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# Library Responses During the Early Days of the Pandemic: A Bibliometric Study of the 2020 LIS Literature

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## ABSTRACT

As society emerges from an unprecedented pandemic that saw the closure of libraries, schools, and universities worldwide, the potential lasting impacts on institutions, professions, and communities can begin to be assessed. Through a bibliometric study of COVID-19-related library publishing, combined with thematic coding of article abstracts, this paper provides an initial glimpse into the impacts of the pandemic on library operations, services, collections, and the workforce. Two hundred thirty-seven journal articles published in 2020 about libraries and the pandemic were identified and analyzed. These articles indicate broad cross-sectoral, global impacts on libraries and librarianship. This analysis provides a baseline for future research on the lasting effects of the pandemic on the field.

## KEYWORDS

Bibliometrics; COVID-19; COVID; libraries; text analysis

## Introduction

In early 2020, workplaces worldwide were forced to shift from the status quo to a new reality, faced with a global pandemic that has had immense impacts, which society has yet to fully understand. Few professions will likely emerge unchanged on the other side of the pandemic, and certainly, librarianship is no exception.

Libraries and librarianship are not new to dramatic, transformational change. The development of the internet and the shift from print to digital information both compelled libraries and librarians to reimagine their role in the world, to transform collections, spaces, services and organizations, and to redefine their occupational identity (Nelson & Irwin, 2014). The ways students read and learn have changed, with significant implications for the format and delivery of academic and school library collections and information literacy instruction (Durant & Horava, 2015; Thomas et al., 2020). With the shift to digital research and scholarship, libraries took on new roles and established infrastructure to support research data and publishing (Salo, 2010; Corral, 2012). Public libraries have also reframed their role in society, working to bridge the digital and technology divide, providing internet access, education, and assistance (Jaeger et al., 2012).

This technological shift has happened relatively slowly over years, if not decades, and is irreversible and transformative. The pandemic by comparison has been an abrupt and

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unpredictable disruption, with at least a possibility of returning to pre-pandemic normalcy. However, many predict lasting changes. The forced shift to remote work in many professions has shed light on its impact on productivity, employee well-being, business expenditures, and more. A survey found that almost 2/3 of workers in the U.S. who worked remotely during the pandemic would prefer to continue remote work, at least part of the time, post-pandemic (Brenan, 2020), and organizational leaders largely support this change (Courtney, 2020). Conferences and events were also forced to go virtual, with many unforeseen benefits that might lead to permanent change. Virtual programming can be more inclusive, less expensive, and can lower the environmental impact associated with long-distance travel (Liu, 2020). Moreover, the expedited shift to more AI-driven technology and automation across sectors has profound implications for the future of work and business, both positive and negative (Muro et al., 2020).

So how have libraries been impacted by the COVID-19 pandemic and how might these impacts leave a permanent mark on the work and role of libraries and the profession? The current study aims to address this question through a bibliometric examination of library publishing during the pandemic year of 2020. By looking at pandemic-related library literature, a snapshot of the myriad ways in which libraries have been impacted by the pandemic is provided, and a baseline for future research on the pandemic's lasting impacts is established. How librarians have written and published about their pandemic experience should reflect key aspects of the organizational and professional pandemic response and the associated changes, adaptations, and role and identity shifts that could lead to long-term change.

## Objective

This study seeks to establish how the COVID-19 pandemic initially affected libraries, and how libraries responded, as reflected by the 2020 publications that appeared in the library and information science literature.

## Methods

The authors first searched two databases, Library, Information Science and Technology Abstracts (EBSCO) and Library Literature and Information Science Full-Text (EBSCO). These databases were selected because they each index several hundred library and information science journals covering all aspects of libraries and librarianship, and their combined coverage ranges from small society publications to international journals, and from trade publications to research-oriented journals (EBSCO Information Services, Inc., 2021). Because the nature of this study is exploratory, the authors considered these two databases to be sufficient for obtaining an overview of the literature. Using the search string (covid-19 or covid19 or covid or coronavirus or 2019-ncov or sars-cov-2 or cov-19 or pandemic), limiting to the publication year 2020, the facet “Scholarly (Peer Reviewed) Journals,” and language = English, returned 1075 results. After removing duplicates, 798 article citations and abstracts remained.

