Authorship in Academic Librarianship Journals, 2015–2019: Evaluating Author Occupations, National and Institutional Affiliations, and Coauthorship

Erin Owens

This study evaluated authorship in academic librarianship journals by assessing factors such as occupation, institutional affiliation, national affiliation, and coauthor relationships. The findings showed increased coauthorship, reinforcing the findings of previous studies. However, academic library practitioners as authors declined. Authorship was dominated by English-speaking Western nations with very high Human Development Indexes (HDI), and U.S. authorship was disproportionately represented by research-intensive (R1) doctoral institutions. Implications for diversity of representation and relevance to applied practice are discussed, along with suggestions for journal editorial boards to evaluate their content solicitation and promotion, peer review processes, and author support services.

Introduction

Librarianship as a profession has a known diversity problem in its workforce. The membership of the American Library Association in 2014 was 87.1 percent white, and Willa Tavernier noted that "access to the [LIS] field is largely limited to a homogenous cultural and socio-economic trajectory."[1] The limited diversity among practicing librarians can be even further exacerbated in academic libraries because of additional cultural and socioeconomic barriers.

The twenty-first century has also seen significant discussion of diversity and inclusion in scholarly publishing. On the content side, a 2009 review found that only 1.5 percent of papers published in the top five economics journals focused on countries other than the United States, and scholars interested in low-income countries often refocused research on the U.S. to achieve publication.[2] On the staffing side, a survey by *Publishers Weekly* in 2015 found that the publishing industry workforce was still predominately white, and a panel the same year at the Society of Scholarly Publishing Annual Meeting addressed the need for more women leaders in scholarly publishing.[3] Several years later, the Diversity Baseline Survey from 2019 still shows an industry that is 76 percent white, 81 percent heterosexual, and 89 percent nondisabled.[4] But it's not only about race and gender: the publishing sector is also "dominated by commercial publishers—as well as societies and academic presses—from the Global North,"

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and "current industry standards" have "severely limited the English-as-a-second language academics, early career reserachers *[sic]*, and international researchers."[5]

Progress is increasingly being sought and fought for. The Coalition for Diversity & Inclusion in Scholarly Communications (C4DISC) was founded in 2017 to further discussion of and action towards improving diversity in scholarly publishing. And although many studies focus on aspects of gender and race, these are hardly the only limiting factors: C4DISC's Joint Statement of Principles identifies a non-comprehensive list of identity groups, which includes geographic location, nationality/national origin, professional career level, socioeconomic background/social class, and more.[6] In 2020, the Association of University Presses (AUPresses) issued the Statement on Equity and Anti-Racism, in which they promise "to diversify our staff profiles and those of our authors, faculty boards, reviewers, and external suppliers."[7]

For other such initiatives in modernizing scholarly communications, the library profession has been a visible ally. For example, with regard to open access publishing, the Association of College & Research Libraries flipped its flagship journal, *College & Research Libraries*, to a gold open-access publishing model in 2011 and approved a policy statement in 2019, which "recommends as standard practice that academic librarians publish in open access venues, deposit in open repositories, and make openly accessible all products across the lifecycle of their scholarly and research activity."[8] Other scholarly journals published by divisions of the American Library Association (ALA), including *Reference and User Services Quarterly*, have also flipped to open access.[9]

Yet neither ALA itself, nor ACRL or any other division of ALA, has yet adopted the C4DISC Joint Statement of Principles. The Association of Research Libraries (ARL) joined during the drafting of this paper, in June 2021, and only six university libraries are so far represented in the list of adopting organizations.[10] Compared to the traction seen with scholarly communication endeavors related to open access, academic libraries seem thus far less engaged in spearheading inclusion efforts in their field's journals and serving as role models to the researchers they support across many disciplines—despite calls from within the profession, such as Charlotte Roh's petition for librarians to "be explicit about the inequalities in scholarly publishing" and "take action to avoid reproducing them."[11]

When diversity challenges in the LIS discipline are coupled with inclusion problems in the scholarly communication systems, the risk seems clear: a body of disciplinary literature that narrowly reflects only one type of experience and excludes others. April Hathcock calls on us to "pause and reflect …on who is being excluded from the forward motion in scholarly communication."[12] As the library and information science profession works to increase diversity and inclusion in its disciplinary scholarship, knowing who is presently included or excluded is an imperative starting point. This study seeks to evaluate the current state of diversity and inclusion in academic librarianship journals by considering the occupations, institutional affiliations, national affiliations, and collaborative relationships of authors. Note that this study did not engage with diversity factors such as gender or race, for specific reasons discussed in the Methodology.

Literature Review

Past studies that surveyed author characteristics and collaborations form a historical foundation and comparison point for the current study. Studies which did not focus in some way on academic librarians or academic librarianship have generally not been included.[13] Although

individual studies occasionally incorporated less typical metrics, four author characteristics clearly emerged as standard ways of comparing authors in library and information science: occupation, institutional affiliation, national affiliation, and sex.

Author's Occupation

Author occupation often appears as a comparison among different types of librarians or else professional librarians versus non-librarians. Study findings varied depending on the journals selected, and numbers have fluctuated somewhat over time, but taken together they suggest a general trend of decline in the proportion of authors who are practicing academic librarians.

Kim and Kim found that the proportion of articles by academic librarians in *College & Research Libraries* (*C&RL*), 1957 to 1976, remained relatively consistent (between 57 and 61%), although contributions from non-administrative librarians increased.[14] Krausse and Sieburth investigated authorship in twelve library journals to determine whether publications by practicing academic librarians were increasing as faculty status and pressure to publish rose: out of more than 4,000 articles examined, they found 34.4 percent written by academic librarians, the majority of which appeared in *C&RL* and *Journal of Academic Librarianship* (*JAL*).[15] In analyzing 1939–79 *C&RL* articles, Cline reported almost 60 percent of contributions from academic libraries.[16] Metz built on Cline's landmark study to further analyze *C&RL* through 1988 and found that the proportion of authors in academic libraries held relatively steady with only a slight decline, from 58.7 percent in 1939–79 to 56.12 percent in 1980–88.[17] Terry found a slight increase in 1989–94 *C&RL* data: 70.1 percent of authors were affiliated with academic libraries.[18]

Weller, Hurd, and Wiberley studied 32 library journals from 1993 to 1997, finding academic librarians as authors of 43.6 percent of the peer-reviewed articles. In nineteen journals, academic librarians authored one-third or more of the articles. But when analyzing similar data points from 1998 to 2002, Weller, Hurd, and Wiberley found declines in the "number of refereed articles by academic librarians (almost 13%), the proportion of refereed articles by academic librarians (just over 4%), the proportion of academic librarian authors (almost 3%), and the proportion of coauthored articles by academic librarians (almost 4%)."[19]

Finally, Blecic, Wiberley, De Groote, Cullars, Shultz, and Chan studied authorship by U.S. academic library practitioners in forty-one refereed journals in library science over a ten-year period (2003–12).[20] They found 37 percent of refereed articles with at least one U.S. academic librarian author. However, they also recorded "a long-term trend of decline in the proportion of that contribution [by academic librarians to their field's literature]."[21]

Author's Institutional Affiliation, Including Carnegie Classification

For analyzing authorship by institutional affiliation, simple proportions of authorship from individual institutions are sometimes compared, but Carnegie Classification has been used frequently by researchers since its inception in 1970. The Carnegie Classification of Institutions of Higher Education® describes institutional diversity in the United States based on empirical data including enrollments, completions, research expenditures, etc. For instance, "institutions that awarded at least 20 research/scholarship doctoral degrees during the update year and also institutions with below 20 research/scholarship doctoral degrees that awarded at least 30 professional practice doctoral degrees in at least 2 programs" are all grouped together as Doctoral Universities.[22] These are further subdivided into three categories as follows: *R1: Doctoral Universities-Very high research activity; R2: Doctoral Universities-High research activity; D/*

PU: Doctoral/Professional Universities. Though all three of these categories meet similar criteria for degrees awarded, R1 and R2 categories include "only institutions that awarded at least 20 research/scholarship doctoral degrees *and* had at least $5 million in total research expenditures (as reported through the National Science Foundation (NSF) Higher Education Research & Development Survey)" (emphasis added).[23] The Carnegie Classification system includes "all Title IV eligible, degree-granting colleges and universities in the 50 United States, the District of Columbia, and the territories and commonwealths …represented in the National Center for Education Statistics IPEDS system."[24] Details for all of the classification definitions can be found on the Carnegie Classification website, along with extensive tools for data search and download.

Past studies of library journals have consistently shown higher rates of authorship from larger institutions or those with higher Carnegie Classifications. Krausse and Sieburth evaluated author institutions and concluded that academic libraries with larger collections contributed more publications than small academic libraries.[25] Cline found that the top ten institutions represented by author affiliation in *C&RL* comprise the Library of Congress, the American Library Association, and eight universities that had an R1 Carnegie Classification in 1987 (the oldest dataset available).[26] Budd and Seavey examined thirty-six national, refereed, library and information science journals over five years, testing the assumption that academic librarians were encouraged to publish to retain employment; they found that most contributions came from authors affiliated with a small number of four-year institutions.[27] Hernon, Smith, and Croxen found that 92.5 percent of authors with papers accepted by *C&RL* were affiliated with academic institutions; among those, 77.7 percent were from doctoral institutions, 16.1 percent from Master's institutions, and 6.2 percent from baccalaureate and associate's institutions.[28]

Author's National Affiliation, Including Human Development Index (HDI)

Past studies have shown an interest in what countries are most represented or least represented in library journal authorship according to the authors' national affiliation. Hernon, Smith, and Croxen found that 92.5 percent of authors with papers accepted by *C&RL* worked in the U.S., 2.8 percent worked in Canada, 0.7 percent worked in Nigeria, and the remaining 2.0 percent represented just seven other countries.[29] (Note, however, that the count of authors by country total only 552–520 U.S. + 31 international—while the article indicates there were 562 total individuals, so these percentages may be slightly flawed by this discrepancy in *N*.)

In a study of international librarian collaborations, Kozlowska and Scoulas leveraged the Human Development Index (HDI) as a metric for comparing authors' national affiliations, finding that 70 percent of librarian collaborators came from "very high" Human Development Index (HDI) and predominately English-speaking countries.[30] HDI is a means of assessing a country's development by more than just economic traits such as gross domestic product (GDP). HDI summarizes "average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have *[sic]* a decent standard of living."[31] According to the United Nations documentation, countries ranked at or above 66 are categorized as *Very High HDI* countries, while rankings of 157 or below are categorized as *Low HDI*. This metric provides a way to go beyond which specific countries contributed the highest or lowest proportions of authors and to compare authorship among types of countries in terms of development and privilege, in much the same way that Carnegie classifications can be used to understand the types of institutions from which authorship originates.

