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Are Medical Students Comfortable Managing Research Data?

Rebecca Reznik-Zellen

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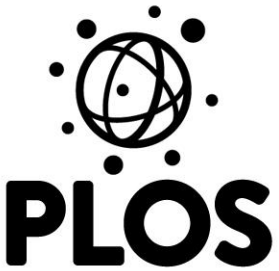
NEGEA Annual Retreat 2014

Context

- Data are becoming a more visible part of the scholarly record.
  - Funder requirements are emerging. (OSTP)
  - Publication requirements are evolving. (PLoS ONE)
  - Cultural expectations are growing. (DataBib)
  - Citation standards are being established. (DataCite)
  - Impact measures are developing. (Impactstory)



DataCite
International Data Citation

Context

- Data literacy is not a formal component in most undergraduate and graduate student curricula.

  Carlson JR, et.al. (2011). "Determining Data Information Literacy Needs: A Study of Students and Research Faculty" Libraries Faculty and Staff Scholarship and Research. Paper 23. http://docs.lib.purdue.edu/lib_fsdocs/23.

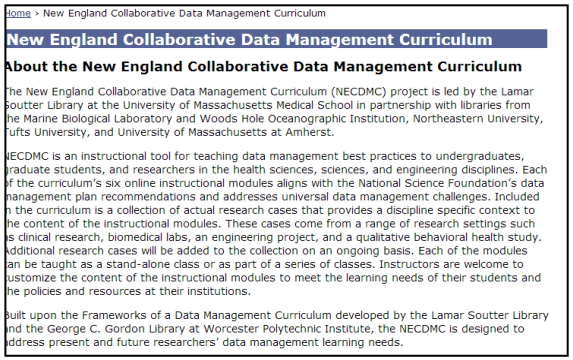
- A medical student's work life is demanding.

  Lee J and Graham AV. (2001). "Students' perception of medical school stress and their evaluation of a wellness elective." Medical Education 35(7): 652-659. doi:

  10.1046/j.1365-2923.2001.00956.x.

Context

- Libraries have been filling in the gaps for education and training on research data management.
  - Data Information Literacy program (Purdue)
  - New England Collaborative Data Management Curriculum (UMMS)
  - MANTRA (Edinburgh)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New England Collaborative Data Management Curriculum

About the New England Collaborative Data Management Curriculum

The New England Collaborative Data Management Curriculum (NECDMC) project is led by the Lamar Soutter Library at the University of Massachusetts Medical School in partnership with libraries from the Marine Biological Laboratory and Woods Hole Oceanographic Institution, Northeastern University, Tufts University, and University of Massachusetts at Amherst.

NECDMC is an instructional tool for teaching data management best practices to undergraduates, graduate students, and researchers in the health sciences, sciences, and engineering disciplines. Each of the curriculum's six online instructional modules aligns with the National Science Foundation's data management plan recommendations and addresses universal data management challenges. Included in the curriculum is a collection of actual research cases that provides a discipline specific context to the content of the instructional modules. These cases come from a range of research settings such as clinical research, biomedical labs, an engineering project, and a qualitative behavioral health study. Additional research cases will be added to the collection on an ongoing basis. Each of the modules can be taught as a stand-alone class or as part of a series of classes. Instructors are welcome to customize the content of the instructional modules to meet the learning needs of their students and the policies and resources at their institutions.

Built upon the Frameworks of a Data Management Curriculum developed by the Lamar Soutter Library and the George C. Gordon Library at Worcester Polytechnic Institute, the NECDMC is designed to address present and future researchers' data management learning needs.

UMMS

- Founded 1962
  - School of Medicine
  - Graduate School of Biomedical Sciences
  - Graduate School of Nursing
- 1100 students
- $240 million in federal and private research grants (FY13)
  - Top quartile for NIH funding

Objectives

- Determine baseline for comfort and familiarity with data management concepts
- Identify needed resources and training opportunities on campus

