Commentary

Collaborating to Increase the Evidence Base in Library and Information Practice

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As I was thinking about EBL while preparing to come and give this talk, I started thinking about evidence based practice in general. I know you didn’t come here for a history lesson, but I think we can learn something from a quick look at how EBP has evolved.

The most common early examples used when discussing EBM are from the nineteenth century: John Snow and Florence Nightingale. John Snow (Wikipedia, n.d.) is famous for figuring out that cholera was spread through water, eventually resulting in the famous pump map of the London cholera outbreak in 1854. In 1856, Florence Nightingale started pushing for changes in medical care, notably sanitation, to save the lives of soldiers and patients in hospitals, based on data collected during her work as a nurse during the Crimean War (McDonald, 2001). I have also seen references to earlier medical research, especially epidemiology research.

When reviewing these early examples, I noticed that they really just applied the scientific method, which can be used by anyone (Nerdy Baby, 2017):

1. Make an observation
2. Form a hypothesis
3. Perform the experiment
4. Analyze the data
5. Report your findings
6. Invite others to reproduce the results

What we now recognize as evidence based medicine, including the familiar evidence pyramid (Wikimedia Commons, 2016), 5 A’s (Ask, Acquire, Appraise, Apply, Assess, e.g. University of North Carolina Health Sciences...
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Health, the outcomes of medical care, the productivity of biomedical researchers and the knowledge obtained by graduates of biomedical and health sciences training programs, and at what total cost? We presented a poster at MLA 2015 (Henderson et al., 2015) and we still aren’t finished (team members finding the time to work on a project outside their usual job duties can be a problem with some collaborative projects). Even though we started with a set of over 4000 articles, we ended up with just over 100 that fit all criteria, and even fewer had actual data. And when there was data, the papers covered very dissimilar measures, so there was no way to combine results to bring together a more robust result, as noted by Wagner and Byrd (2004) in a systematic review of clinical medical librarian effectiveness.

The bottom line: we need to do more LIS research that results in data!

So, when I was planning a survey on the research data needs of Virginia Commonwealth University (VCU) faculty earlier this year, I pulled questions from other papers to allow me to do some comparisons. This is a step towards being able to compare results and pull together a large body of evidence. The following are a few of the questions I asked, and the responses I received, compared with one of the papers I used as inspiration.

The results on data formats faculty are collecting compared to those at Northwestern, in a 2015 report of a survey by Cunera Buys and Pamela Shaw are shown in Figures 1 and 2.

I can compare most of the reasons for not sharing data with the responses to a 2015 study by Federer, Lu, Joubert, Welsh, and Brandys at the NIH Library (2015). (Tables 1 and 2)

Responses on how much data is being stored, and where it is being stored, can be compared with results from Katherine Akers and Jennifer Doty at Emory in 2013 (Table 3, Figures 3 and 4):

But it isn’t enough to just look for other studies and make comparisons; we need to be more intentional about what we are doing.

Figure 1
Faculty data formats from VCU survey.
Figure 2
Type/format of data from Northwestern study (Buys and Shaw, 2015).

Table 1
Reasons for Not Sharing Data, from VCU Faculty Survey

| Reason                                                                 | Number |
|-----------------------------------------------------------------------|--------|
| Privacy or protection of subjects                                     | 148    |
| Data require secure/restricted access                                 | 94     |
| Data might be misinterpreted/misused                                  | 71     |
| To protect my intellectual property rights                            | 71     |
| Might not get credit (e.g., citation, acknowledgment, authorship)    | 59     |
| Requires too much time/effort                                         | 50     |
| Not licensed to share data                                            | 47     |
| Data of little value to others                                        | 26     |
| I don’t know where to share it                                        | 25     |
| Commercialization/patent concerns                                     | 25     |
| No repository exists for my type of data                              | 21     |
| Other                                                                 | 5      |

We need to collaborate from the start to plan research that is applicable to multiple libraries, such as a recent study looking at the evolving needs of researchers in information and data management (Cain, Cheek, Kupsco, Hartel, & Getselman, 2016). The authors hope to develop new information service models that can be used by others, based on surveys conducted at two research-intensive universities. Marshall, et al. (2013), conducted a large, multi-site study to learn about the impact of medical libraries on patient care. This large collaboration included
physicians, residents, and nurses at 118 hospitals, making the results more generally applicable than a single site study.

We need to make sure that, where possible, we change our promotion and tenure requirements to include credit for open and shared resources. And we make sure that we include time for research in our work plans.

We need to relate our research to assessment measures so it can be a bigger part of the job we do. Librarians often shy away from research because there isn’t enough time (Fox, 2007), so building research into the assessment we should already be doing is a good way to get started.