Sole Versus Collaborative Authorship

Many past studies of library science authorship have examined collaboration, comparing the rates of sole versus collaborative authorship, the quantity of authors in collaborations, or the nature of collaborations in terms of occupation, nationality, or institutional affiliation. Taken together, past studies show a trend of declining sole authorship and increasing collaborative authorship.

Cline found that sole-author papers accounted for 95.65 percent of *C&RL* publications in 1939 to 1944; this dropped to 72.68 percent for 1975–1979, showing that collaboration was increasing but was still the minority.[32] When Metz continued Cline's analysis through 1988, collaboration continued to grow more common, with sole authorship dropping to 54.1 percent in 1985–1988.[33] Starratt and Person reported on author traits in *C&RL* and *JAL*: 22 percent of articles had exactly two authors, and 31 percent had at least two authors or more.[34] Hernon, Smith, and Croxen found that 35.1 percent of accepted papers in *C&RL* had more than one author.[35] Terry, continuing to build on Cline's and Metz's line of enquiry into *C&RL* authorship, found that 59.5 percent of articles from 1989 to 1994 included more than one author.[36]

Bahr and Zemon analyzed authorship collaboration in *C&RL* and *JAL* from 1986 to 1996, finding that 40 percent of articles published in *C&RL* and 29 percent in *JAL* were collaborative. Most collaborations had two authors: 72 percent in *C&RL* and 78 percent in *JAL*. University librarians were most likely to collaborate with another university librarian; the small number of other collaborators included library science faculty, faculty in other disciplines, librarians from junior college or public libraries, and vendors.[37]

Blecic, Wiberley, De Groote, Cullars, Shultz, and Chan found that, among articles by U.S. academic library practitioners in forty-one refereed journals in library science from 2003 to 2012, 51.04 percent were coauthored.[38] Norelli and Harper sampled 500 articles from *JAL*, *C&RL*, *Research Strategies*, and *portal: Libraries and the Academy*; they found 48 percent single-authored and 52 percent coauthored papers.[39] Luo and McKinney focused narrowly on *JAL* publications, finding 45.7 percent single-authored and 54.3 percent with multiple authors.[40] Luo and McKinney further found that the majority (74.5 percent) of sole authors were librarians; among multiauthor papers, more than half (52%) were collaborations between librarians, while a little over one quarter (25.2%) were partnerships between librarians and non-librarians. Another 22.8 percent were collaborations entirely among non-librarians. In 62.2 percent of collaborations, coauthors came from the same institution.

Most recently, Kozlowska and Scoulas examined collaboration between U.S. and international librarians, the majority of whom (66.09 percent) were from doctorate-granting institutions. Only 17 percent of respondents had published with international collaborators, and 70 percent of collaborators came from "very high" Human Development Index (HDI) and predominately English-speaking countries, revealing "the amount of geographical disparity in terms of who has access and who is excluded from scholarly communication."[41]

Author's Sex

Numerous studies have used author sex as another trait for evaluating authorship trends, whether looking at all authors or lead authors only, including Cline; Buttlar; Olsgaard and Olsgaard; Starratt and Person; Hâkanson; Hernon, Smith, and Croxen; Terry; and Zemon and Bahr. The studies vary in terms of whether they label this characteristic as *sex* or *gender*, and clarity is generally lacking regarding whether the researchers were seeking to compare sex assigned at birth, gender identity, or perhaps gender presentation as perceived by others.

Sex was usually classified according to a male/female binary based on the traditional associations of given names. Because these methods are questionable (as will be discussed further in the Methodology section), the findings themselves are questionable as well and thus are not included in this review.

Increase in and Motives for Author Collaboration

In reviewing the existing literature, the primary focus was on studies of authorship in academic librarianship journals, but some further examination of the increase in and motives for research collaboration was also helpful to establish context for analysis of coauthorship.

The existing literature shows that collaborative authorship has increased significantly in library and information science over the past sixty years. This same trend can be seen across disciplines over the past four decades or more: for example, the number of authors per paper in biomedicine, chemistry, and mathematics has been increasing since 1980, and a similar increase in authors per paper and a decline in sole-authored papers can be seen in business scholarship.[42] Although specific disciplines vary in scale, this shift in authorship has even held true across the humanities and social sciences.[43]

These shifts in authorship may stem from many influencing factors, such as changes in funding patterns, increased specialization, training and mentorship, division of labor (with more authors, each is responsible for less of the final product), risk aversion ("it is better to spread your risks by submitting, say, four papers by four authors than one solo-authored paper," say Kuld and O'Hagan) and more sophisticated communication and transportation technology.[44]

Recent findings by Tran and Chan studying librarian motivations for research collaborations identified significant influence from "seeking expertise that you lack," which may relate to both the increase in specialization and the need to benefit from others' skills, as well as "Distributing the workload" and "Seeking a sounding board."[45]

It is also worth noting that diversity itself is at least a potential outcome, if not a driving motivation, for research collaboration. Dr. Haseeb Md Irfanullah observes that "North-South and South-South collaborations in research projects are recognized and practiced modes of increasing diversity."[46]

Informing the Current Study

While several of the studies reviewed have been defining landmarks in understanding who publishes scholarly library science articles, many of them are also between ten and forty years old, and the most recent works have focused primarily on collaboration, so data regarding other characteristics is particularly dated. Additionally, past studies have either analyzed a much broader swath of library and information science journals or else have focused almost entirely on *C&RL*. After reviewing this existing landscape of literature, the current study finds an opportunity to update our knowledge of who authors scholarly library science articles by examining more recent volumes in a thematically related pool of journals according to a constellation of author characteristics.

Aims

This study sought to examine the diversity of authorship in journals focused on academic librarianship, guided by a question: How diverse were authorships according to factors such as occupation, institutional affiliation, national affiliation, and collaboration?

Methodology

Searches were first conducted to identify peer-reviewed journals that were focused exclusively on academic librarianship, as opposed to librarianship generally or a specialized subfield, such as electronic resources or user services. Eight key journals were included in data collection (see table 1). Throughout this article, these journals will be referred to by the shorthand references in table 1.

TABLE 1
Details of Journals Considered and Selected

Shorthand Reference	Journal Title	Excerpt from Mission or Scope
CJAL	*Canadian Journal of Academic Librarianship*	"…topics related to the profession of academic librarianship," "by and about any academic library workers"[47]
C&RL	*College & Research Libraries*	"…all fields of interest and concern to academic and research libraries"[48]
C&UL	*College & Undergraduate Libraries*	"…supports the continuous learning of academic library staff to become more effective professionals"[49]
JAL	*Journal of Academic Librarianship*	"…articles that focus on problems and issues germane to college and university libraries… a forum for… research findings and their practical applications"[50]
NRAL	*New Review of Academic Librarianship*	"…applicability of theory and/or research for the academic library practitioner"[51]
Portal	*portal: Libraries and the Academy*	"…research about the role of academic libraries and librarianship… for all those interested in the role of libraries within the academy"[52]
PAL	*Practical Academic Librarianship*	"…scholarship with an emphasis on the practical side of academic library work"[53]
PSQ	*Public Services Quarterly*	"…public service issues in academic libraries, presenting practical strategies for implementing new initiatives and research-based insights into effective practices"[54]

Selection of Authorship Characteristics for Study

Informed by the literature review, the present study chose to adopt for study the author characteristics of occupation; institutional affiliation, including Carnegie Classification; national affiliation, including Human Development Index (HDI); and collaboration. Use of these metrics in the current methodology will allow closer comparison to past findings and continue adding to a consistent knowledge base for future studies to build on. Although Carnegie Classifications are only assigned for institutions in the United States, because it is a standard system for comparing U.S. institutions and has been frequently cited in past studies it nevertheless serves as a useful data point for evaluating at least a portion of authorships.

Although many past studies included author sex as a factor for evaluating diversity, the present study ultimately chose to exclude this trait. Most past studies have classified sex based on author names, assuming that certain names are, within specific cultures, traditionally associated with male or female sex assigned at birth. However, this practice is imprecise, hampered

by cultural assumptions, and biased towards a binary worldview. To begin with, names may be differently associated in different cultures, and some families may assign names counter to their traditional sex association. Additionally, individuals may choose to adopt names other than those assigned at birth, which may or may not have any personal or cultural association with their sex assigned at birth or their gender identity. And finally, an attempt to force all individual authors into binary male/female categories negates the dignity of individuals who were born intersex or who identify differently along the spectrum of gender.

The only accurate approach would be direct contact with authors to request self-identification of gender identity specifically, separate from sex assigned at birth, including non-binary options. Such a direct survey of authors was initially considered as a method for the present study to obtain self-identification of gender identity as well as racial and ethnic identity. However, that approach was eventually abandoned due to the complexity of finding viable contact information: many articles included emails only for first authors, not all of which were still valid contacts, and identifying current contact information for all authors was challenging due to factors such as changing affiliations over time, name changes, ambiguously common names, language barriers on international institution websites, retirement, and death. Additionally, the researcher was concerned that this information request could be perceived as personally intrusive and doubted whether the resulting response rate would yield statistically significant data. Ultimately, sex, gender, and race were excluded as author traits for analysis.

Data Collection: Stage One

The first stage of data collection involved compiling article-level data from the table of contents of each issue in the five-year period from 2015 to 2019. Data for 2020 was initially collected as well, but has not been analyzed so as to control for potential variation related to the COVID-19 pandemic. Core article metadata was exported from databases on the EBSCOhost platform and then verified against the official publisher websites while copying author affiliation information from each article. For each article title, author name(s) and institutional affiliation(s) were collected in addition to the journal, volume, and issue. Data was collected only for articles; editorials, columns, and book and resource reviews were omitted. However, whereas some previous studies focused only on original research articles while excluding works like review articles, this study included review articles, case studies, and other explorations of professional theory, philosophy, or practice alongside empirical research.

A few seeming omissions appear in the dataset. Volume 76 issue 3 of *C&RL*, a special issue, was omitted, because all content comprised classic articles or commentaries on those classics, as opposed to newly published research. A significant amount of *PSQ* content was classified as columns, so the data for that publication appears smaller than the issues as published. *CJAL* began publishing in 2016 and therefore lacks 2015 content, while *PAL* lacks 2019 issues as it was on hiatus that year.