The methods combined bibliometric analyses of article metadata to establish publication patterns of COVID-19 articles with thematic analysis of abstracts derived through

qualitative coding. Bibliometric analyses are based on article metadata, i.e., information *about* the articles (e.g., citation information, abstracts, author keywords, times cited by other articles), rather than on the *content* of the articles (as in a review article, for example). These measures are often used to quantify the output of individual authors or institutions (Ball, 2018), or to evaluate research programs based on scholarly output and citation rates (Gingras, 2016). Librarians have used bibliometric approaches to evaluate the relevance of their journal collections by examining the publications most frequently appearing in the references lists of papers published by researchers from their institution (Belter & Kaske, 2016). For this study, the primary bibliometric measures were journal title and number of articles. Because only one publication year was considered, no time-based or citation measures were relevant to the study. Tools used included OpenRefine (<https://openrefine.org/>) for data clean-up and VantagePoint software (<https://thevantagepoint.com/>) for extracting bibliometric data from the included articles.

Some aspects of the data set were difficult to establish summarily through automated bibliometric means. For example, the authors realized that determining the type of library or library services discussed in an article required a close reading of each title and abstract and could not be easily extracted using bibliometric software. Therefore, to establish themes that described the data set, each author separately coded a random selection of titles/abstracts of 34 articles, then combined and edited their codes to create one coding schema that included library type, major topics of the articles, country, and whether the articles were based on empirical data. All articles were then coded for one or more topics based on a reading of the titles and abstracts. The titles/abstracts and coding schema were uploaded to the SysRev platform (<https://sysrev.com/>) for coding analysis. Articles were excluded from the study if they were not explicitly about libraries or the COVID-19 pandemic.

## Results

Through the coding process, 237 articles were included for final analyses. Many types of libraries were included in the data set. The largest proportion of articles ( $n=88$ , 37.13%) did not specify a type of library in the title or abstract. Academic libraries were represented by 69 articles (29.11%), and medical or health libraries and school libraries were represented by 23 articles each (9.7%). Public libraries ( $n=18$ , 7.59%), archives ( $n=7$ , 2.95%), law libraries ( $n=7$ , 2.95%), LIS education ( $n=5$ , 2.11%), and other types of library settings ( $n=5$ , 2.11%) were recorded.

Many countries were also represented in the data set, although a majority of articles ( $n=133$ , 56.11%) contained no mention of the country in the article titles or abstracts. The United States was specified in 62 articles (26.16%), followed by Australia ( $n=5$ , 2.11%) and Germany ( $n=4$ , 1.69%). An additional 26 countries from North America, South America, Europe, Asia, and Africa were mentioned across 37 articles.

The top five topics that emerged from hand-coding, independent of library type, included Remote Services ( $n=44$ , 18.57%), Collection Development ( $n=42$ , 17.72%), Remote Work ( $n=31$ , 13.08%), Teaching and Instruction ( $n=31$ , 13.08%), and Health and Well-Being ( $n=27$ , 11.39%). The topic of 17 articles (7.17%) was coded as

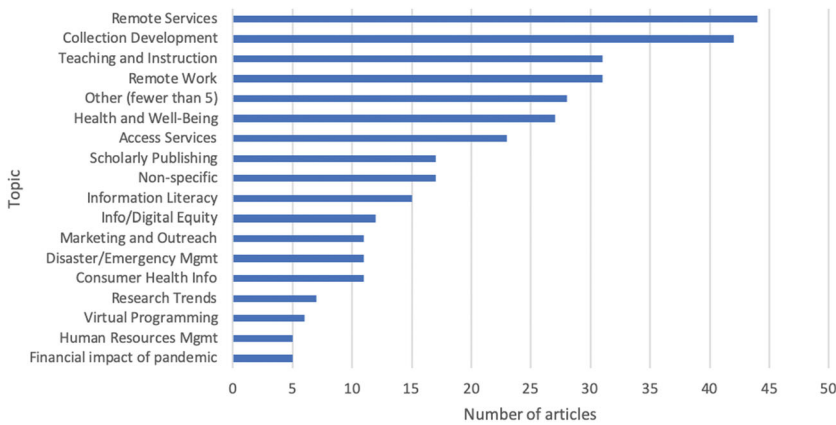


Figure 1. Popular topics across all articles ( $n = 237$ ).