We need to relate our research to the research interests of faculty outside of the library, especially with the current focus on interdisciplinary research. Our research will be more useful if it can inform decisions outside of the library, and have impact throughout our institutions. There are issues about student success or researcher support that are common everywhere and we should do the work together. Yesterday, I quickly tweeted a question about who worked with faculty outside of the library, and on what, just to give you a few examples:

- Cynthia Hudson Vitale works on data citation practices, EHR research on transparency and qualitative health data sharing. Plus systematic reviews.
- Roy Brown works on Nurses Magnet Status research and teaching EBN in curriculum. Plus systematic reviews.
- Patricia Anderson works on bibliometrics, comics, wearable tech, systematic reviews, video game design, and educational design.
- Abigail Goben works on scholarly impact, bibliometrics, copyright education, electronic health record federated search tools, and health information literacy.

Table 2
Reasons for Not Sharing Data from NIH Study (Federer et al., 2015)

| Reason                                                                 | Scientific (n = 15) | Clinical (n = 5) | Total (n = 20) |
|-----------------------------------------------------------------------|---------------------|-----------------|---------------|
| I would be willing to share my data, but I haven’t had an opportunity to do | 8 (53%)             | 1 (20%)         | 9 (45%)       |
| My data contains personally identifiable information and sharing would compromise my subjects’ privacy | 2 (13%)             | 5 (100%)        | 7 (35%)       |
| I am prohibited from sharing my data for some reason other than subject privacy | 2 (13%)             | 4 (80%)         | 6 (30%)       |
| I don’t know any repositories that accept the kind of data I produce | 7 (47%)             | 2 (40%)         | 9 (45%)       |
| It’s too difficult to prepare my data and documentation for sharing with others | 0 (0%)              | 0 (0%)          | 0 (0%)        |
| I don’t know how to prepare my data and documentation for sharing with others | 6 (40%)             | 0 (0%)          | 6 (30%)       |
| Repositories’ requirements for format or description of data are too difficult to meet | 0 (0%)              | 0 (0%)          | 0 (0%)        |
| I don’t feel I would get credit for sharing my data | 1 (7%)              | 0 (0%)          | 1 (5%)        |
| I put in a great deal of time and effort to gather my data, and I don’t want to give it away | 0 (0%)              | 1 (20%)         | 1 (5%)        |
| I’m concerned that another researcher could beat me to publication if I share my data | 1 (7%)              | 0 (0%)          | 1 (5%)        |
| My data has commercial value, so I don’t want to give it away for free | 0 (0%)              | 0 (0%)          | 0 (0%)        |
| I don’t think anyone else would have any reason to use my data | 4 (27%)             | 0 (0%)          | 4 (20%)       |
| It isn’t customary to share data in my research field | 4 (27%)             | 3 (60%)         | 7 (35%)       |
| I’m concerned another researcher might find errors in my data | 0 (0%)              | 0 (0%)          | 0 (0%)        |
| I’m concerned another researcher might misinterpret my data | 1 (7%)              | 2 (40%)         | 3 (15%)       |

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Table 3
Current Data Storage Amounts by Faculty at VCU

| Approximately how much digital research data are you currently storing? (Choose one) | Frequency | Percent |
|-------------------------------------------------------------------------------------|-----------|---------|
| Valid Megabyte range                                                                 | 40        | 16.9    |
| Valid Gigabyte range                                                                | 72        | 30.5    |
| Valid Terabyte range                                                                | 43        | 18.2    |
| Valid Don’t know                                                                    | 76        | 32.2    |
| Total                                                                               | 231       | 97.9    |
| Total                                                                               | 236       | 100.0   |

Figure 3
Current data storage locations of VCU faculty.

Figure 4
Digital research data storage amounts and locations from Emory survey (Akers & Doty, 2013).
And to make sure we can publish and share any insights we have from surveys or questionnaires we use, we should always get IRB/ethics board approval before starting our research.

We need to make our articles, research instruments, and data open so research can be replicated using the same survey instruments or methods, and so that data can be combined to create a more robust evidence base. The ACRL Value of Academic Libraries Bibliography (http://acrl.al.org/valueography/) allows sharing of research in a blog post, but there is no good way to find a listing of all the studies submitted and no way to share data. I recommend setting up an OSF (https://osf.io) project or depositing materials in the new SocArXiv Preprints (https://osf.io/preprints/socarxiv). Librarians are pushing for open access; some researchers are pushing for open science. Wouldn’t it strengthen our position to have our research out there where it can be scrutinized?

The reasons we give to researchers in other areas for sharing are the same for us. Sharing research methods and results:

- Helps to avoid duplication, thereby reducing costs and wasted effort.
- Promotes scientific integrity and debate.
- Enables scrutiny of research findings and allows for validation of results.
- Leads to new collaborations between data users and data creators.
- Improves research and leads to better science.
- Enables the exploration of topics not envisioned by the initial investigators.
- Permits the creation of new datasets by combining data from multiple sources.
- Increases citations. A study by Piwowar, Day, and Fridsma (2007) showed a 69% increase in citations.

And we can use the same repositories to make our data available.

- DataVerse http://dataverse.org/
- figshare http://figshare.com/
- Open Science Framework https://osf.io/
- Zenodo https://zenodo.org/
- Your Institutional Repository

I have been a librarian for 30 years now, and I’ve seen many changes, but I’m still enthusiastic about the profession and see a wonderful future for us. I hope you will see the value in LIS research and feel enthusiastic for our future as well.

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