Data Collection: Stage Two

In the second stage of data collection, each author's occupation was coded, and the country of institution, HDI of country, and Carnegie Classification of U.S. institution were added as applicable. Additionally, each article was coded with regard to sole or collaborative authorship, quantity of collaborators, and types of collaboration. Codes for author occupations are shown in table 2, and codes for collaboration types in table 3; the nuances of this coding were

TABLE 2
Author Occupation Codes

Code	Occupation	Definition
1	**Academic Library**	Author is employed in an academic library in any role
2	**Academia, Non-Library**	Author is employed in, or a student in, higher education but not employed in an academic library
3	**Non-Academic**	Author is employed outside of higher education

governed by additional rules, which are explained in tables A1 and A2 in appendix A. The coding of author occupation and collaboration type was all completed by a single coder (the author), and comparisons between records were performed regularly to verify consistency.

TABLE 3
Codes for Describing Author Collaboration Types

Code	Type	Definition
1	**Internal: Library**	All coauthors share an institutional affiliation and all work in an academic library
2	**Internal: Mixed**	All coauthors share an institutional affiliation; at least one works in an academic library, and at least one works outside an academic library
3	**Internal: Non-Library**	All coauthors share an institutional affiliation, but none work in an academic library
4	**Internal: Undetermined**	All coauthors share an institutional affiliation, but at least one cannot be classified inside or outside an academic library
5	**National: Library**	Coauthors are affiliated with at least two different institutions, all within academic libraries, and share the same country affiliation
6	**National: Mixed**	Coauthors are affiliated with at least two different institutions, at least one in an academic library and at least one outside an academic library, and share the same country affiliation
7	**National: Non-Library**	Coauthors are affiliated with at least two different institutions, none within academic libraries, and share the same country affiliation
8	**National: Undetermined**	Coauthors are affiliated with at least two different institutions and share the same country affiliation, but at least one cannot be classified inside or outside an academic library
9	**International: Library**	Coauthors are affiliated with at least two different institutions, all within academic libraries, in at least two different countries
10	**International: Mixed**	Coauthors are affiliated with at least two different institutions, at least one in an academic library and at least one outside an academic library, in at least two different countries
11	**International: Non-Library**	Coauthors are affiliated with at least two different institutions, none within academic libraries, in at least two different countries
12	**International: Undetermined**	Coauthors are affiliated with at least two different institutions in at least two different countries, but at least one cannot be classified inside or outside an academic library

Next, the Human Development Index (HDI) rank for each country was added to the data records, using the 2019 rankings from the United Nations.[55] Lastly, the Carnegie Classification was added for each author affiliated with a U.S. institution, based on the Carnegie 2021 Update Public File.[56] For reference, Table A3 in Appendix A lists the Basic Classifications assigned by the Carnegie system and how they have been grouped and abbreviated for analysis in this paper.

The dataset generated and analyzed during the current study is available in the Scholarly Works @ SHSU institutional repository at https://shsu-ir.tdl.org/handle/20.500.11875/3601.

Results

Article and Author Counts

A total of 1,146 articles appeared in issues of the eight selected journals dated 2015 through 2019. Figure 1 illustrates the article count and percentage that each journal contributed to this dataset. In total, these articles included 2,472 authorships—meaning the total number of names in bylines, without accounting for individuals who may be associated with more than one article. The percentage of authorships contributed by each journal were closely aligned with the percentage of articles contributed (see figure 2), generally varying by no more than 1.4 percent for each journal except *C&RL*, which contributed 1.8 percent more authors than articles.

Author's Occupation

Among the individual authors, 70.2 percent were employed in academic libraries; 27.1 percent were employees or students in higher education but not employed in academic libraries; and 2.7 percent were not employed in higher education. This yields a total of 29.8 percent that are outside academic libraries.

FIGURE 1
Articles per Journal

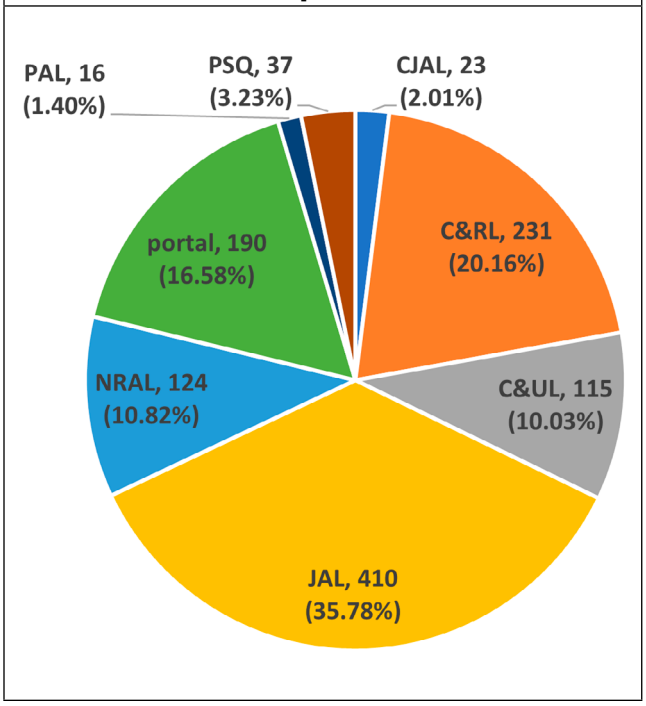


FIGURE 2
Authorships per Journal

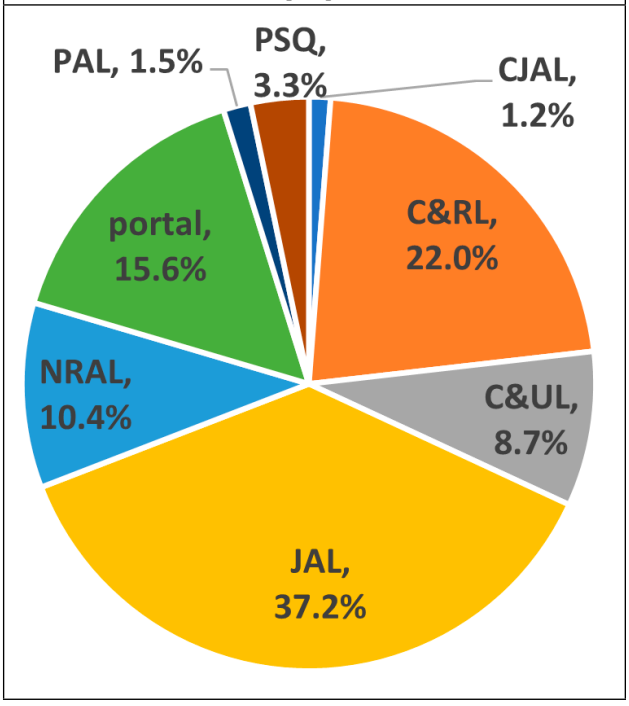
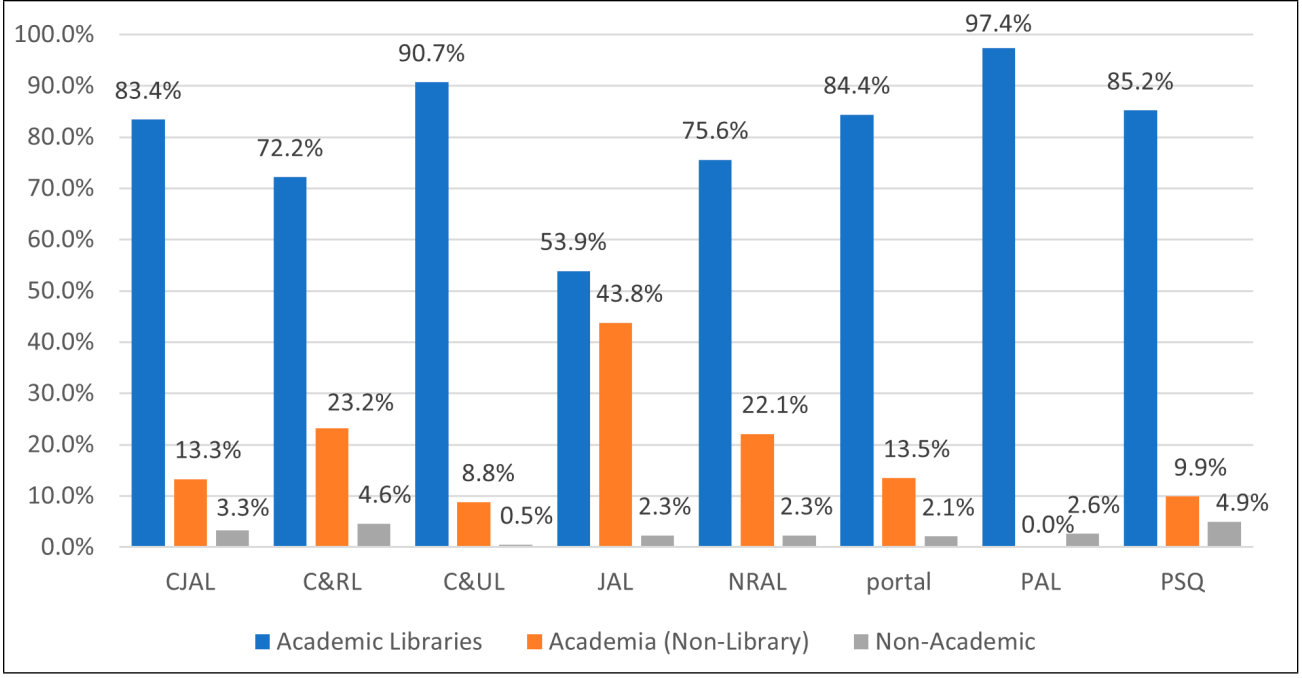


FIGURE 3
Author Occupations by Journal



Author occupations varied among the eight journals studied (see figure 3). *PAL* stood out as having the most authors employed in academic libraries (97.4%), while *JAL* had the fewest (53.9%), but all titles had greater than 50 percent of authors from academic libraries. Meanwhile *JAL* had the greatest number of non-library higher education authors (43.8%), and *PAL* had the fewest (0.0%). No journal had more than 4.9 percent of authors who worked outside of higher education.