Method

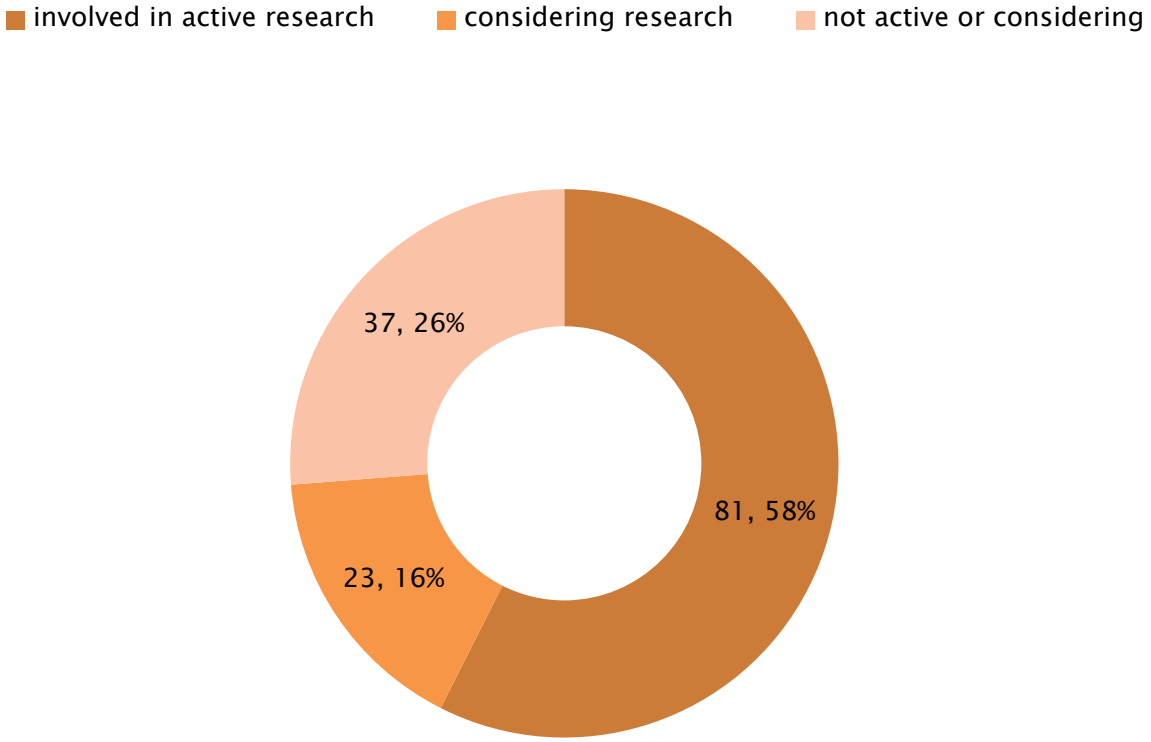
- Developed 20+question online survey covering enrollment, experiences, and attitudes
- Opened survey between February 2 and March 14, 2014 to 1108 GSBS, GSN, and SOM students
- Received 141 complete responses (12.6%)

Findings

1. Research is a significant component of student life at UMMS.

   However, few students receive or have prior training in managing research data and few students are aware of funding agency requirements for data sharing.

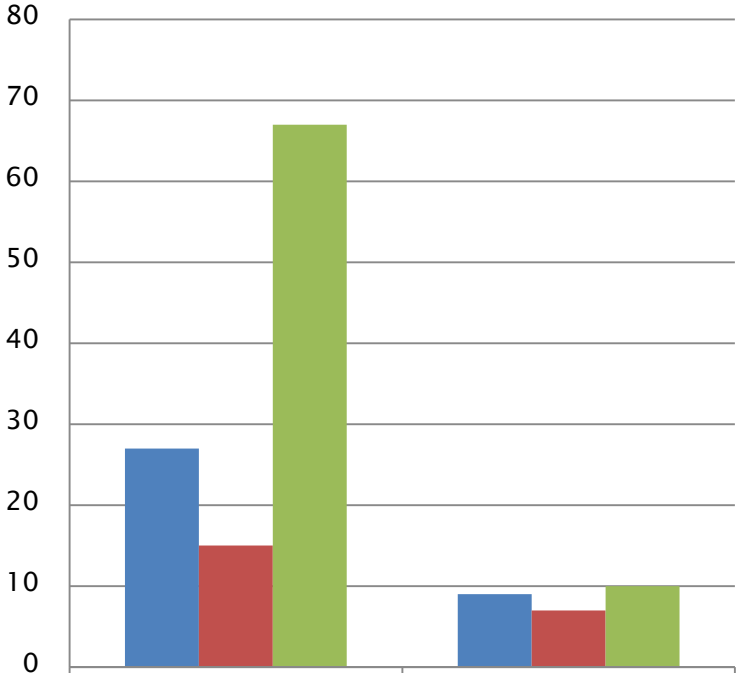
Respondents involved in or considering research overall (n=141)



Research

Overall, 74% of respondents are either actively involved in research or are considering joining or undertaking a research project.

