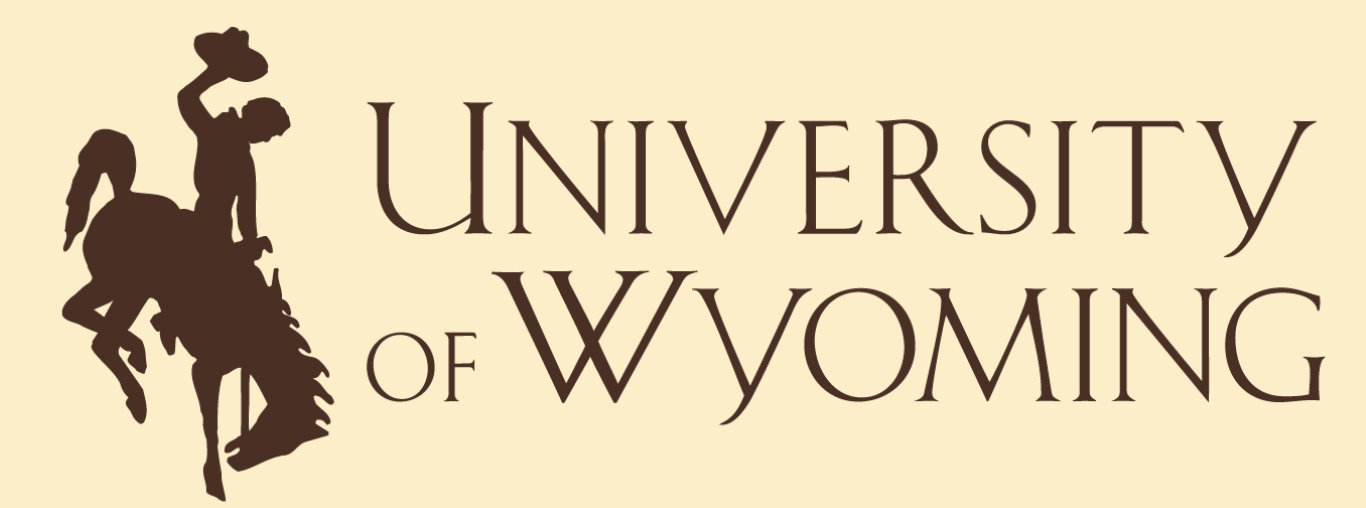


# Assessing education needs of graduate students for data management

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Libraries

## Introduction

Many research funding agencies have implemented data sharing policies. Publication of research results is no longer an endpoint in itself. Graduate students, as the researchers of tomorrow, need to learn how to navigate data sharing requirements. A study was designed to better understand what education support graduate students need in research data management.

## Objectives

- Determine the needs of graduate students for education in research data management
- Explore faculty perspectives
- Identify approaches to library services to fill knowledge gaps

## Research Questions

- How do graduate students and faculty rate the importance of research data management (RDM)?
- How do graduate students and faculty rate RDM knowledge and skills of graduate students?
- How do graduate students learn RDM concepts and practices?
- Do self-reported assessments by graduate students regarding RDM education differ from faculty perceptions of their graduate students?
- Are there differences in RDM education needs between the two institutions studied?