Author's National Affiliation, Including Human Development Index (HDI)

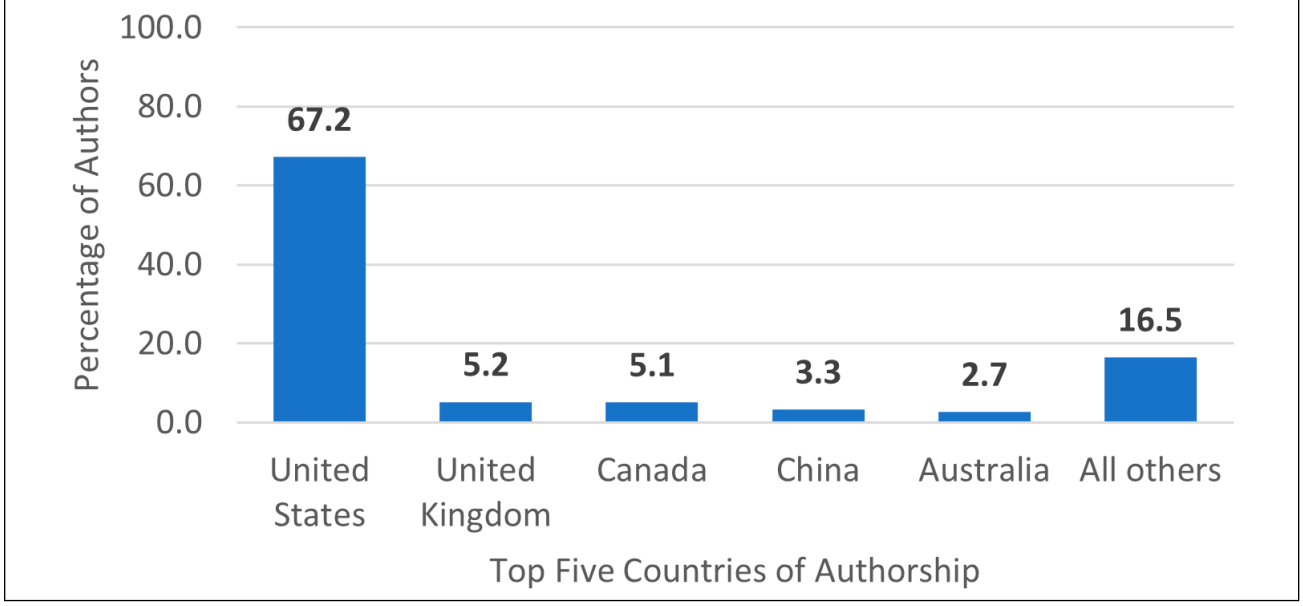
Of all authorships, 67.2 percent were from authors affiliated with the United States; no other country came close: the next country in order, the United Kingdom, accounted for only 5.2 percent of authorships (see figure 4). Canada produced 5.1 percent of authorships (with just three fewer authors than the United Kingdom); China and Australia rounded out the top five countries with 3.3 percent and 2.7 percent respectively. No other country achieved more than 1.8 percent of total authorships. Another fifty-one countries of authorship combined represented just 16.4 percent of the total authorships (see the appendix for details); two authorships (0.08%) had unknown national affiliations.

CJAL is positioned as a national publication, as the word *Canadian* in its name clearly implies, and its authorship reflects that reality: 73.3 percent of its thirty authors had Canadian affiliation. The other 26.7 percent had U.S. affiliation. No other national affiliations were represented (see figure 5).

PAL and *PSQ* were even more skewed towards a dominant country of authorship: PAL saw 84.2 percent authorship from the U.S. and 15.8 percent from Canada, while PSQ saw 96.3 percent from the U.S. and 3.7 percent from Canada. Neither represented authorships from any countries except the U.S. and Canada (see figure 5).

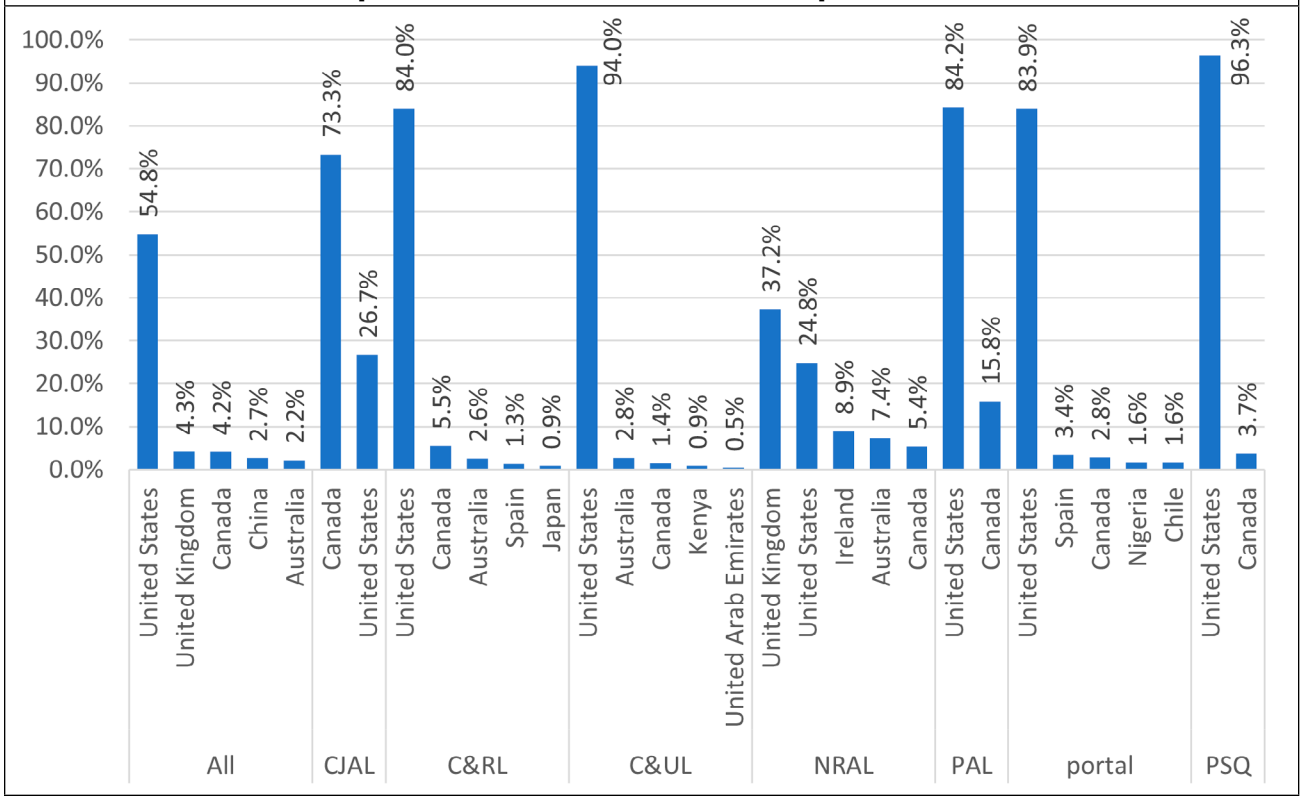
C&UL boasted 93.9 percent U.S. authorship; Australia was the only other country to break 2 percent, with six authors for 2.8 percent of *C&UL* authorships (see figure 5). Only four other

FIGURE 4
Top Five Countries of Author Affiliation across All Journals



countries were represented (Canada, Kenya, United Arab Emirates, and Hong Kong) with between one and three authors each. (Although Hong Kong is not an entirely independent country, it is a special administrative region with governing and economic systems separate from the rest of the People's Republic of China [PRC], and it is scored separately in the Human Development Index; thus, it is addressed separately in this paper as well.)

FIGURE 5
Top Countries of Author Affiliation per Journal



Meanwhile *portal* reflected less exaggerated but still dominant U.S. authorship: 324 of 386 authorships (83.9%) originated in the U.S. (see figure 5). No other country came close; next was Spain, with 13 authors (3.4%) and Canada with 11 authors (2.8%). The remaining authorships were divided among fifteen other countries, which are listed in full in appendix D.

C&RL reflected a very similar majority of U.S. authorship, with 456 of 543 authorships (84.0%) from the U.S. (see figure 5). Canadian affiliations made up another 5.5 percent, and Australia yielded 2.6 percent. Another fifteen countries were represented with between seven or fewer authors; these are listed in full in appendix D. Two authors (0.4%) had unknown national affiliations.

JAL was still heavily U.S.-authored: of its 920 authors, 497 (54.0%) are from the U.S., and yet *JAL* also represented the largest number of other international affiliations, including authors from forty-four other countries. Rounding out the top five with at least twenty-five authors each were China (8.4%), Canada (4.0%), United Kingdom (3.0%), and Australia (2.8%) (see figure 5). The rest are listed in full in appendix D.

The 258 authors in *NRAL* represented 37.2 percent authorship from the United Kingdom, followed by the U.S. (24.8%), Ireland (8.9%), and Australia (7.4%) (see figure 5). The remaining authorships (21.7%) were dispersed among another sixteen countries, listed in full in appendix D—so *NRAL* stood out with less U.S. dominance, but still an anglophile focus and also not as broad an international representation overall.

Very High HDI countries accounted for 92.2 percent of all authors (both sole and collaborating), 97.1 percent of sole authors, 91.2 percent of all collaborating authors, and 78.3 percent of international collaborators specifically. Only 0.8 percent of all authors, 0.5 percent of sole authors, 0.9 percent of collaborating authors, and 0.0 percent of international collaborators were affiliated with Low HDI countries (see figure C-1 in appendix C).

Looking at individual journals, *CJAL*, *PAL*, and *PSQ* entirely comprised authors from countries with Very High HDI (see figure 6). *JAL* authorship was still predominately Very High HDI (83.8%), though they also included 12.9 percent authors from High HDI countries. Every other HDI category saw less than 3 percent authorship in any given journal. *NRAL* had the greatest representation of both Medium HDI authors (2.7%) and Low HDI authors (2.3%).

Author's Institutional Affiliation, Including Carnegie Classification

Carnegie Classifications were clearly identifiable for a total of 1618 authorships. Of those, 48.5 percent originated from R1 institutions specifically, and 73.3 percent originated from doctoral universities of some degree (R1, R2, or D/PU). Another 16.7 percent of authorships originated from Master's Universities (M1, M2, or M3), and 8.7 percent originated from Baccalaureate, Associate's, or Special Focus institutions. Zero authorships originated from Tribal Colleges. Figure 7 shows the breakdown of U.S. authorship by classifications (the abbreviations are explained in table A-2).

For context, only 3.0 percent of U.S. institutions are classified as R1 and 9.6 percent as Doctoral (R1, R2, or D/PU). Meanwhile 15.8 percent are classified as Master's (M1, M2, or M3) and 74.5 percent as Baccalaureate, Associate's, Special Focus, or Tribal. Figure 8 shows all U.S. institutions by Carnegie Classification, representing an almost inverse distribution compared to authorships.