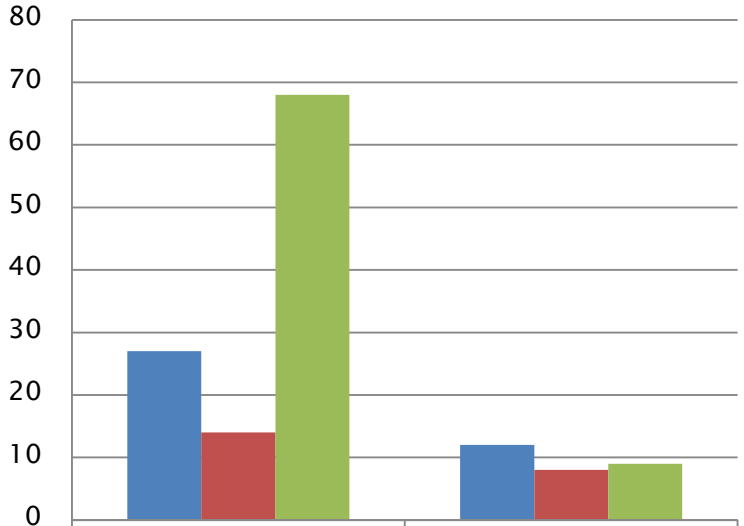
Respondents with prior training by school (n=135)



	No	Yes
GSBS	27	9
GSN	15	7
SOM	67	10

81% overall have no data management training

Respondents aware of funding agency requirements by school (n=138)



	No	Yes
GSBS	27	12
GSN	14	8
SOM	68	9

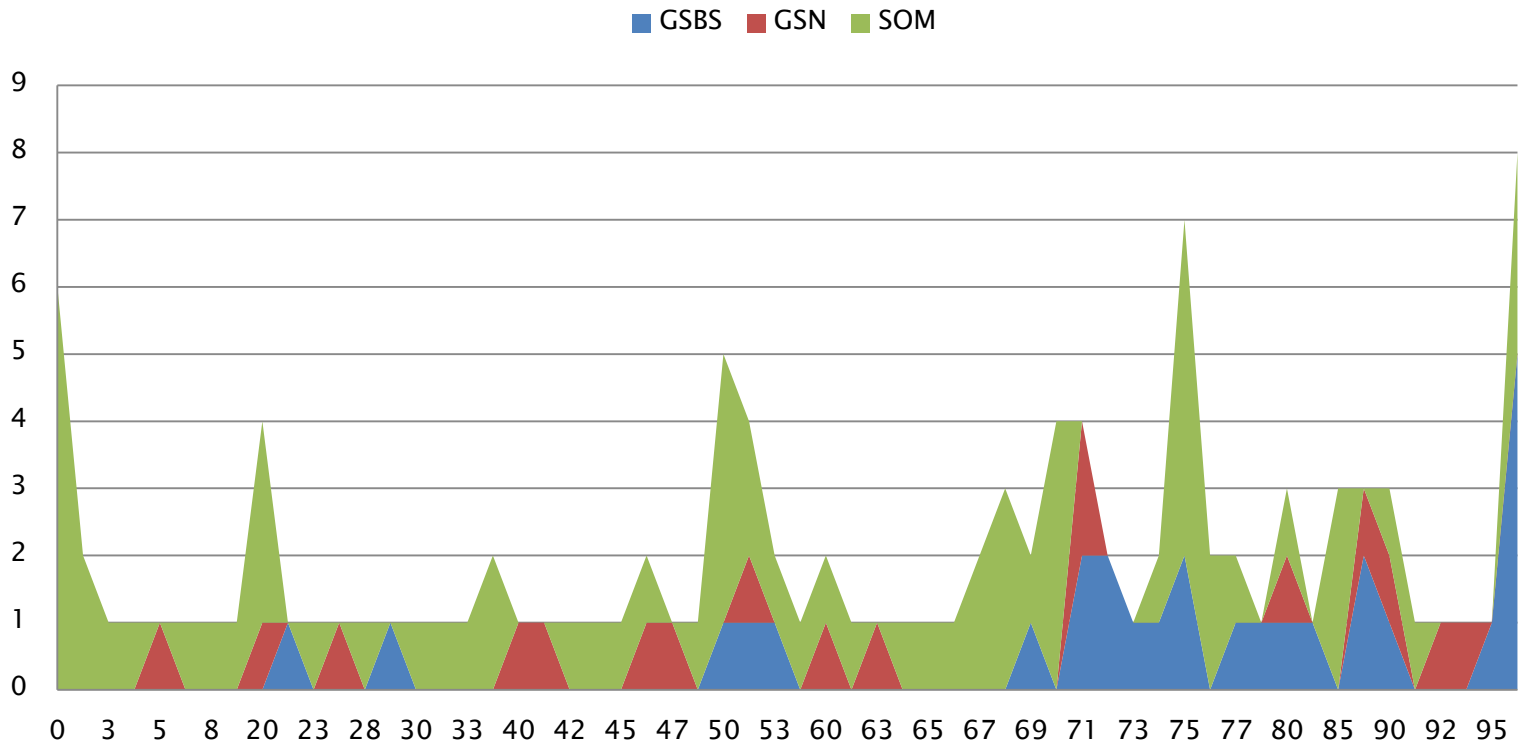
79% overall are unaware of agency requirements