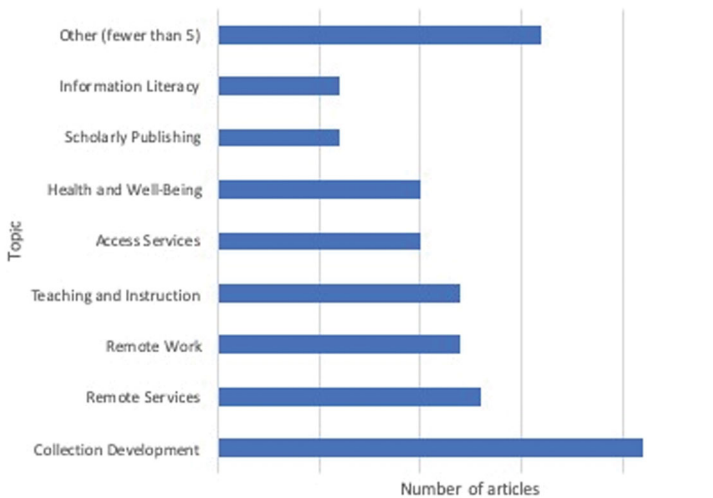


Figure 2. Popular topics for academic libraries ( $n = 69$ ).

Nonspecific based on the title and abstract. Topics with fewer than five occurrences in the data set were aggregated into “Other” in Figure 1; these topics included Conferences ( $n = 4$ ); Community engagement and Search methods ( $n = 3$  each); Cataloging, Documenting the pandemic, Historical perspective, Impact on the profession, and Information management ( $n = 2$  each); Evidence synthesis, Genealogy as a pastime, Government information, Information technology, Metadata, and Reference services ( $n = 1$  each). See Figure 1 for additional topics of importance across the entire data set. Figures 2–5 illustrate the most important topics for Academic, Medical and health sciences, School, and Public libraries.

Nineteen journals each published at least five articles in the dataset, representing 60.76% ( $n = 144$ ) of the total. The leading journal was *Against the Grain* ( $n = 26$ , 10.97%), followed by *Teacher Librarian* ( $n = 11$ , 4.64%), *Digital Library Perspectives* ( $n = 10$ , 4.22%), *Children & Libraries: The Journal of the Association for Library Service*

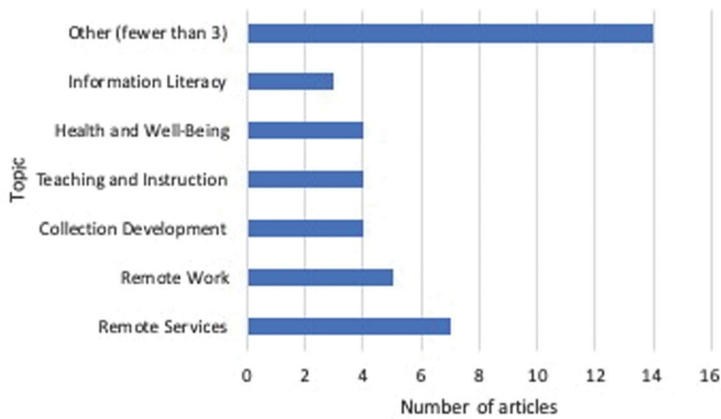


Figure 3. Popular topics for medical or health sciences libraries ( $n = 23$ ).