Among the eight journals analyzed, *CJAL* appeared to have the highest rate of R1 authorship at 71.4 percent, but as it had only seven authors at Carnegie-classified institutions, this number

FIGURE 6
Author Country HDI across Individual and All Journals

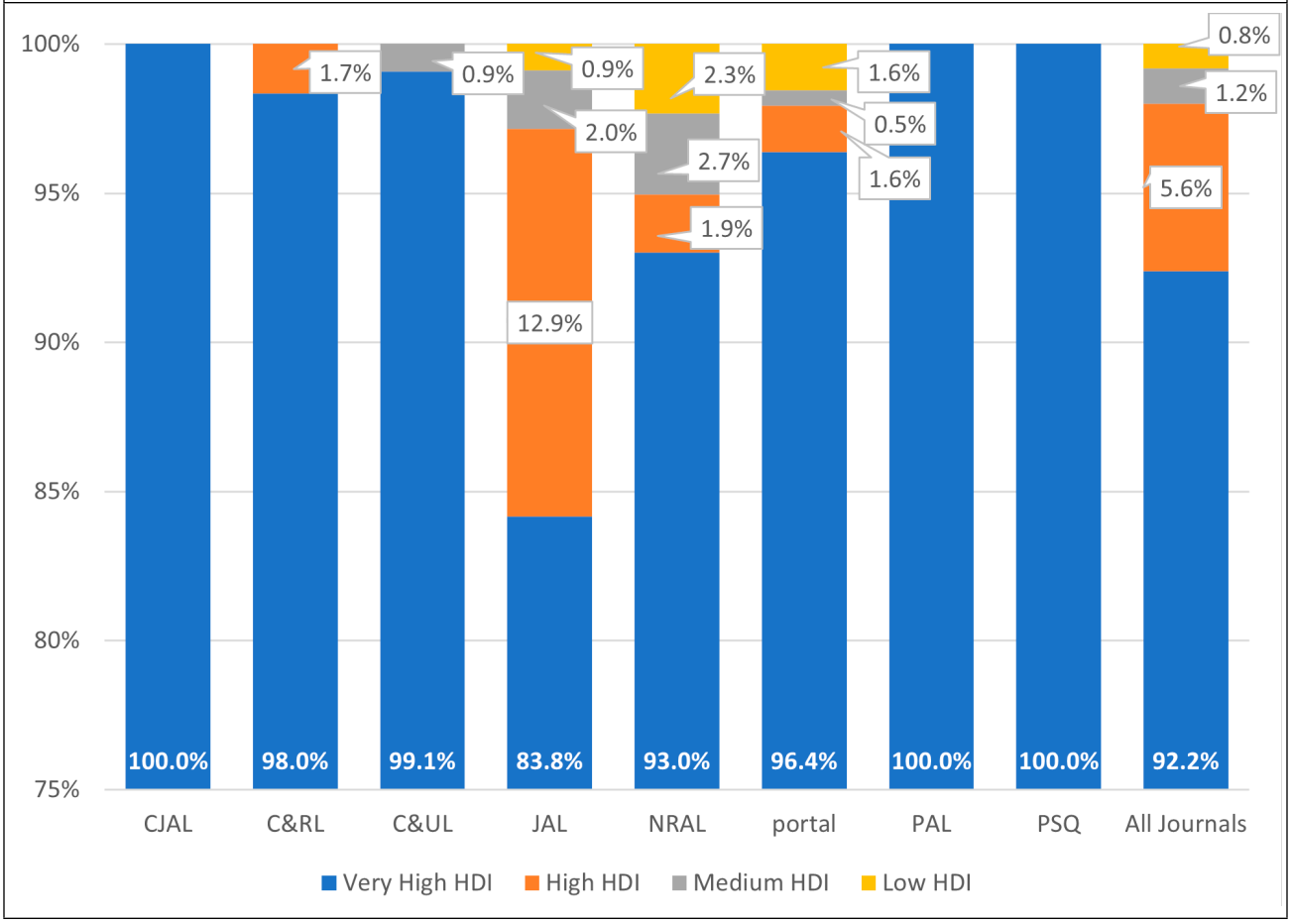


FIGURE 7
U.S. Authorships by Institutional Carnegie Classification

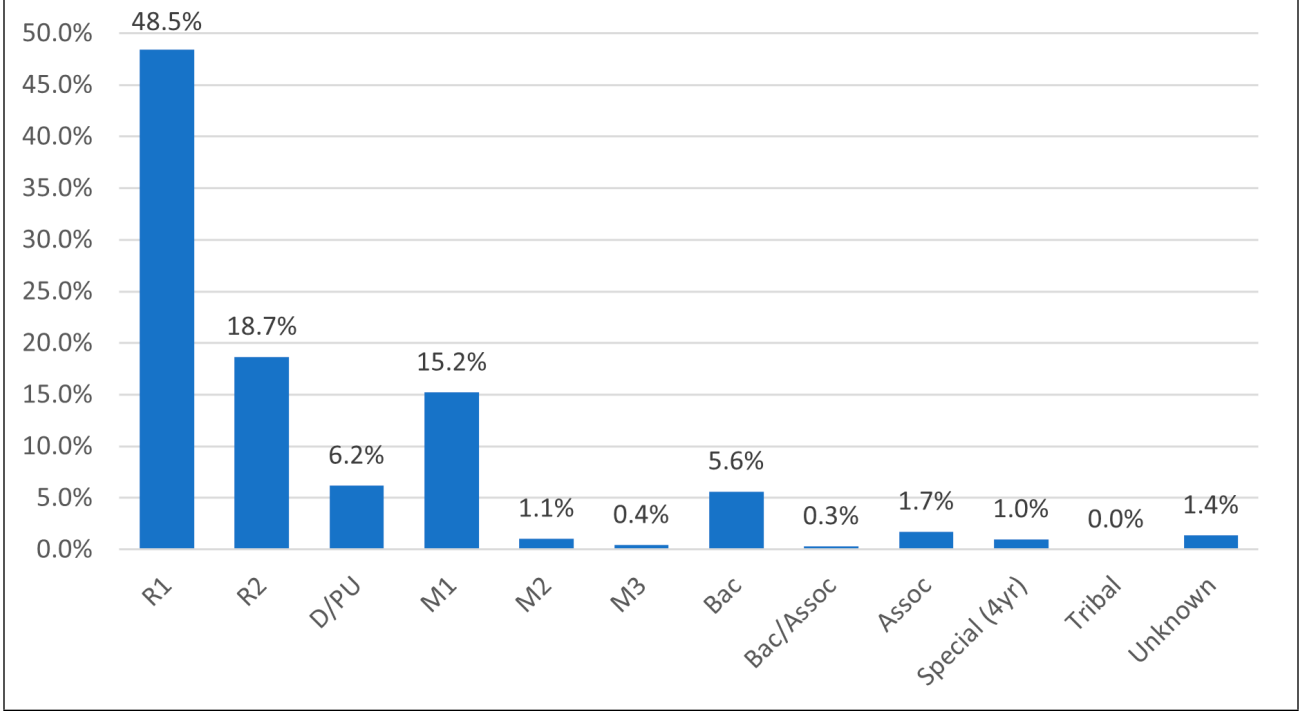
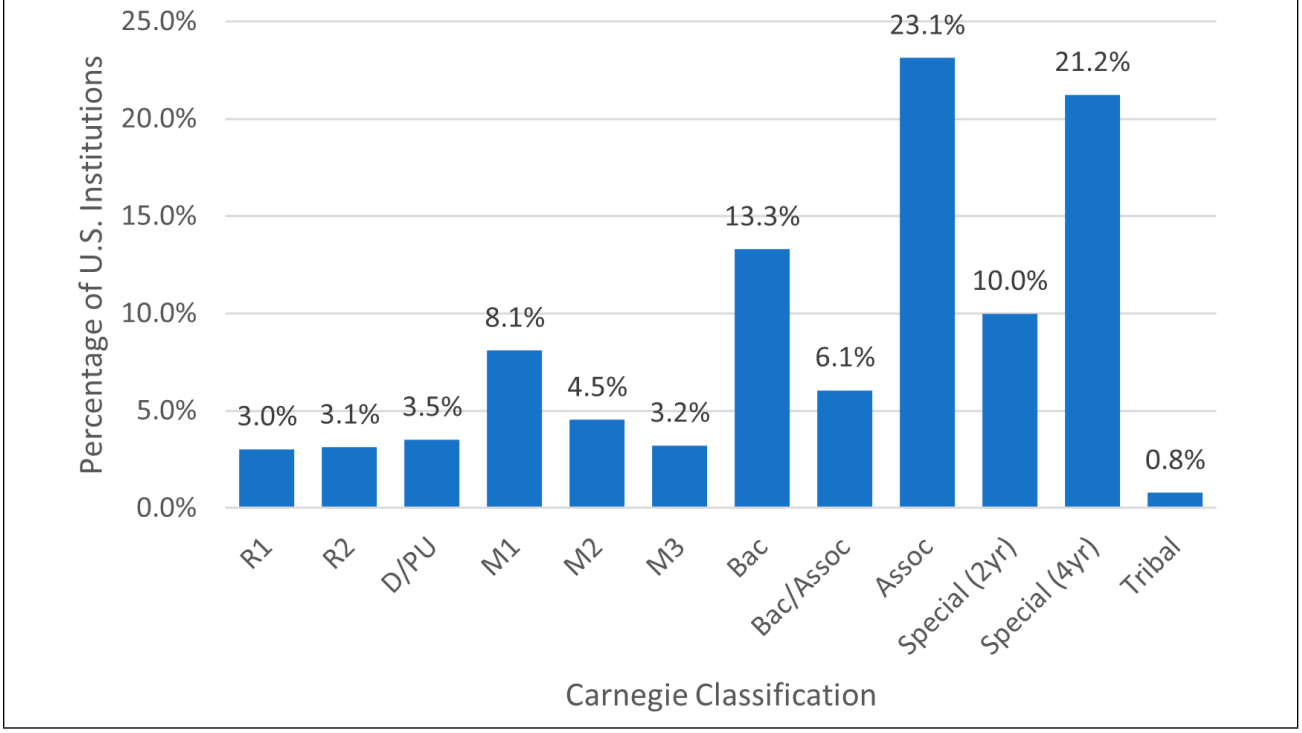


FIGURE 8
All U.S. Institutions by Carnegie Classification[57]



is a bit skewed. Among journals with larger groups of authors at Carnegie-classified institutions, *portal* and *PAL* stood out with higher rates of R1 authorship than the 49 percent overall average—57.0 percent and 56.3 percent respectively (see figure C-2 in appendix C). *C&UL* had the lowest rate of R1 authors at 37.6 percent. While the overall average rate of R2 authorship was just 18.7 percent, *C&RL* had the highest above-average proportion of these authors at 26.0 percent. The lowest rates of R2 authorship came from *PAL* and *CJAL* (both 0%). Although the overall average rate of authorships from Bac (Baccalaureate) institutions was 5.2 percent, this was heavily influenced by *C&UL*, 16.3 percent of whose authors are affiliated with these institutions.