Findings

2. In general, GSBS respondents score themselves higher than GSN or SOM respondents on their comfort with and awareness of data management activities and best practices.

   Most respondents do not find data management to be a barrier to research productivity.

Familiarity with data managment activities by school (n=113)

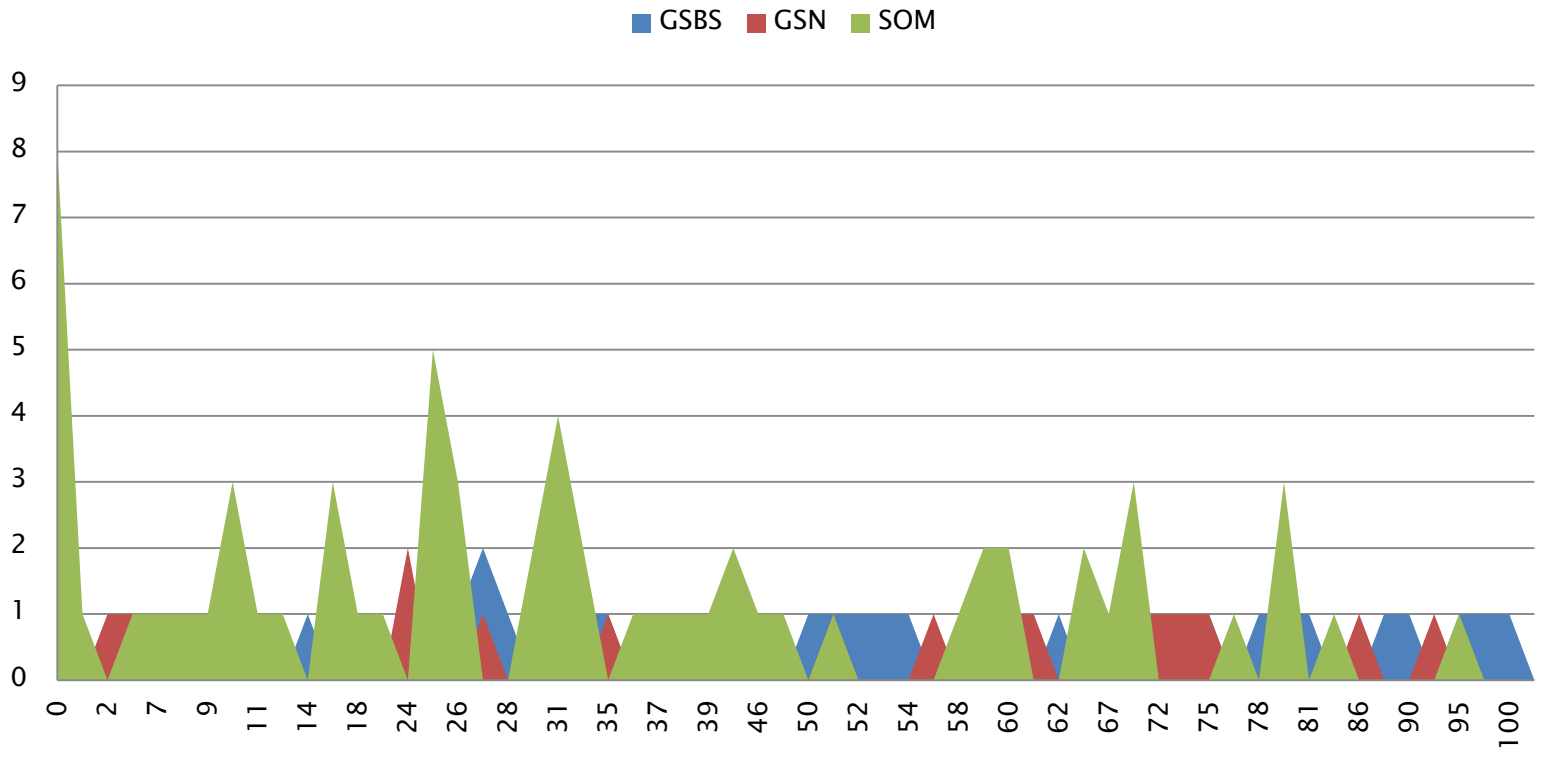