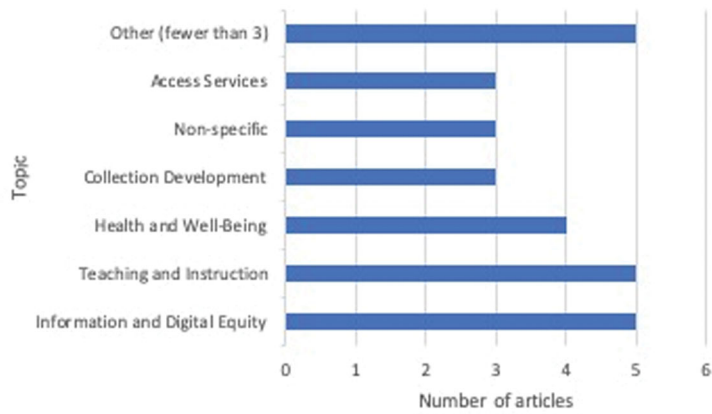


Figure 4. Popular topics for school libraries ( $n = 23$ ).

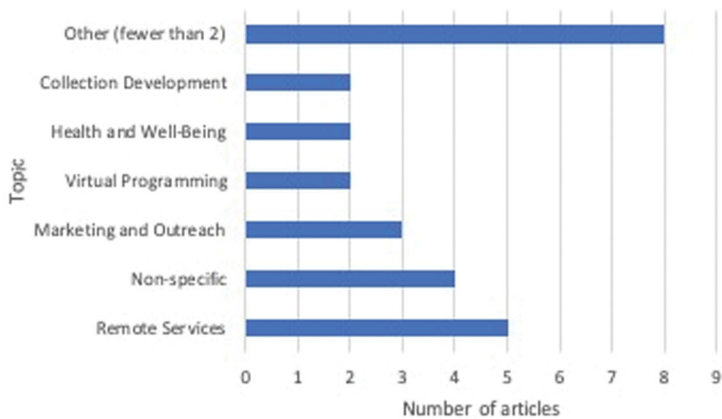


Figure 5. Popular topics for public libraries ( $n = 18$ ).

to *Children* ( $n = 8$ , 3.38%), and *International Information & Library Review* ( $n = 8$ , 3.38%). The remaining 93 articles (39.24%) were published in 50 journals that ranged from coverage of academic or public libraries, to state or regional library associations or professional organizations, to electronic resources, information management, reference work, access services, cataloging, and more. See the [Appendix](#) for a complete listing of journals that appeared in the dataset.

About study type, each article was coded according to whether it was based upon Empirical Research, Non-empirical, or Unclear. Of the total, 28 articles (11.81%) were based upon empirical methods, 200 (84.39%) were not based upon empirical methods, and there was insufficient information to determine the case for nine articles (3.80%).

## Discussion

### *Impact on scholarly publishing*

This analysis of LIS journal articles published in 2020, during the first months of the COVID-19 pandemic, demonstrates that the pandemic affected virtually all types of libraries, and all aspects of librarianship, all over the world. This is evident from the variety of library types, library services, and countries reflected by the data set. Many of the journals publishing these articles are peer-reviewed—57.6% of journals in Library Literature and Information Science Full-Text are peer-reviewed, while 57.8% of journals indexed in Library and Information Science and Technology abstracts are peer-reviewed (Title Lists | EBSCO, n.d.)—yet the rapidity with which COVID-19-related articles appeared in the LIS literature implies that, in many cases, the peer review process was relaxed or omitted as librarians swerved from largely in-person services and programming to an online environment. This parallels the expedited publication processes for COVID-19 scientific articles in traditional journals and preprint servers as researchers raced to understand the virus, how it is transmitted, and how to fight it (Bagdasarian et al., 2020). Invalid results that are the product of rushed research and relaxed peer review have been likened to a virus itself in that if it is shared (“replicated”) enough, it too can cause a global disruption (Morgensen, 2020). This rush to publish COVID-19-related research also parallels, to a degree, the process of unethical or “predatory” Open Access publishers, and may have inadvertently provided an environment where such publications can flourish (Teixeira da Silva, 2020). The expedited publication process of the pandemic is a potential threat to good science, and going forward will require constant monitoring, and retrospective assessment, for quality control.

