chart of responses to the question “Research data management services are unnecessary for libraries to provide to their patrons.”

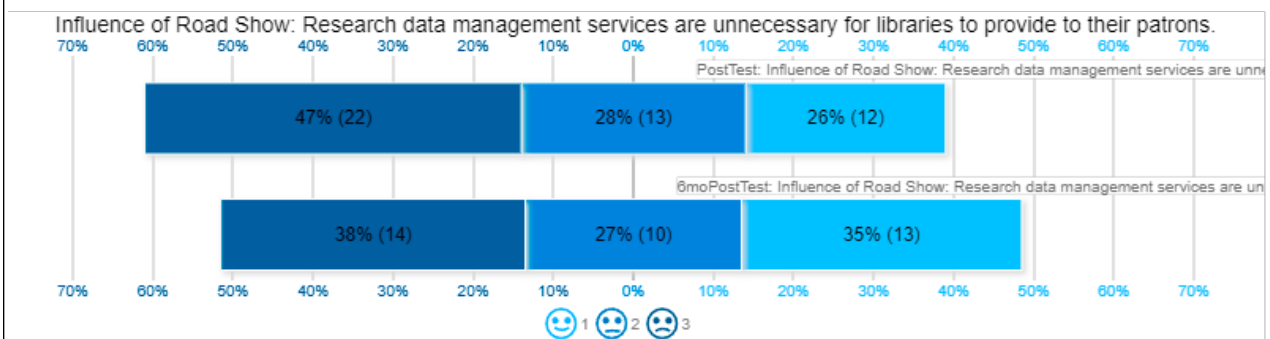


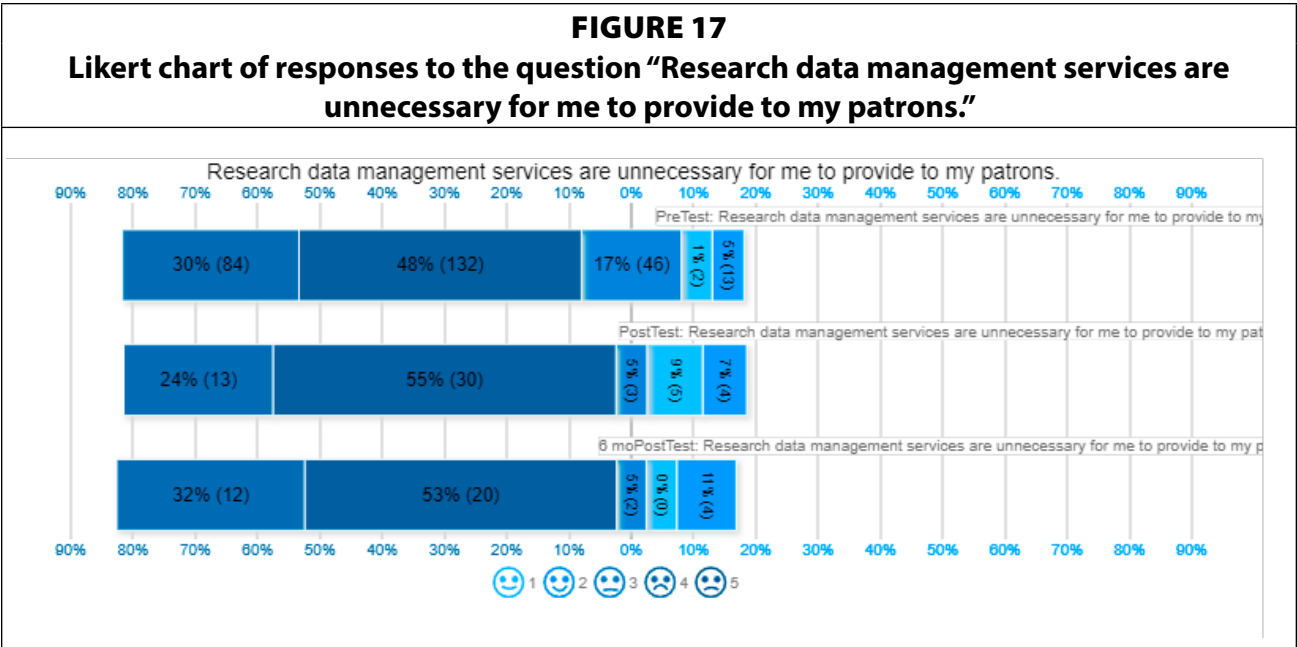
Participants identified the impact of the Road Show on their attitude regarding the statement “Research data management services are unnecessary for libraries to provide to their patrons.” Figure 16 shows the perceived influence broken out by the one-month and six-month surveys. At the one-month post-survey 54 percent said the RoadShow was very/somewhat influential and 47 percent said it was not influential. In the six-month post-survey, 62 percent reported that the RoadShow was very/somewhat influential and 38 percent said it was not influential.