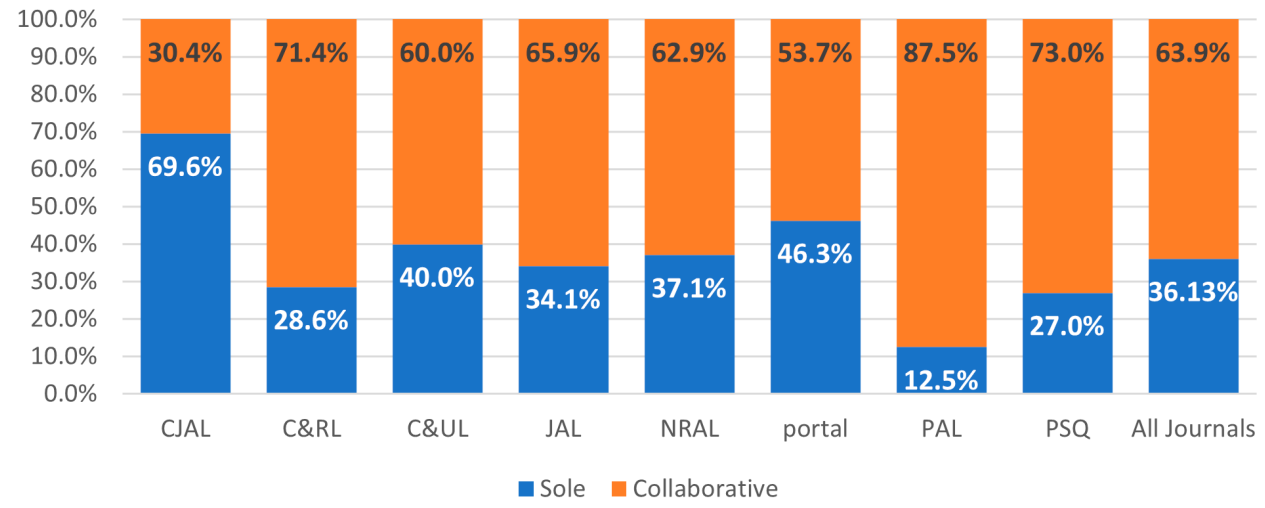
Sole Versus Collaborative Authorship

Sole authorship accounted for 36.1 percent of articles across all journals, while the remaining 63.9 percent involved collaborative authorship. Overall, collaborative authorship was more common, although *CJAL* in particular had more sole than collaborative authorship. Figure 9 breaks down sole versus collaborative authorship in each individual journal and all journals combined.

Looking specifically at first authorship in collaboration, that is, which author appears first in the byline, the top five countries remained identical to those with the most total authorships. The United States still led with 66.7 percent of the total 732 first authorships. United Kingdom had 5.1 percent, Canada had 4.8 percent, China had 3.6 percent, and Australia had 2.6 percent. Another forty-five countries accounted for the remaining 17.3 percent of first authorships, each individually representing 1.9 percent or less of authorships (ranging from 1.9% to 0.1% each).

Dual authorship was very close in popularity to sole authorship, with 377 two-author papers compared to 414 sole-author papers. Two-author collaborations accounted for 51.5 percent of all 732 collaborative articles. Another 29.2 percent of collaborations had three authors; no papers had more than nine authors (see figure 10).

FIGURE 9
Sole versus Collaborative Authorship



Collaborations

All collaborations were coded as a combination of Internal, National, or International and Library, Non-Library, or Mixed, as detailed in Table 3. These types of collaboration manifested themselves differently across the eight journals evaluated.

Across all journals, Internal: Library was the most common type of collaboration (35.9 percent), meaning most collaborations happened among academic library employees at the same institution (see figure 11). Collaborations between academic library employees in the same country, coded as National: Library, were the second most common (17.5%). In third place (12.4%) were collaborations within the same institution including at least one academic library employee and one non-library employee, which were coded as Internal: Mixed; the category National: Mixed was not far behind at 12.0 percent. The rarest kind of collaboration (not counting those of "undetermined" type) was International: Library (0.7%). Additional graphs are included in the appendix to show this breakdown in each journal.

FIGURE 10
Percentages of Collaborative Papers by Number of Authors

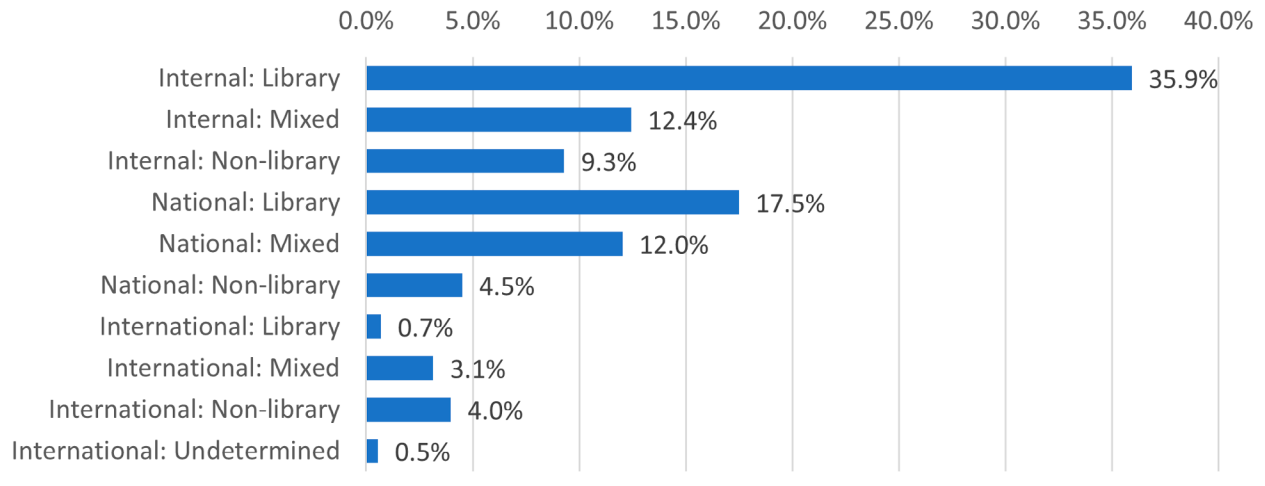
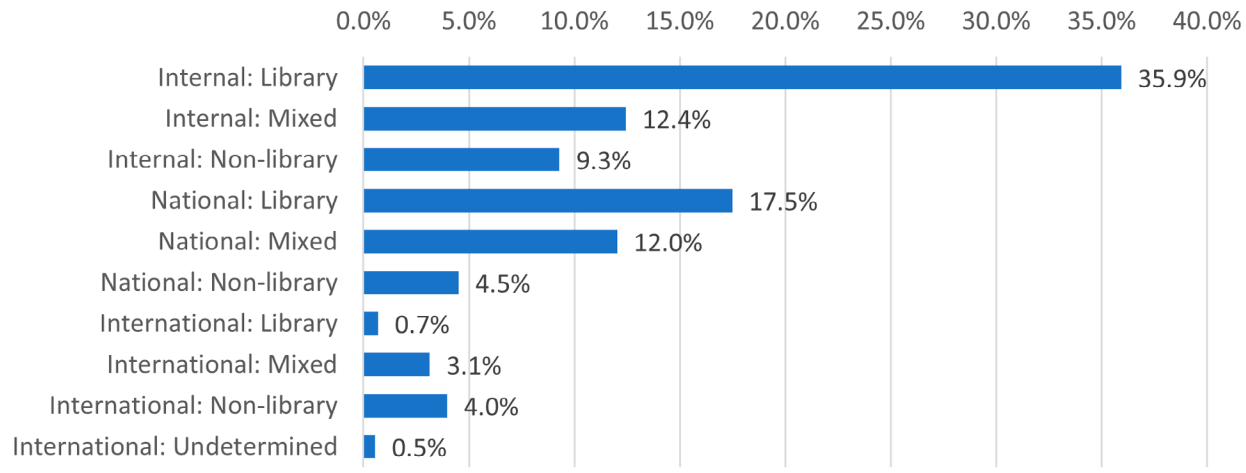


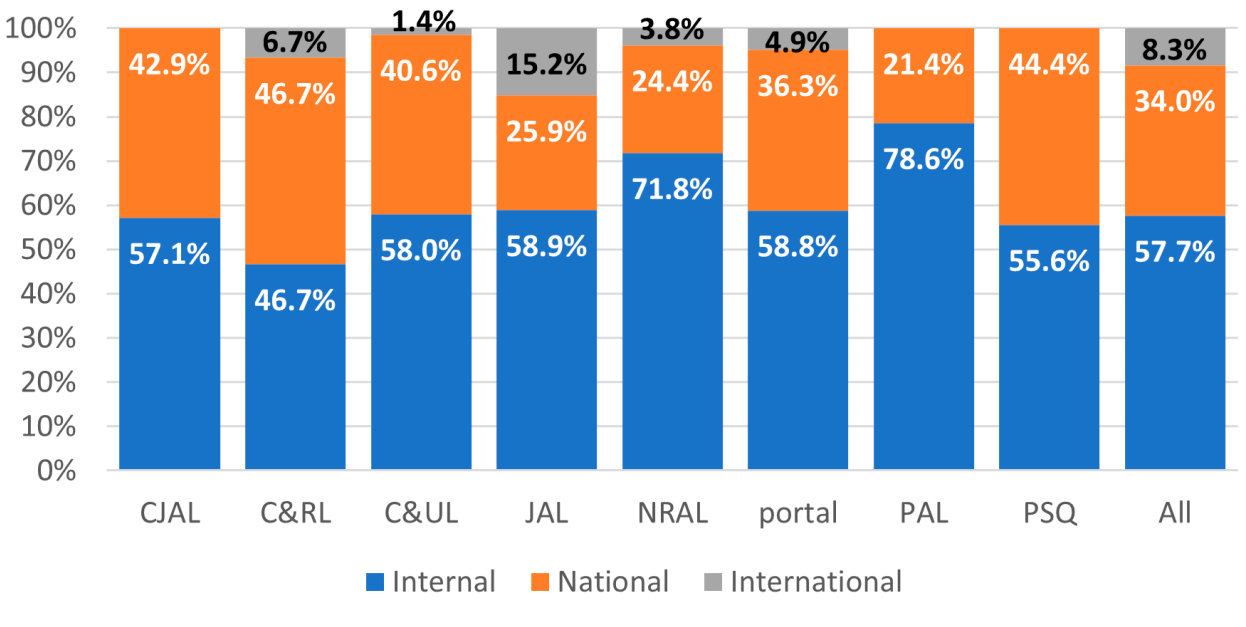
FIGURE 11
Collaboration Types across All Journals



These combined codes can also be broken apart to analyze collaborator affiliations and occupations separately. *CJAL* contained only seven collaborative pieces total, and over half of those (4, or 57.1%) were internal collaborations within one institution. *CJAL, PAL,* and *PSQ* lacked international collaborations entirely, while *C&UL* published only one and *NRAL* published only three. Figure 12 illustrates different collaborator affiliations represented by collaborations in each journal.