## Methods

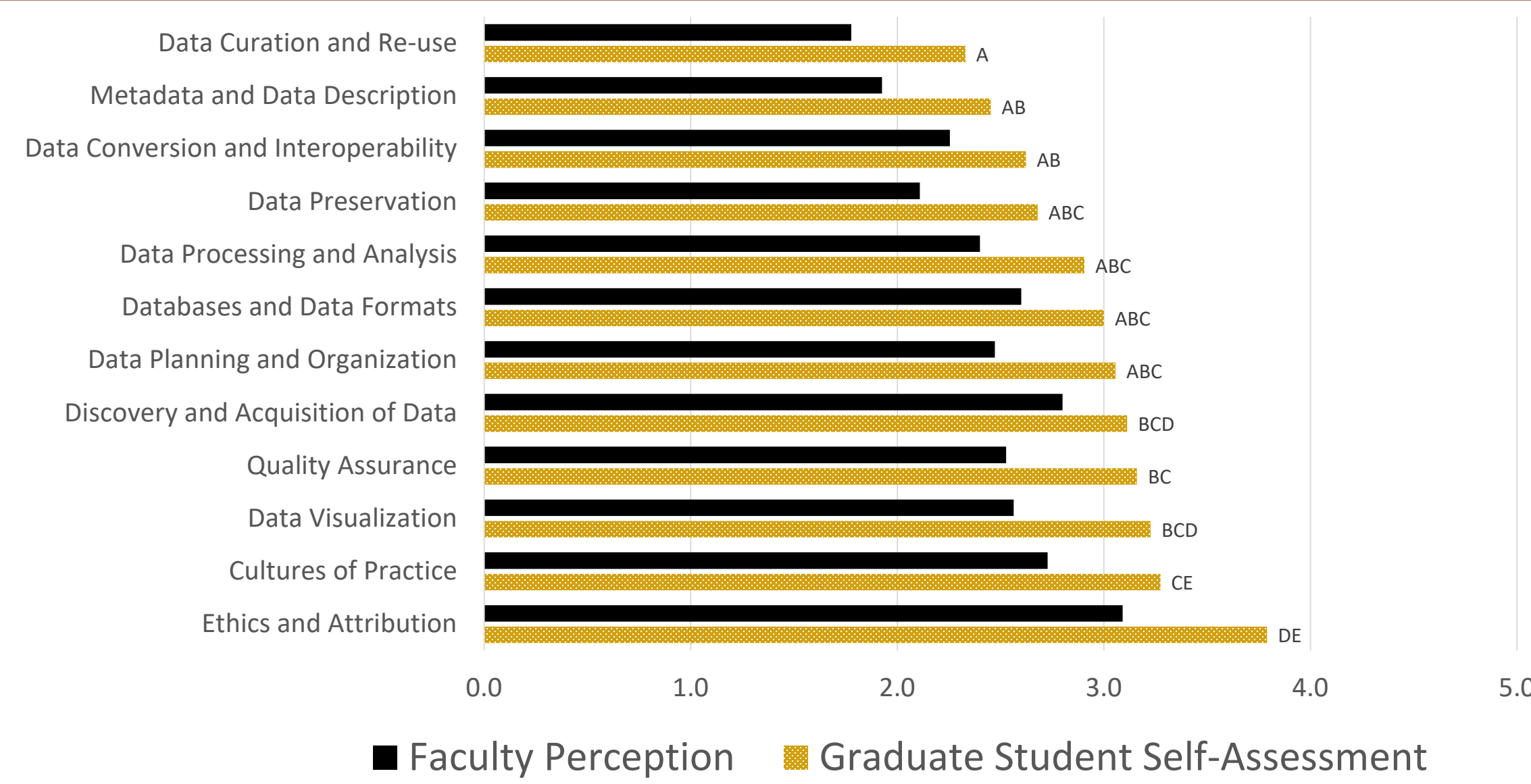
- Separate, but parallel, online surveys of graduate students and faculty
- Two medium-sized, public doctoral universities: University of Wyoming and University of Northern Colorado
- Science-based degrees requiring original research (thesis; dissertation)
- Graduate students asked to self-assess knowledge/skills
- Faculty asked to assess knowledge/skills of their graduate students
- 12 Research Data Management competencies adapted from Carlson et al.