The quick shift to focusing on how libraries could continue to function and remain relevant during a pandemic-induced social lockdown also explains the large percentage of articles that were not based on empirical methods. For example, at least eleven articles in the included data set were identifiable as editorials from words in the title or abstract, yet were retrieved through a search limited by the facet “Scholarly (Peer Reviewed) Journals,” a search strategy one would expect to exclude editorial content. Many other articles were formatted as opinion or advice pieces, or as quick case studies about how a library or department responded to this global crisis (e.g., Fritz et al., 2020; Garner & Logue, 2020; Limpitlaw et al., 2020). So while it is not so surprising that many non-empirical articles were published during this time, perhaps it *is* surprising

that 28 COVID-19/pandemic-related articles were based on empirical data and managed to be published within several months. A few of these appear to represent studies that were conducted before the pandemic but included a brief reference to the pandemic in the abstract (Beširević, 2020; Buschman, 2020; Mashiyane et al., 2020). Of the COVID-related research articles, several were based on content analysis of library subject guides, Tweets, or other library communications (Fraser-Arnott, 2020; Saavedra-Alamillas et al., 2020; Wang & Lund, 2020). A few were based on questionnaire or survey data (Cox & Brewster, 2020; Majanja, 2020; Tammaro, 2020), while some bibliometric studies examined the COVID-19 literature (Älgå et al., 2020; Ram, 2020; Rong et al., 2020).

### ***Impact on library services, teaching and instruction***

As a service profession, one of the greatest challenges during the pandemic for libraries of all types has been maintaining continuity in reference, teaching, access, and other services to patrons with physical libraries being closed or under the constraints of limited access or capacity. This is reflected in the fact that the large majority of publishing on COVID-19 topics in the library literature in 2020 was related to services, including teaching, instruction, and public programming.

For public libraries, remote services, including a shift to virtual programming and changes in marketing and outreach approaches, emerged as important topics in the literature. Public librarians noted exponential increases in the use of Overdrive for e-book reading and an increased reliance on the libraries' electronic collections to support remote learning from home for school-aged children (Goddard, 2020). Shifting programs like storytime, book clubs, and summer reading to virtual environments was also a challenge successfully met by many public libraries (Goddard, 2020; Grassel, 2020; Lesku et al., 2021).

For academic, medical and health libraries, remote services meant shifts to more virtual reference models, finding innovative ways to enable access to print collections, and rethinking one-shot information literacy sessions for the virtual environment (e.g., Joe, 2020; Mehta & Wang, 2020). This also meant significant contingency planning and increased agility to adapt at a moment's notice as university policies and procedures changed by the day (Limpitlaw et al., 2020). Library policies like overdue fines, loan periods, and renewals were revised to provide flexibility to students and faculty unable to return to campus with little notice (Ma, 2020; Temiz & Salelkar, 2020).

### ***Impact on collections***

While many libraries, particularly academic libraries in colleges and universities, have shifted toward electronic collections in recent years, the pandemic was a stark reminder to many about the importance of collections accessibility and the constraints of copyright, licensing, and publishing models that can present barriers to access. Collection development and scholarly publishing topics represented about one-quarter of the pandemic-related articles published in the library literature in 2020 and were particularly important for libraries in the higher education, academic sector. Academic libraries had to increase their purchasing of e-books, grapple with licensing and copyright issues to



make textbooks and course material available digitally, and leverage consortial agreements and interlibrary loan programs to fill gaps where needed (e.g., Armstrong, 2020; Limpitlaw et al., 2020; Stearns et al., 2020; Temiz & Salelkar, 2020; Walsh & Rana, 2020).

While not prevalent in the literature, an interesting aspect of collections during the pandemic that was noted was the collection and digital preservation of materials in terms of the historical record. At least two papers discussed the importance of libraries and archives in the documentation of the pandemic (Neatrou et al., 2020; Greenberg, 2020).

### ***Impact on the way librarians work***

Like workers in many other sectors, librarians and library staff have been deeply affected by the closure of physical libraries and shifts to remote work. The library literature in 2020 reflects a wide range of topics related to the challenges and benefits of this shift. For many in libraries, the pandemic presented not just a stressful transition to a more isolated work environment, but also the potential of furloughs and layoffs. Thus, some papers addressed issues related to employee well-being and work-life balance (Kaspar, 2020; Pomputius, 2020). Challenges and opportunities related to staff training were noted in other publications and ranged from training on the use of remote tools to reskilling (Bennett et al., 2020; Ifijeh & Yusuf, 2020; Mashiyane et al., 2020). Infrastructure and technical considerations, and staff and project management were also topics addressed in the pandemic literature (Stein et al., 2020; Risley, 2020).