Self-scoring scale1-100

Average Familiarity

Overall	**57.15**
GSBS	75.33
GSN	57.94
SOM	50.00

Awareness of data managment best practices by school (n=109)

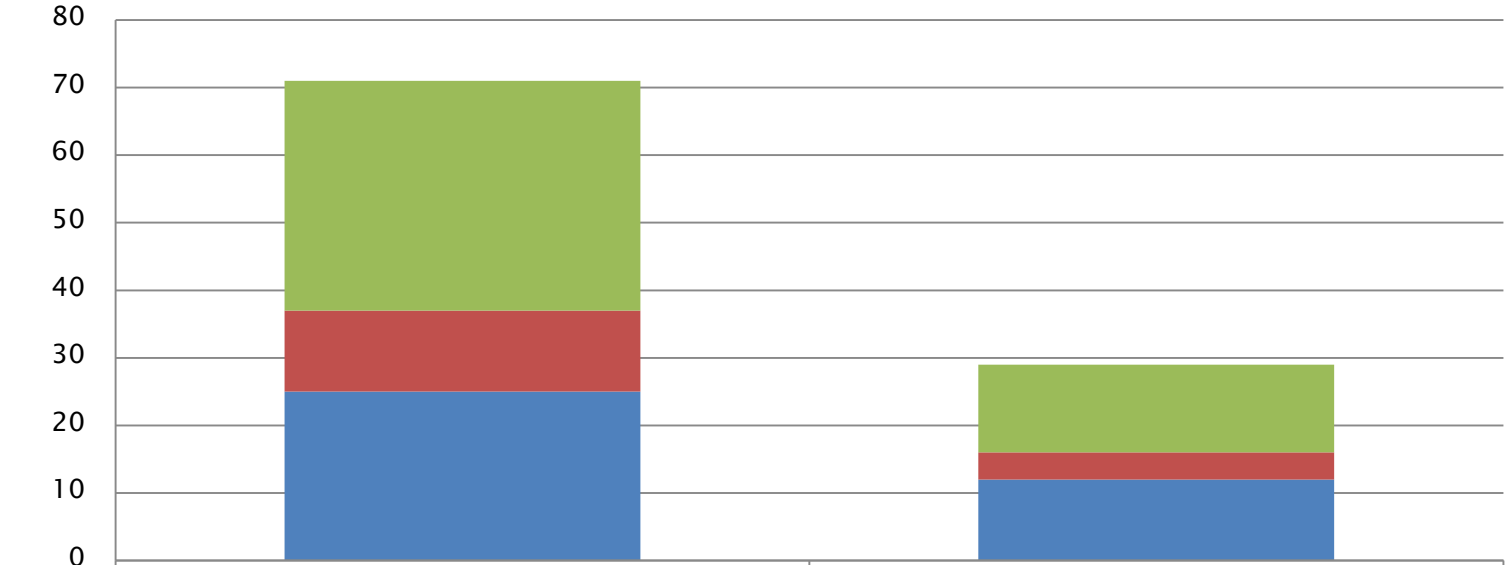


Self-scoring scale1-100

Average Awareness

Overall	**41.09**
GSBS	51.76
GSN	52.05
SOM	33.78

Data management is a productivity bottleneck by school (n=100)