## Respondents

	UNC	UW	Total
Graduate students	63	68	131
Faculty	39	40	79

## Selected Results

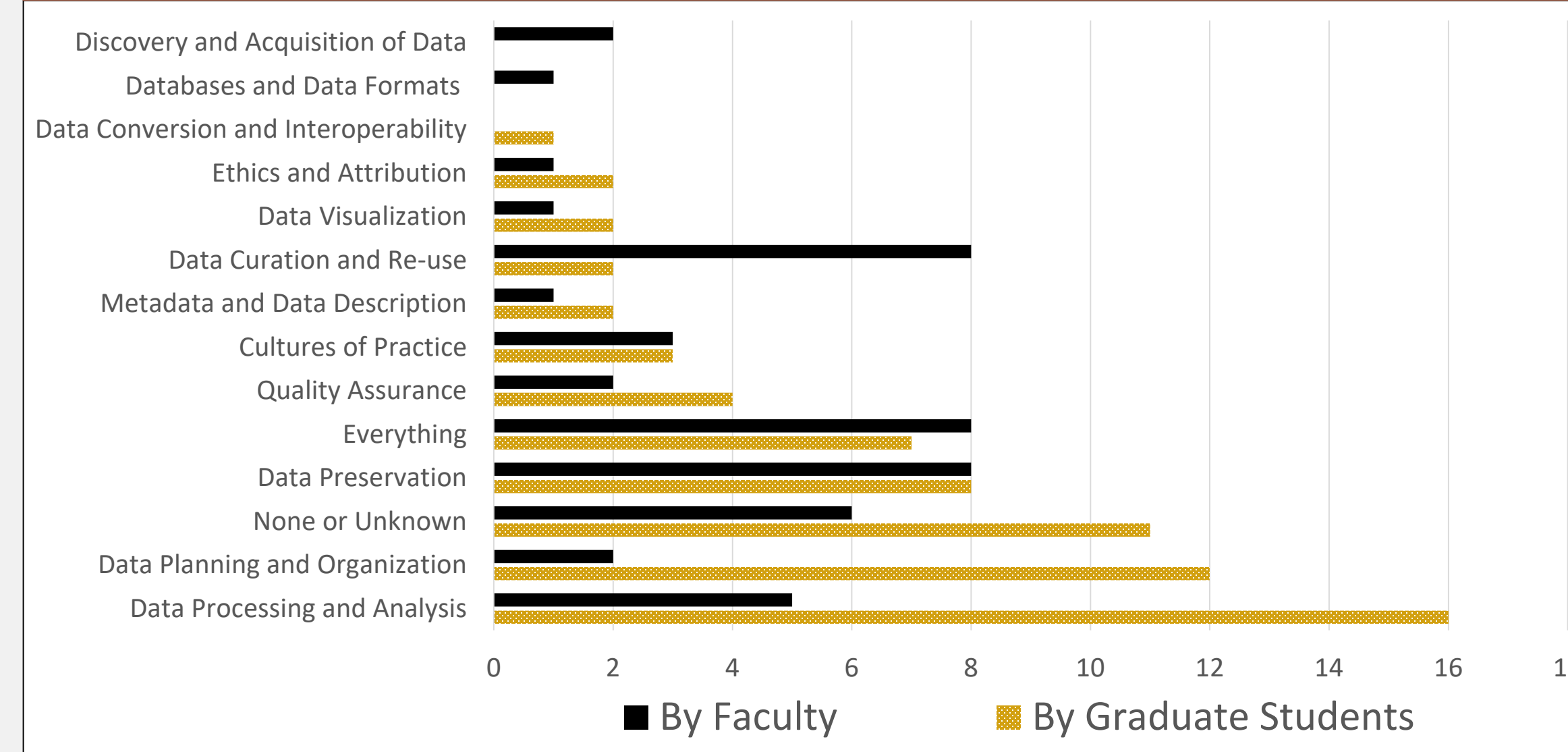
### Knowledge & Skills: Research Data Management Concepts