The second necessity question asked participants to determine whether “Research data management services are unnecessary for me to provide to my patrons.” Figure 17 presents the agreement of participants with these statements in the pre-survey, the one-month post-survey, and the six-month post-survey. In the pre-survey, 6 percent of RoadShow participants agreed, 17 percent were neutral, and 78 percent disagreed. In the one-month post-survey, 16 percent agreed that they had the skills, knowledge and training, 5 percent were neutral, and 79 percent disagreed. At the six-month post-survey, 11 percent agreed, 5 percent were neutral, and 85 percent disagreed.

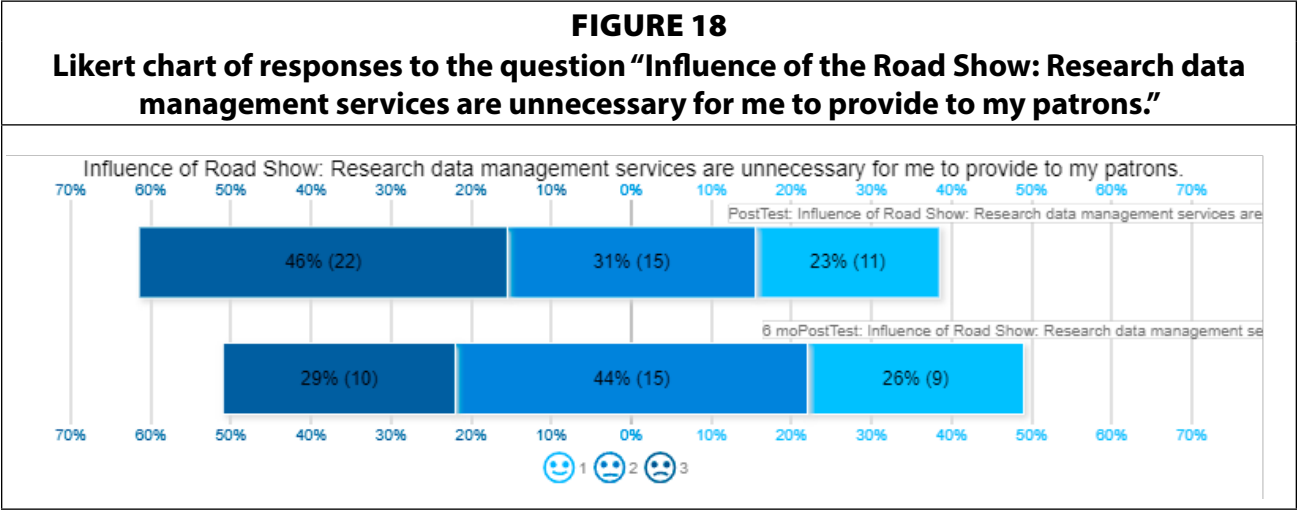
FIGURE 16

Likert chart of responses to the question “Influence of the Road Show: Research data management services are unnecessary for libraries to provide to their patrons.”





Participants identified the influence of the Road Show on their perception of the statement with the question: “Research data management services are unnecessary for me to provide to my patrons.” Figure 18 shows the perceived influence broken out by the one-month and six-month surveys. At the one-month post-survey 54 percent said the RoadShow was very/somewhat influential and 46 percent said it was not influential. In the six-month post-survey, 70 percent reported that the RoadShow was very/somewhat influential and 29 percent said it was not influential.



Limitations

Limitations to the findings in this study include respondent heterogeneity, with participants including not only liaison librarians, but data librarians, other types of librarians who may not have data responsibilities, and participants from other campus partners. This was further exacerbated by the time between the first and last RoadShows captured in the survey, as several years had passed, and there was likely a change in general awareness of research

data management concepts. Finally, as we did not track individual participants over the three surveys, we are unable to make generalizable statements related to any particular group's growth or change in knowledge, behavior, or attitude.