Remote work was a particularly relevant topic in publications on academic, medical and health libraries and public libraries. Interestingly, no publications on remote work related to school libraries were found. This could be because many school districts attempted to get back to in-person teaching and librarianship when possible, or that the emphasis in the reviewed publications was on the impact of remote work on learners, and less so on the librarians and library staff, which likely tend to be smaller than other types of libraries with many librarians serving in solo roles.

### ***Health, well-being and digital equity***

The pandemic has highlighted the critical role of libraries in supporting public health and community well-being, through health literacy, combatting mis- and disinformation, and bridging the digital divide that was laid bare during the pandemic as teaching and learning went remote for all students, from the youngest learners to those in colleges and universities. While publications about school libraries were a relatively small proportion of the total, nearly half of those addressed issues of digital equity, health, and well-being. School libraries played a critical role in helping to sustain educational efforts and ensuring that students in low-resource settings had access to the resources they needed to continue their education (Everhart, 2020; Merga, 2020; Stephens, 2020;). Issues of digital equity were also raised in the context of public library services (Smith, 2020; Thiele & Klagge, 2020).

Libraries contributed to disseminating reliable health information during the pandemic and helping to mitigate the negative impacts of the so-called “infodemic”. Not surprisingly, this topic was raised in numerous publications by health and medical librarians, with libraries providing quality health information to the public as well as to practicing medical professionals through rapid evidence synthesis (Ansuategi et al., 2020; Morgan-Daniel et al., 2020). School and public libraries also addressed health literacy needs through the provision of quality information (Sarles, 2020; Smith, 2020). Academic libraries curated LibGuides and other resources for their campus communities and played a role in supporting the mental health and well-being of students (Cox & Brewster, 2020; Fraser-Arnott, 2020).

## Limitations and future directions

The current study is a small study designed to establish an impression of how libraries began to respond to the COVID-19 pandemic by looking at the journal articles published in 2020. Like any study based on the results of database searches, this study was limited by the selected databases. While an objective of this study was to focus on peer-reviewed literature, indexing practices in *LISTA* and *Library Literature*, combined with apparently relaxed publication guidelines, lessened our confidence that articles in the data set had been peer-reviewed or were based on empirical methods. Further, it is difficult to determine the extent to which first-person articles or non-research-based articles usually appear in the “Scholarly (Peer Reviewed) Journals” results from these databases, so the authors were unable to gauge exactly how much of a change was facilitated by the pandemic. Nevertheless, examining these 237 articles has shown how quickly librarians responded to the developing crisis, and concomitantly shared their experiences with others by writing them up for publication.

As COVID-19 vaccines have rolled out in 2021, organizations across all sectors have begun to reopen, relax safety precautions, and re-expand face-to-face services. Many wonder when things will return to “normal.” Yet even as the pandemic was only a few months old, some authors were already urging readers to think about how libraries would return to a post-pandemic world (Ayre & Craner, 2020; Smith, 2020; Stephens, 2020). Going forward, there will undoubtedly be many research studies conducted to determine just what have been the lasting effects of the COVID-19 pandemic upon libraries of all types. Which changes are here to stay? Who will continue working from home, and will it be part- or full-time? Were workers more or less productive—or stressed—during the pandemic than they were before? Will Zoom research consultations continue to be acceptable? Will our kids ever go back to school?! This research will be important because the pandemic has forced us as a profession to challenge one of our most basic assumptions about librarianship—namely, that librarianship must be practiced in person, both with patrons and with colleagues. Librarians have known for a long time that “the library” encompasses so much more than a building with books and journals in it; a library is also a collection of people and services and technologies. Has it taken a global health crisis to force librarians to mash up all of these offerings to realize potentials they didn’t know existed or were possible?

## Data availability statement

A list of articles screened for this project can be viewed at <https://sysrev.com/u/1968/p/55730>.