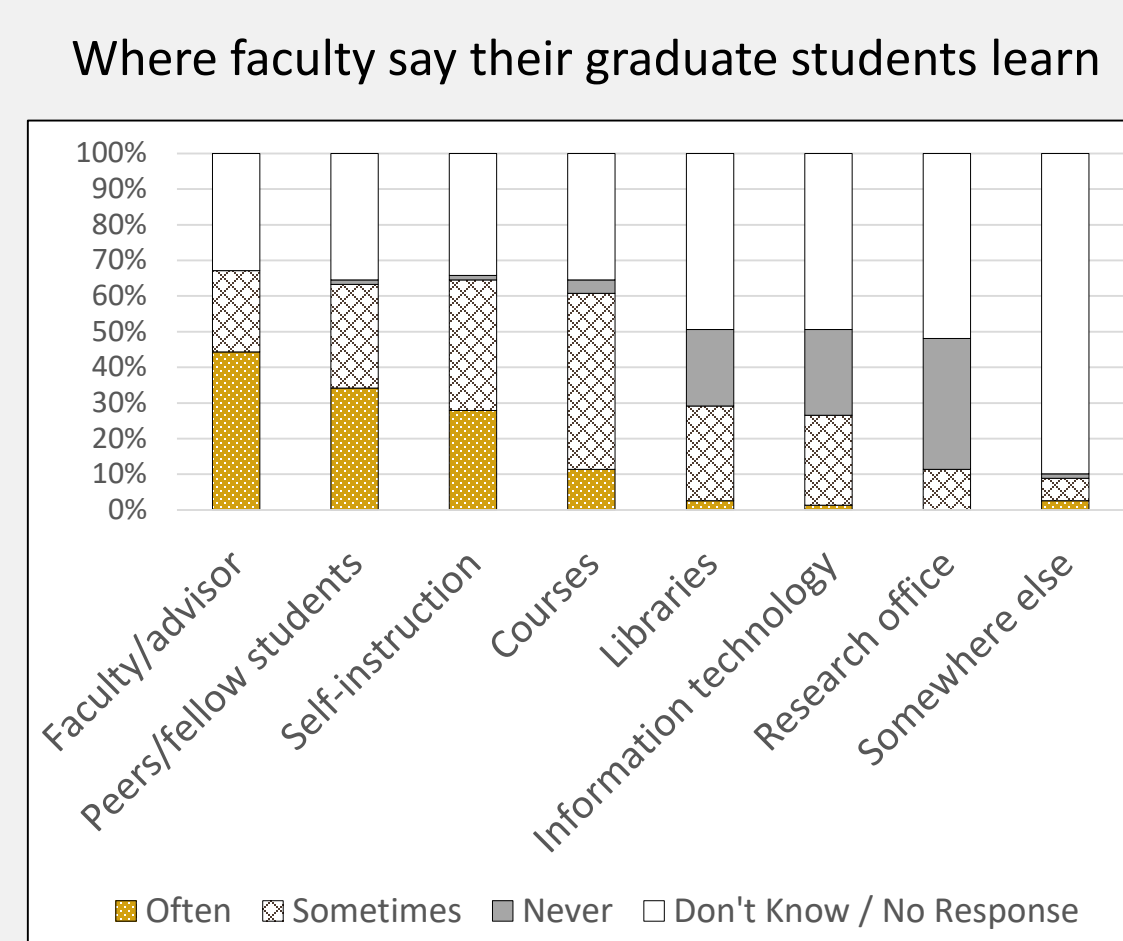
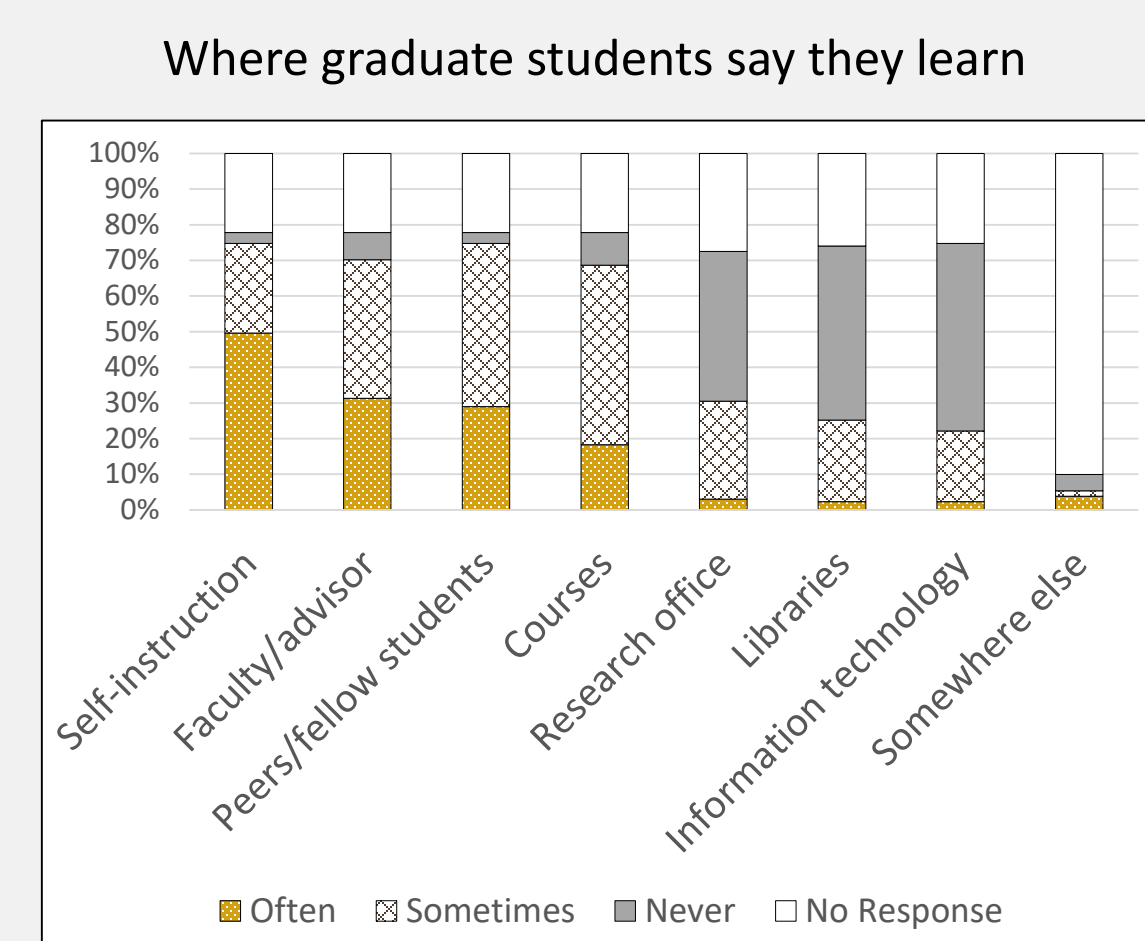
- 5-point Likert rating scale was used.
- The competencies graduate students feel most knowledgeable about tend to relate to the conduct of research.
- Graduate students feel less knowledgeable about sharing and preserving data.
- Faculty perceptions of graduate students' knowledge and skills in RDM concepts did not differ significantly from graduate student self-perceptions.

