Data Science in Libraries

B. Tijerina, C. Erdmann, M. Burton, L. Lyon

http://d-scholarship.pitt.edu/33891/
IMLS RE-43-16-0149-16
Data Science in Libraries Workshop

May 16th & 17th, 2017

Digital Scholarship Commons, Hillman Library, University of Pittsburgh
Pittsburgh, Pennsylvania USA
As librarians increasingly use, build, and maintain Data-centric systems and services, we need the skills to manipulate, analyze, and manage data are crucial. Librarians will need to meaningfully engage the tools and techniques of data science, but they currently face **two significant challenges**:

1. **The Skills Gap**: While practicing mid-career librarians are learning some data science skills, it is through ad-hoc, uncoordinated continuing education programs.

2. **The Management Gap**: Library administrators need toolkits and frameworks to strategically use data science for data-driven decision making and management of library operations.
What is Data Savvy?

Data Science exists more or less on a spectrum, and spans work requiring the deep statistical and software engineering skills, to work that focuses on advocacy, policy development, and data management planning.
Data Savvy Roles

- Data savvy librarians gain familiarity with the datasets, understand technical methods and techniques, and speak multiple disciplinary languages allowing them to work more closely with researchers or the public.

- Some librarians engage more deeply, becoming technically proficient in data preparation and analysis, allowing them to work with data, automate workflows, and become fully embedded in research teams.

Multi-Faceted Framework
Skills: professional and informal training
Structures: organizational and managerial
Services: internal and external data savvy services
Stakeholders: researchers, IT, students, public, admin
Structures & Skills: Vicky Steeves

- Librarian for Research Data Management and Reproducibility (NYU Libraries & Center for Data Science)
- Part of team developing solutions that make it easier for researchers to share their computational work (ReproZip)
- Practitioner of reproducibility librarianship with explicit aim of helping researchers with the reproducibility and replication of their research
- Data-savvy librarian skills (understanding digital preservation policies and standards, unpacking R scripts, building tools and infrastructure)

Structures & Skills: The Carpentries

- Began with aim to teach research programmers better practices in software development
- Training programs that help the research community to learn new tools and methods
- Reduce tool overload, bridge gap between disciplines & roles, create community & shared learning materials

The Carpentries offers a unique space where multiple communities, from researchers to librarians, can come together, break down barriers, and learn new tools and methods in a lean, iterative fashion.

The Carpentries sits at the doorstep of libraries with a curriculum already in place, a worldwide network to learn from, and certificate-based instructor training programs.
Services & Stakeholders: Caltech Library

Services & Stakeholders: Carnegie Public Library

Tensions

Credentialing

Re-engineering
Data Savvy 360 Model

Aspirational goals for a Data-savvy library organization, which can be characterized by:

1. Routine collection and strategic application of quantitative evidence
2. Effective communication and messaging driven by data-rich stories
3. Established professional education programs to extend and expand data savvy skills
4. An explicit understanding and articulation of the values and benefits of science and stewardship roles and responsibilities
# The Data-Savvy Roadmap

## FACET
- Recommendation & Action

## SCAN
- Highlight success stories
- Discover data lifecycle requirements
- Perform data audit
- Identify external datasets

## STRUCTURES
- Collaborate with leadership institutes
- Utilize physical learning spaces

## SKILLS
- Utilize existing educational resources
- Ethics and privacy
- Advocate for software carpentry
- Reposition the MLIS
- Blended skills

## SERVICES
- Share assessment data
- Libraries as amplifiers
- Pilot data services
- Triage services
- Resources to scale-up
- Re-engineer services

## STAKEHOLDERS
- Identify campus stakeholders
- Outreach to researchers
- Showcase capacity and capability
- 360-degree data-savvy model
- Build data partnerships
Next Steps

Go on a **roadshow** to discuss the project and gather interest.

Convene future **meetings** on data science in libraries.
  E.g. Annual meeting, rotating locations

Explore opportunities for improving **discovery** of DS educational resources.
  E.g. [The Journal of Open Source Education](https://thejournalofopensourceeducation.org)

Share report findings with **leadership institutes**.
  E.g. [Harvard](http://www.harvard.edu), [UCLA](http://www.ucla.edu)

Gather **training programs** and discuss shared, community program.
  E.g. [Software Carpentry](http://software-carpentry.org), Library Carpentry
Questions & Discussion

Dr. Liz Lyon  
Visiting Assistant Professor  
School of Computing and Information (iSchool), University of Pittsburgh

Chris Erdmann  
Director of Library Carpentry  
The Carpentries & California Digital Library

Dr. Matthew Burton  
Visiting Assistant Professor  
School of Computing and Information (iSchool), University of Pittsburgh

Bonnie Tijerina  
Librarian, researcher  
Data & Society Research Institute

http://d-scholarship.pitt.edu/33891/  
Thanks to the Institute of Museum and Library Services.