## Disclosure statement

The authors have no conflicts of interest to disclose.

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## Appendix

Journal title, number of times it appeared in the dataset (percentage of 237)

Access (10300155), 6 (2.53%)

Advances in Librarianship, 2 (0.84%)

Against the Grain, 26 (10.97%)

ALISS Quarterly, 2 (0.84%)

Art Libraries Journal, 1 (0.42%)

Bibliothek Forschung und Praxis, 2 (0.84%)

Cataloging & Classification Quarterly, 2 (0.84%)

Children & Libraries, 8 (3.37%)

Code4Lib Journal, 2 (0.84%)

Codex (2150-086X), 7 (2.95%)

Collaborative Librarianship, 5 (2.11%)

Collected Magazine, 1 (0.42%)

College & Research Libraries, 2 (0.84%)

DESIDOC Journal of Library & Information Technology, 1 (0.42%)

Digital Library Perspectives, 10 (4.22%)

Education for Information, 5 (2.11%)

El Profesional de la Informacion, 3 (1.26%)

Electronic Library, 1 (0.42%)

Evidence Based Library & Information Practice, 1 (0.42%)

Georgia Library Quarterly, 5 (2.11%)

Government Information Quarterly, 1 (0.42%)

Health Information & Libraries Journal, 5 (2.11%)

Information Polity: The International Journal of Government & Democracy in the Information Age, 1 (0.42%)

Information Services & Use, 3 (1.26%)



Information Systems Management, 1 (0.42%)  
 Information Technology & Libraries, 6 (2.53%)  
 International Information & Library Review, 8 (3.37%)  
 International Journal of Information Dissemination & Technology, 2 (0.84%)  
 International Journal of Information Management, 1 (0.42%)  
 Journal of Academic Librarianship, 4 (1.68%)  
 Journal of Access Services, 1 (0.42%)  
 Journal of Consumer Health on the Internet, 4 (1.68%)  
 Journal of East Asian Libraries, 1 (0.42%)  
 Journal of Electronic Resources in Medical Libraries, 3 (1.26%)  
 Journal of Electronic Resources Librarianship, 6 (2.53%)  
 Journal of Hospital Librarianship, 6 (2.53%)  
 Journal of Information Literacy, 1 (0.42%)  
 Journal of Library Administration, 7 (2.95%)  
 Journal of Medical Internet Research, 2 (0.84%)  
 Journal of Scholarly Publishing, 6 (2.53%)  
 Journal of the American Medical Informatics Association, 1 (0.42%)  
 Journal of the Association for Information Science & Technology<sup>1</sup>, 1 (0.42%)  
 Journal of the Australian Library & Information Association, 2 (0.84%)  
 Journal of the Medical Library Association, 3 (1.26%)  
 Kentucky Libraries, 5 (2.11%)  
 Knowledge Quest, 2 (0.84%)  
 Knygotyra, 1 (0.42%)  
 Learned Publishing, 1 (0.42%)  
 Legal Information Management, 7 (2.95%)  
 Liber Quarterly: The Journal of European Research Libraries, 1 (0.42%)  
 Library Management, 1 (0.42%)  
 Malaysian Journal of Library & Information Science, 2 (0.84%)  
 Medical Reference Services Quarterly, 3 (1.26%)  
 Pakistan Library & Information Science Journal, 1 (0.42%)  
 Pennsylvania Libraries: Research & Practice, 3 (1.26%)  
 Preservation, Digital Technology & Culture, 1 (0.42%)  
 Public Library Quarterly, 2 (0.84%)  
 Public Services Quarterly, 3 (1.26%)  
 Reference Librarian, 4 (1.68%)  
 School Libraries Worldwide, 1 (0.42%)  
 Science & Technology Libraries, 2 (0.84%)  
 Serials Librarian, 3 (1.26%)  
 Serials Review, 4 (1.68%)  
 South African Journal of Libraries & Information Science, 1 (0.42%)  
 Teacher Librarian, 11 (4.64%)  
 Tennessee Libraries, 5 (2.11%)  
 Theological Librarianship, 4 (1.68%)