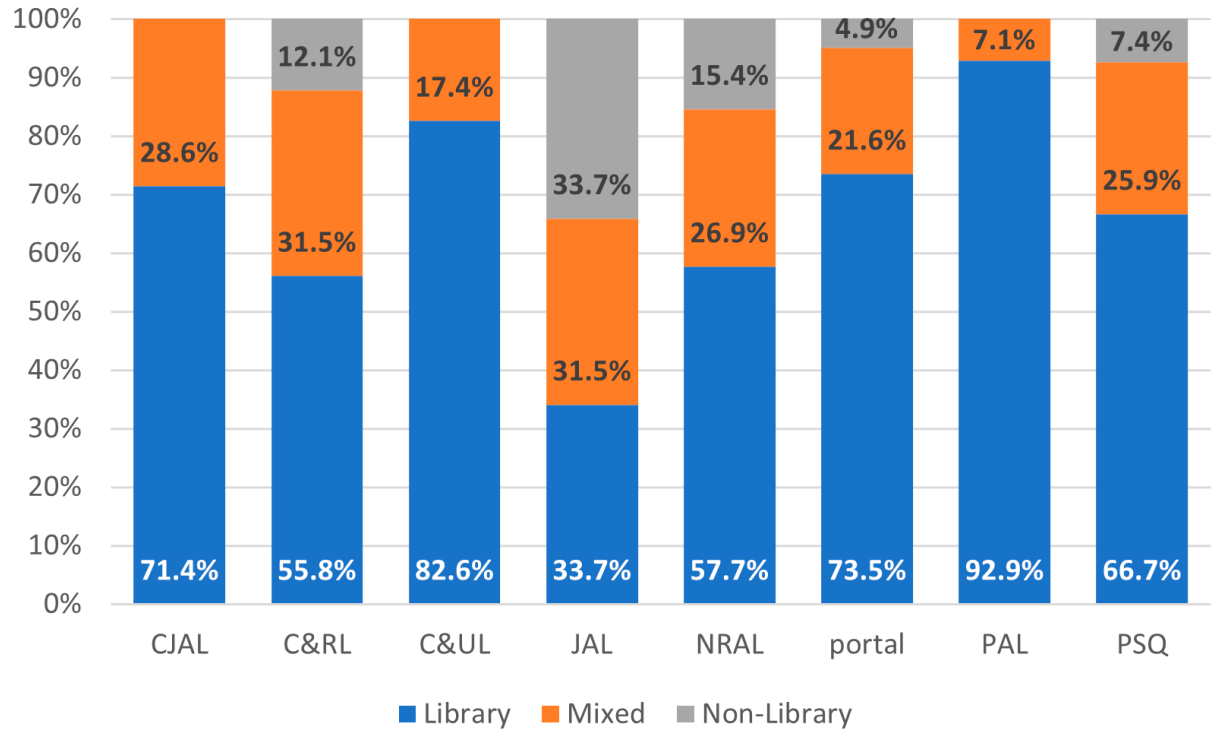
Out of the total 732 collaborative articles, 385 (54.1%) involved only collaborators employed in academic libraries. Another 202 (27.6%) represented mixtures of academic library employees and others from outside academic libraries, while 130 (17.8%) included only collaborators that worked outside of academic libraries. The final four collaborations (0.5%) were Undetermined in this respect.

FIGURE 12
Collaboration by Affiliation per Journal



PAL represented the greatest number of library-only collaborations (92.9%) and contained zero collaborations from only non-library authors; *C&UL* was similarly positioned, with 82.6 percent library-only collaborations and zero non-library collaborations (see figure 13). Meanwhile *JAL* included the lowest proportion of library-only collaborations (33.7%) and by far the greatest number of papers with no library authors (33.7%). Note that the emphasis in this breakdown was on current, applied experience via employment in the academic library; LIS professors were categorized as *non-library* in this context, along with researchers in other fields and non-academics, so that category should not be understood as entirely lacking in knowledge or expertise pertaining to academic libraries.

FIGURE 13
Collaboration by Occupation per Journal



Discussion

In studying these findings, a number of themes emerge that are worth closer consideration for ensuring equitable access to the publishing process and diverse outputs in scholarly publishing on academic librarianship.

Author Occupations

As might be expected, the highest proportion of authors (70.2%, more than two-thirds) were employed in academic libraries. This almost seems like an improvement on the study by Weller, Hurd, and Wiberly, which found that only 43.6 percent of authors were academic librarians; however, it is difficult to compare precisely, since their study surveyed thirty-two journals of librarianship, which may have represented a broader librarian constituency beyond academia, and additionally they may have employed different methods in coding for *librarian*, while the current study more broadly recognized *academic library employees* who

might have been outside an MLIS librarian position.[58] The current study's findings closely parallel Terry's finding of over 70 percent academic library practitioner authors in *C&RL* from 1989 to 1994.[59]

On the other hand, the author did not expect that more than one-quarter of all authors (27.1%) would be employed outside of academic libraries. The thread of professional practice or practical application characterizes the mission and scope of six out of the eight selected journals (see table 1), and yet a noticeable portion of the scholarship being published to inform practice is coming from non-practitioners.

In terms of collaborations, little seems to have changed in recent years regarding author occupations. The current study found that a little over half of collaborative articles (54.1%) involved library-only authorship—this is similar to the findings of Luo and McKinney, who found that more than half (52%) of multiauthor papers in their sample were collaborations between librarians, and also somewhat resembles the findings of Bahr and Zemon, who found that, "for university librarians, the most common partner is another university librarian."[60] However, the present study's notation of *employment in academic libraries*, which could embrace a variety of positions and statuses, may not compare directly to Bahr and Zemon's more specific identification of *librarians*.

The present study's findings regarding mixed library/non-library collaborations held steady with Luo's and McKinney's data at a little over one quarter. Finally, the percentage of articles coauthored entirely by non-librarians was 17.8 percent, lower than the 22.8 percent found by Luo and McKinney.[61] However, Luo and McKinney examined only *JAL*, while the present study compared multiple journals in academic librarianship. If the present study's findings regarding coauthorship in *JAL* only are compared to Luo's and McKinney's results, then the longitudinal shift becomes more starkly apparent. Now all-librarian collaborations plummet from 54.1 percent to 33.7 percent, mixed collaborations rise to 31.5 percent (compared to 27.6% across all journals), and non-librarian collaborations rise to 33.7 percent (compared to 17.8%). From this perspective, we see an even stronger indication that authors other than practitioner librarians are more regularly publishing in *JAL*, even when lacking a librarian collaborator. That being said, *JAL* admittedly has the most extreme proportions of low librarian-only and high non-library collaborations, so this trend is more exaggerated in *JAL* compared to other journals.

This raises questions about whether various fields, including academic librarianship, may be developing greater overlap in topics of interest, and whether academic librarianship journals may be seen as more accessible pathways to publishing compared to journals in related disciplines, thus possibly contributing to an increase of submissions from non-practitioners, whether sole or collaborating. Possibly economic factors in higher education are simultaneously sidelining research activities among practicing librarians, causing their proportion of contributions to decline. As Blecic et al. note, "academic librarians bring a unique perspective and a focus on library practice, often evidence-based, to the LIS literature. The profession needs to take notice of evidence of a decrease in contributions by practitioners."[62] Admittedly, many of the non-practitioners represented in this case are library and information science educators, rather than members of wholly separate fields. They are not necessarily ignorant of library practice. But these trends nevertheless raise some questions as to whether the experience and perspective of active practitioners is being marginalized, at least within the arena of scholarly journals. At the same time, other options for communication channels do exist, including blogs and social media; we might also ask whether active practitioners are favoring these alternate

channels for sharing their insights and experiences, particularly if they are employed in positions that do not require scholarly publishing.

National Affiliations

The data show that the United States led in first authorships. However, first position in the byline does not always indicate a leadership position in the research or a correspondence responsibility for the publication. There are many reasons why a team may decide to order names in the byline in a particular way. Thus, although we may observe that U.S. authors dominate the first spot in bylines, this cannot be correlated to more frequent "leadership" in research, and it likely reflects only the relative quantity—and perhaps relative privilege—of U.S. authors.

Ultimately, this dataset represents authors from only 56 countries--for comparison, the United Nations recognizes 195 countries as members or permanent observers.[63] National affiliations across all journals reflected a disproportionate number of authors from Western, English-speaking, and majority white nations historically connected to the British Empire: the United States, the United Kingdom, Canada, and Australia. This validates findings from Kozlowska and Scoulas, who reported that international collaborators in their data sample were predominately English-speaking.[64] This also squares with the data shared by Hathcock to demonstrate that "publishing priority is given to the work of North American and European researchers."[65] Furthermore, the present study found that 91.2 percent of all collaborators and 78.3 percent of international collaborators came from countries with Very High HDI, further validating Kozlowska and Scoulas, who reported 70 percent of international collaborators came from Very High HDI countries.[66]

China (ranked High HDI as opposed to Very High) also managed to break into the top ranks alongside higher HDI, predominately English-speaking Western nations, but perhaps this should be unsurprising. At the national level, China has placed significant emphasis on, and funding towards, becoming a competitive research powerhouse; a 2020 report from the National Science Board shows that China alone accounted for almost one-third (32%) of the global increase in research and development (R&D) between 2000 and 2017, and their national R&D spending in 2017 exceeded that of the entire European Union.[67]

A central question that emerges is *why* more authorships are not represented from more countries. Do academic librarians in those nations face less professional and institutional pressure to publish research? Are they simply targeting different journals—perhaps published within their nation or language, or scoped more narrowly to focus on specific areas of librarianship (reference, electronic resources, etc.)? Are they engaging with more informal channels of communication, like blogs? Or are they facing barriers that limit their publishing in leading academic librarianship journals—and, if so, what are those barriers: language, financial support, implicit bias of reviewers? Future research could investigate these issues so that these journals can ensure they are maximizing the diversity of experience they represent. As Lettie Conrad stated in an interview with *The Scholarly Kitchen*, "diversity is only possible if we operate outside our comfort zones, to include disparate voices of scholars without competitive English proficiency, welcome insights from all ages, races, genders, etc."[68]

Carnegie Classifications

The 3.0 percent of institutions in the U.S. classified as R1 generated nearly half of the authorship in U.S. academic librarianship journals, while the fully three-quarters of U.S. institutions

classified as Baccalaureate, Associate's, Special Focus, or Tribal contributed only 8.7 percent of authorship. Authorship by Carnegie Classification was not significantly different between OA and subscription journals. This suggests that decisions to publish in open versus paywalled journals are not necessarily a matter of institutional resources or values.