Discussion

Across the various topics, participants in the RDM RoadShow showed a positive change in questions related to their personal knowledge, behavior, and attitudes surrounding research data management and their preparedness to engage in related activities. The strongest gains and the most significant impacts of the RoadShow appears to have been regarding the ability of participants to make referrals on campus with reference to research data management needs, as well as the ability of participants to create an interview plan regarding RDM, and to carry on formal or informal conversations with researchers regarding RDM. However, noted limitations prevent identifying improvements at the institutional or individual level and the documented individual changes are unlikely to reflect broad institutional preparedness or support for RDM.

Participant RDM Knowledge

Participant knowledge questions showed a significant positive change, with a nearly 30 percent improvement in agreement reported for each of the questions, suggesting that the RoadShow resulted in at least a one-month knowledge gain for responding participants. The introductory question of whether participants had skills, knowledge, and training for RDM showed an overall response of 49 percent disagreeing that they were prepared. This demonstrated that the workshop was reaching a significant number of participants for whom RDM wasn't a current responsibility and who were likely to most benefit. Further, with a target audience of liaison librarians, part of the goal of the workshop was not only to introduce RDM concepts, but to have participants identify these emerging requirements and obligations for the faculty and students with whom they were most likely to collaborate for instruction and research. Those reporting that they disagreed that they had the ability to do this decreased nearly by half in the first month (43 percent to 27 percent), suggesting that the workshop was able to provide participants a way to connect RDM with already held disciplinary information. However, at the six-month post-survey, 70 percent of participants disagreed that they had the skills, knowledge and training. This suggests that, by learning more about RDM, participants could then identify their personal knowledge gaps as time proceeded. This may suggest that the workshop knowledge gains may be short-lived or that by having integrated the foundational information provided by the workshop, the material seemed so introductory that it was no longer perceived as knowledge gain.

A primary objective of the RoadShow was that librarians who participated would be able to correlate their current responsibilities and skills to RDM. Figure 3, which shows—at the one-month post-survey and the six-month post-survey—a nearly 90 percent agreement with that statement, suggests that the RoadShow was able to meet that goal. This familiarized participants with RDM services within the context of the greater library and information science landscape.

Opportunities for Engagement

Beyond internal awareness and personal understanding of RDM, it is critical for liaisons to

engage with the campus community, connecting researchers with information, partners, and colleagues. It was amongst the opportunity questions that the biggest impact of the RDM RoadShow was documented, with 80 to 90 percent of respondents at the one- and six-month marks noting that the workshop was very or somewhat influential in this area. This was related to general opportunity identification, such as data lifecycles, as well as taking part in activities such as creating an interview plan or speaking to researchers about RDM. While data lifecycles are often considered commonplace, they were and continue to be a framework to facilitate identifying and navigating activities of research data management. Here, the data suggests that the RoadShow provided a variety of ways for librarians to see opportunities for engagement for themselves and their peers. The interview plan was likely the most direct correlate between traditional library skills, with its direct similarities to getting ready for or conducting a reference interview and engaging in RDM activities. This particular question saw a decrease from 55 percent disagreement that they could do the task to 15 percent, suggesting the workshop presenters succeeded in helping participants identify a specific activity where they could confidently get more information from researchers. This expanded into confidence related to speaking to researchers. When faced with new areas of knowledge, getting past the initial barriers or jargon to allow for conversations with researchers can lead to a lot more opportunities for data management conversations to happen organically. This could allow liaison librarians not only to participate in data conversations, but also provide appropriate handoffs to library colleagues or other campus partners. By expanding and normalizing the conversation, this further reinforces the role of libraries as part of the research data management ecosystem on campus.

An interesting point in the data is related to campus referrals. While there was a 30 percent increase in agreement by participants between the pre-survey and the two post surveys in their belief in their ability to do this, there was a surprisingly high disagreement with the impact of the RoadShow (47 percent and 34 percent, respectively). It is unclear why this wasn't seen as impactful despite the perceived confidence increase. The overlap of RDM referrals with the existing referral networks that the liaisons participate in during traditional disciplinary activities may well account for this high level of disagreement.

Necessary for the Library

The necessity of libraries and individual librarians to provide data services was likely impacted by the makeup of participants in the RoadShow, as the majority of participants self-selected to attend. There was not a significant shift in responses; nearly 90 percent agreed libraries should provide these services, with around three-quarters of participants identifying a role for themselves. As the RoadShow was presented over several years, during which time RDM services became more familiar in academic libraries, data-focused professionals' participation may have impacted these outcomes.