- Respondents often recognized gaps in their knowledge of RDM concepts.
- Open-ended question responses were coded to match the 12 RDM competencies and counted.
- Graduate students more often mentioned data processing and analysis or data planning and organization as areas of struggle.
- Faculty tended to mention data preservation and data curation and reuse as areas where they could use more help.

### Challenges: Research Data Management Concepts

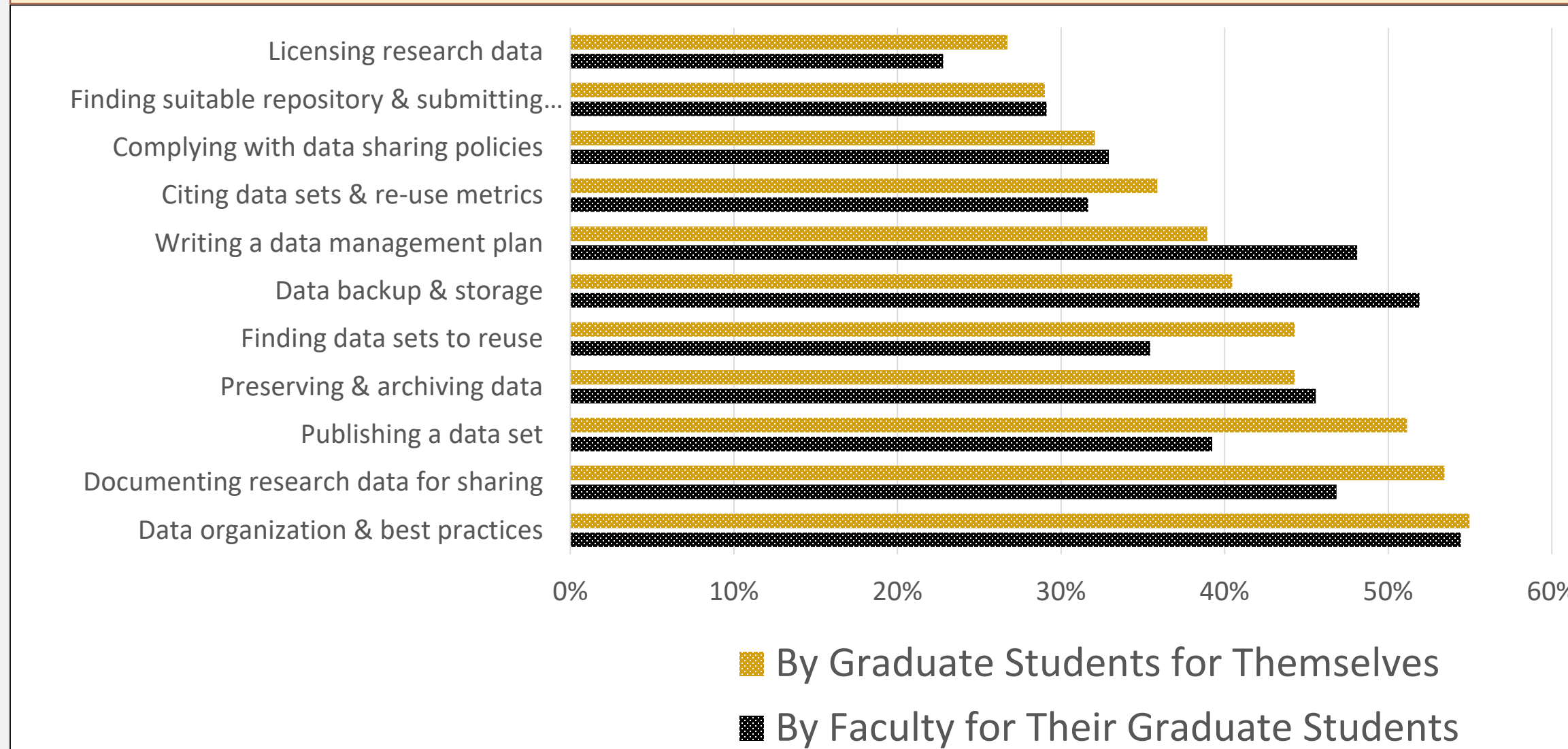


## How Students Learn RDM Concepts



- Among graduate students, 49% said they often learn RDM concepts through self-instruction.
- Only 28% of faculty thought their graduate students often used self-instruction to learn RDM.
- Among faculty, 44% thought their students often learned RDM from them (i.e., from faculty).

## Training Interests: Research Data Management



- In general, less than half of survey respondents were interested in learning more about suggested RDM topics.
- At least some interest was indicated for each RDM topic suggested.
- Highest interest for RDM training was for data organization and best practices.

## Conclusions

- At least some graduate students recognize a need for additional education in RDM competencies beyond what is required to obtain a degree.
- Graduate students indicated that their knowledge levels differed between RDM competencies related to conduct of research versus those involving sharing and preservation of data.
- Little difference was evident between the two universities surveyed.
- Additional study is needed to understand why graduate students often rely on self-instruction for RDM.
- Graduate students rarely consult librarians, research offices, and information technology services for education in RDM.
- Relatively low interest in suggested RDM topics may limit participation in offered workshops.
- Alternative education strategies for RDM may be needed to reach graduate students, e.g., peer mentoring, tutorial modules.

## Observations & Implications

- RDM involves a complex set of competencies. No one person has expertise in all aspects.
- RDM practices differ by discipline and type of study.
- Librarians engaging and collaborating with disciplinary faculty is a likely key to success for RDM education.
- Librarians can draw on expertise in data sharing concepts when developing RDM education programs and support services.
- Librarian support in RDM may best focus on concepts of data planning, organization, metadata, curation, and preservation.

## References

- Carlson, J., Fosmire, M., Miller, C.C. & Nelson, M.S. 2011. Determining data information literacy needs: A study of students and research faculty. *portal: Libraries and the Academy* 11(2):629-657. DOI: [10.1353/pla.2011.0022](https://doi.org/10.1353/pla.2011.0022)
- Pasek, J.E. & Mayer, J. 2019. Education needs in research data management for science-based disciplines: Self-assessment surveys of graduate students and faculty at two public universities. *Issues in Science & Technology Librarianship* 92. DOI: [10.29173/ist112](https://doi.org/10.29173/ist112)

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