	No	Yes
SOM	34	13
GSN	12	4
GSBS	25	12

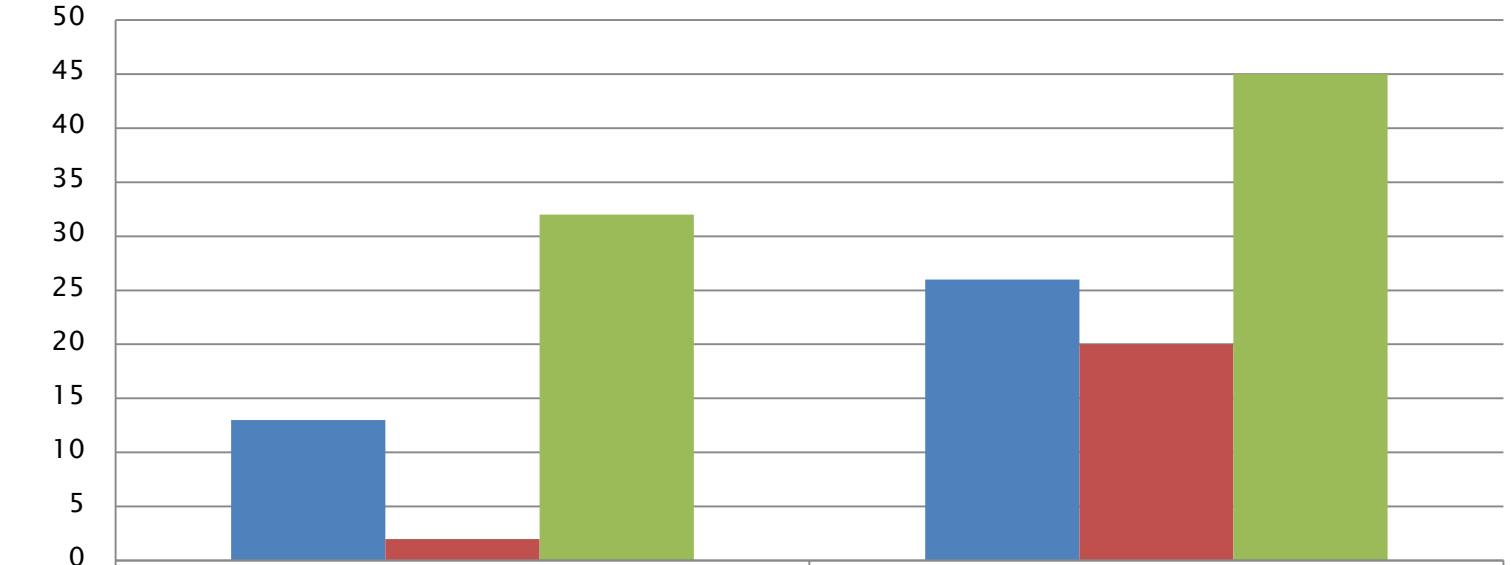
Productivity

71% of respondents overall do not perceive data management to be a bottleneck for productivity in their projects or labs.

Findings

3. There is a need for both formal and informal data management training programs across the schools that address best practices for data management in general as well as common challenges that students face with data management.

Respondents that would want data management training by school (n=138)