Individuals Versus Institutions

While this survey provides insight into individual participants, it does not reflect commitment or actual changes made in an academic library. Due to the short nature of the survey period, libraries were unlikely to have made significant changes in their institutional data practices, whether with full-time data management personnel or by assigning research data management duties on top of existing liaison roles.

This speaks to the difficulty of rapid institutional change. It also points to a challenge of the RoadShow format. Unless an institution was in the position to make changes in response to increased skills and interests of their liaisons, the skills gained through a one-shot format professional development session may be wasted, with participants reverting to earlier familiarity or lack of engagement. This challenge may have been exacerbated by the timing of the RoadShow contract in which one institution would hire the RoadShow at the point it was ready to make changes, but may have also invited other institutions to attend, whether or not those institutions were ready to change.

Without the correlation of timing, expectations for outcomes from the RoadShow need to be framed within the context of adult learning theory.³¹ Framing learning within the context of pre-existing skills that individuals possess, as well as leveraging conceptual models that participants already have, will help ensure some level of information transfer to the audience of the RoadShow. While the content was introduced via the RoadShow in a frame of adult learning theory, if the skills are not practiced within the context of the home institution and the liaison's day to day practice, the learning will not be transferred efficiently. The RoadShow then becomes victim to the same problems of one-shot information literacy sessions.³² Without practice and internalized concepts that are relevant to the lived experience, the learning will be shallow at best and may fail altogether.

The Need for Administrative Support

If library administrations sponsor RoadShows, anticipating that they will bring liaisons up to speed on a given topic, then library administrations should also be prepared to implement programs or services that engage the liaisons in the work related to the topic immediately upon completion of the RoadShow. While RoadShows present as a low bar to entry for an emerging area of Library and Information Studies, due to the nature of the format, they will only be effective in so much as the learner then practices the learned knowledge, skills, and attitudes as soon as possible and as frequently as possible. If a library is planning a RoadShow without the scaffolding in the local environment, the knowledge will be lost swiftly.

Additionally, it is important for the local institution to identify the most appropriate participants for a RoadShow. Those with extensive experience in research data management will most likely be bored by the introductory materials. Those participants affiliated outside Libraries and Information Science may find entire sections of the content less meaningful because the context of the RoadShow content is framed in Library service development and practices.

Consistent comments in the follow up survey indicate that liaisons who attended the RoadShow, but then failed to see concurrent support from library administrations, questioned the efficacy of the RoadShow model as well. The lack of continued investment or support for continuing professional development, combined with a situation that makes the practice of the learned skill difficult either by indifference or clear roadblocks and restrictions, diminishes the impact of the RoadShow at the individual as well as collective level.

Conclusion

The lack of regular, rigorous evaluation of continuing education programs aimed at librarians, particularly of those programs which received external funding, is notable and potentially problematic. We need to appraise the full impact or benefit of these programs, in order to

gain ongoing understanding of knowledge, behaviors, and attitudes of those participating.

By appraising the RoadShow, we were able to demonstrate the short-term knowledge gains perceived by participants and to begin to identify the utility of the workshop format of continuing education. However, to successfully implement research data management services, our institutions will have to do something more than bring in the RoadShow. While a single day of training is useful for introducing individuals to the foundational concepts, achieving long standing implementation of new initiatives requires additional resources such as time, funding, and personnel.

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Appendix. Selected Questions from the RDM Road Show Survey

I have the skills, knowledge and training necessary to provide research data management services	Figures 1 & 2
I can identify traditional library skills with correlates in research data management services.	Figures 3 & 4
I know the research data management requirements and expectations for my liaison discipline	Figures 5 & 6
I recognize opportunities for library involvement in research data management at each point in the data life cycle.	Figures 7 & 8
As a librarian, I can create an interview plan to seek specific information about the state of data management practices or data curation needs.	Figures 9 & 10
As a librarian, I can discuss data management practices with a researcher informally or formally.	Figures 11 & 12
I can make referrals to specific campus partners in research data management to solve researchers' problems in RDM.	Figures 13 & 14
Research data management services are unnecessary for libraries to provide to their patrons.	Figures 15 & 16
Research data management services are unnecessary for me to provide to my patrons.	Figures 17 & 18