Challenges and Concerns

While information visualization presents new and exciting opportunities for libraries to make a better use of their data, it poses major challenges at the same time, such as affordability of new technologies and lack of defined roles for staff. One of the most common challenges for libraries is probably the lack of expertise and skills in information visualization. In their report published by the Council on Library and Information Resources, Lori Jahnke, Andrew Asher, and Spencer Keralis note that information visualization demands the presence of high levels of domain specialist knowledge.[1] They also state that there are no effective ways through which libraries, or other organizations where information visualization can be done, can prepare people to implement and use information visualization. This situation is attributed to a significant shortage in the number of data scientists and other individuals with digital preservation skills in organizations where information visualization can be used and those which could benefit from it. The authors also add that many libraries have varied and even idiosyncratic attitudes toward the implementation of information visualization. From their perspective, this attitude restricts the use of information visualization in libraries.

Despite this restrictive attitude, there is agreement in literature that the lack of expertise or technical skills by people serves as a major hindrance to the implementation of information visualization in libraries. For example, research by Deborah Vincent, Marie Hastings-Tolsma, and Judith Effken states that since the process of information visualization is both technically complex and highly challenging, it requires high technical proficiency.[2] This is where the greatest challenge lies for many libraries. In the authors' study, they found that for many library users, staff in particular, using and exploring information visualization tools may be difficult. This fact makes the implementation of information visualization in libraries a challenging task, partially due to resistance. Therefore, it is important that libraries provide online or real-time training sessions to their staff or, as an alternative, motivate staff members to participate in training sessions that are offered by commercial information visualization software applications.[3]

In another reference, Manguson agrees and states that creating effective information visualization requires a range of skills, such as a thorough understanding of math and statistics and knowledge of data storage, mining methods, front-end design, and development.[4] According to Manguson, these skills can help create better libraries and can allow libraries to offer better instruction and showcase the impact they have on their users and communities. It is important that libraries recognize these hindrances. Libraries must begin investing in their staff to help them develop these skills. By investing in library staff training on the use of information visualization technologies and tools, libraries can benefit both their staff and their end users of library resources. Staff is benefiting by becoming proficient in a new skillset, and end users are finding value in the information visualization resources that the library is creating.

Another major challenge that libraries face in implementing information visualization is the expense. In a survey conducted on the use of data analytics in higher education, Senior Research Analyst Jacqueline Bichsel concludes that high costs of implementation serve as a major barrier to employ information visualization in libraries of educational institutions.[5] She points out that many educational institutions view information visualization as an expensive endeavor

rather than as an investment. Apart from high cost, Bichsel also identifies access and standardization of data and culture of educational institutions as some of the barriers toward implementing information visualization in libraries. Data types and availability are constantly changing, making it difficult to design an information visualization platform that is compatible with all sorts of data and analytical needs. The interplay between the culture of educational institutions and analytics can also be a key barrier if, for example, there is a lack of data use regulations. These challenges, on the other hand, shed some light on the strategies that libraries might develop or key areas to focus on if they plan to commit to implementing information visualization in their institutions.

Conclusion

As incredible as the opportunities that information visualization brings to the way libraries conduct business are, there will be struggles with implementation and use if the proper training isn't in place. In order to be able to employ data visualization, an institution must create opportunities for library staff to learn how to properly use this innovative, game-changing way of retrieving data. From there, a well-trained group of individuals in information visualization are better able to help those they serve.

Notes

1. Lori Jahnke, Andrew Asher, and Spencer D. C. Keralis, *The Problem of Data*, CLIR Publication No. 154 (Washington, DC: Council on Library and Information Resources, August 2012), https://www.clir.org/pubs/reports/pub154/pub154.pdf.
2. Deborah Vincent, Marie Hastings-Tolsma, and Judith Effken, "Data Visualization and Large Nursing Datasets," *Online Journal of Nursing Informatics* 14, no. 2 (Summer 2010): 1–13, http://ojni.org/14_2/Vincent.pdf.
3. Ibid.
4. Lauren Magnuson, *Data Visualization: A Guide to Visual Storytelling for Libraries* (Summit, PA: Rowman & Littlefield, 2016).
5. Jacqueline Bichsel, *Analytics in Higher Education: Benefits, Barriers, Progress, and Recommendations*, research report (Louisville, CO: EDUCAUSE Center for Applied Research, August 2012), http://net.educause.edu/ir/library/pdf/ers1207/ers1207.pdf.