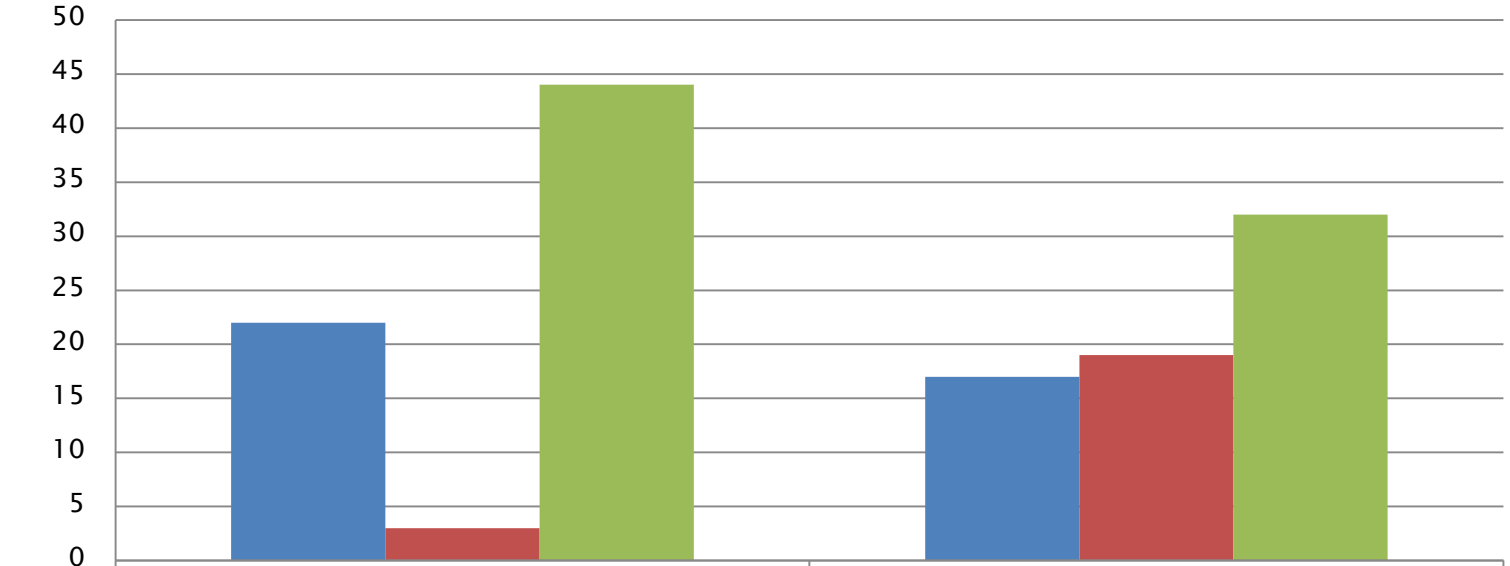


	No	Yes
GSBS	13	26
GSN	2	20
SOM	32	45

Training desired

66% overall would like to receive training, documentation, or guidance on data management practices

Respondents that would take a formal curriculum component on data management by school (n=137)



	No	Yes
GSBS	22	17
GSN	3	19
SOM	44	32

Formal curriculum component

50% would take an elective or other formal curriculum component on data management.

Recommendations

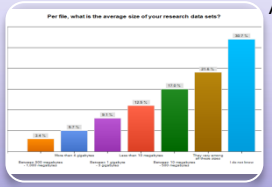
The Library makes the following recommendations based on the results of this survey.

- Develop/launch a combination of formal and informal multi-modal courses tailored by school, year, and topic.
- Partner with Information Technology and the Office of Research funding for course content and delivery.
- Conduct a similar survey among faculty to draw parallels and compare responses among cohorts.

Library Data Services Advisory Group

- October 2013
- Established cross-institutional group to assist with needs assessment and provide strategic direction for library-based data support services. This group includes members of IT, Quantitative Health Sciences, and the Office of Research and provides important external perspective.

Image credit: Dorothy Byatt, http://datapool.soton.ac.uk/tag/research-data/



Assessment of Doctoral Biomedical Student Research Data Management Needs

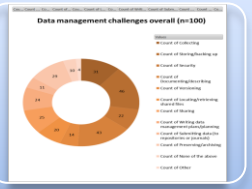
- November 2013
- Conducted a survey among GSBS PhD students to explore the specific institutional repository (IR) data management needs of the University's biomedical sciences doctoral students. See poster for details.

Figure and project credit: Kate Thornhill /Lisa Palmer

Identification of Existing Services and Policies

- November/December 2013
- Identified and collected existing university policies and services relevant to the management of research data. This activity demonstrated the existing options for support as well as gaps in oversight of research data.

Photo credit: Greg Schupe Photography



Student Data Management Survey

- February/March 2014
- Conducted a survey among GSBS, GSN DNP and PhD, and SOM undergraduate students to gauge their comfort with and awareness of data management activities and best practices. The study was designed to identify needed resources and instruction opportunities on campus.

Faculty and Administrator Interviews

- February/March 2014
- Participated in third and final DuraSpace/ARL/CLIR eScience Institute. The program facilitates collaboration among different institutional entities with the goal of developing a strategic agenda for research data support services.

Photo credit: http://www.duraspace.org/e-science-institute

Thank You

- Rebecca.Reznik-Zellen@umassmed.edu
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Shout out

- Len Levin
- Sally Gore
- Lisa Palmer
- Donna Kafel
- Andrew Creamer