The overwhelming dominance of R1 institutions in the authorship pool is not necessarily unexpected. R1 institutions generally place greater emphasis on research production for all faculty, so if librarians at that institution have faculty status, they are likely to face greater pressure to publish for tenure and promotion compared to institutions in other classifications where greater emphasis is placed on teaching. Library authors at R1 institutions are also likely to have access to more numerous and more robust research support services simply because of the R1 focus, and they may find greater opportunity to collaborate on publishing with faculty in other disciplines. Conversely, librarians at institutions focused on baccalaureate and associate's degrees may lack resources and may face little encouragement or incentive to publish—or sometimes may be actively discouraged from doing so—since that is not their institution's priority.

Such an imbalance might almost make sense in a theoretical or purely scholarly discipline, where R1 scholars primarily write to and for one another. But in a profession such as librarianship, characterized by a large practitioner audience seeking to benefit from practical, applied research, it seems unconstructive that such a small, elite, and highly resourced population would produce so much of the literature meant to inform the remaining mass of practitioners who are operating in drastically different settings. The imbalance in authorship might be due only to the fact that librarians at less research-focused institutions neither need nor care to publish or choose to do so only via less formal channels such as blogs. Conversely, it might be the case that some voices who wish to be heard lack the resources to convey their experience. If academic librarianship journals overemphasize the R1 perspective without striving for more balanced inclusion, they could risk isolating the practitioner readers at other types of institutions and creating a conversation that is not relevant or generalizable to a broader audience.

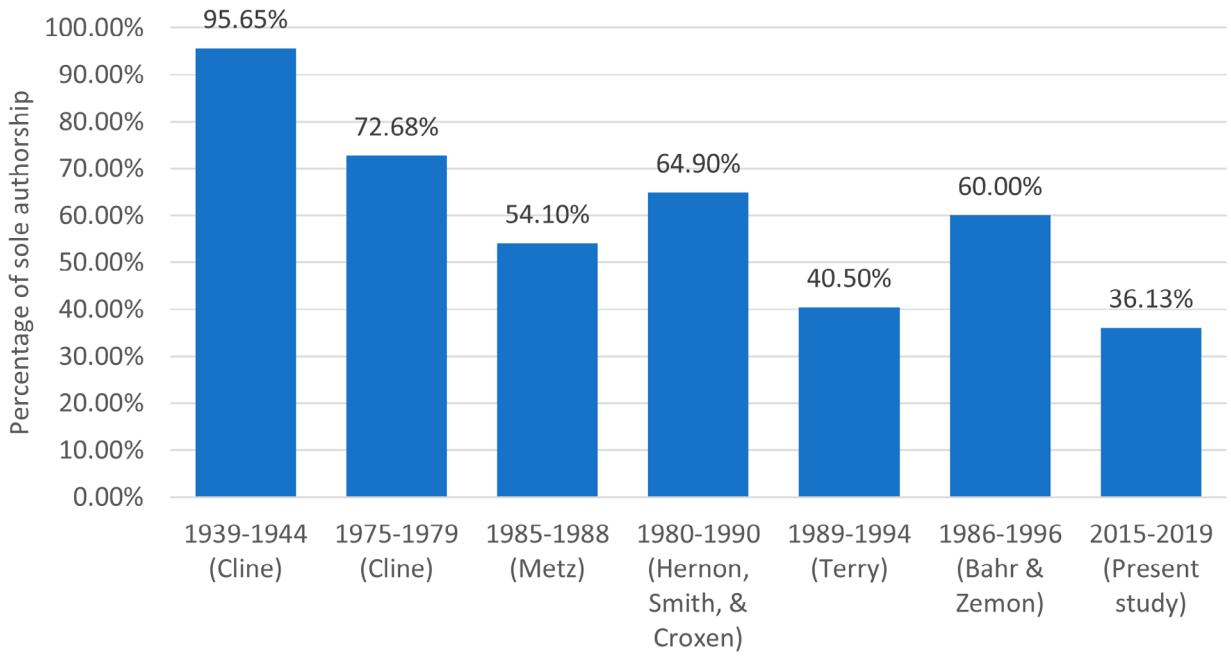
Sole Versus Collaborative Authorship

Previous literature has shown fluctuating but ultimately declining rates of sole authorship in academic librarian scholarship, and the findings of the present study further confirm that trend. Since more data is available for *C&RL* compared to the other journals studied, *C&RL* has been used as an example to illustrate changes in sole authorship over time (see figure 14).

In addition to the increase in the number of collaborations, the number of authors within each collaboration has also generally increased. Looking at articles from 1986 to 1996, Zemon and Bahr found that 72 percent of collaborations in *C&RL* and 78 percent of collaborations in *JAL* comprise just two authors.[69] The present study found that only 44.8 percent of collaborations in *C&RL* and 50.7 percent of collaborations in *JAL* had two authors; meanwhile, three-author studies accounted for close to the same amount, 37.0 percent, of collaborative articles in *C&RL* (see figure 15). Although this study did not survey motives, this suggests that some reasons for collaboration—possibly division of labor, risk aversion, or others—are encouraging authorship teams in academic librarianship to expand in size.

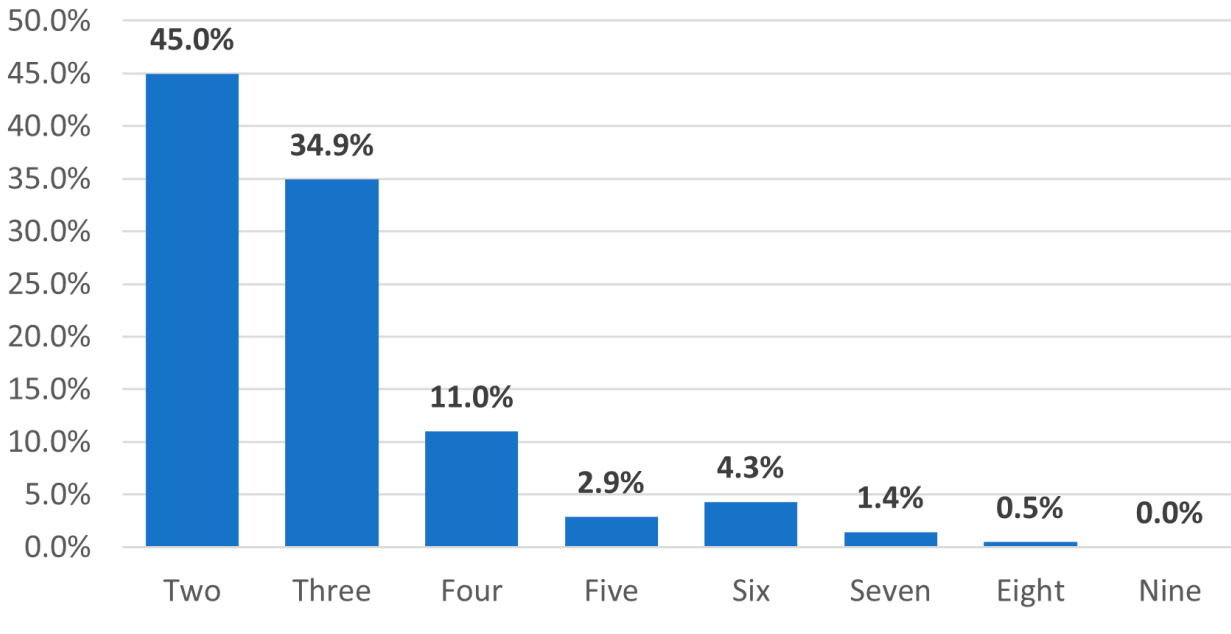
We could perhaps assume that these increases in frequency and size of collaborative authorship would lead to greater diversity in the voices in the scholarship of academic librarianship—more individual authors are represented compared to sole authorship, and some

FIGURE 14
Trends in Sole Authorship in C&RL



individuals may be able to achieve publication as part of a team in a way that they could not access research support or scholarly publications mechanisms on their own. However, a concern also exists that some "powerhouse" institutions and individuals submitting larger numbers of team-sourced articles may actually flood the market and limit publishing access by less resourced individuals. Ultimately, the findings of the present study cannot reach conclusions on this point, but it raises questions worth addressing in future research.

FIGURE 15
Collaborative Articles in *C&RL* by Number of Authors



Institutional, National, and International Collaborations

Norelli and Harper found that coauthors came from the same institution in 62.2 percent of collaborations in their sample.[70] The present study found 57.7 percent of collaborative articles were institutional. That decline in single-institution collaborations suggests that interinstitutional collaboration may be on the rise in academic librarianship research. If that is true, the shift is likely related to many of the same pressures behind the increase in collaboration overall, as cited in the literature review, including changes in funding patterns, seeking greater visibility, and technology that simplifies collaboration at a distance.

Nevertheless, Library: Internal was still the most common of all collaboration types, even if less so than in the past. Internal collaborations were far more likely to be conducted among only academic library practitioners, which is unsurprising since such collaborations would be facilitated by the researchers' proximity, familiarity, and shared goals (in terms of departmental performance requirements, tenure requirements, or the like). These collaborations also require fewer extra steps in terms of sharing resources, datasets, approval by institutional review boards, and so forth, and may be easier to manage without external funding. The second most common form of collaboration was National: Library, suggesting that it is easier or somehow preferable for academic library practitioners to connect with library peers at other institutions, compared to collaborators in other fields even at their own institutions. However, International: Library was the least common of all collaboration types, suggesting that academic librarian practitioners have more difficulty connecting with library peers in other countries. Attending conferences and participating in professional associations is generally less expensive at the national versus international level, thus introducing national peers to one another more easily than international peers. However, given the technology available for video conferencing, file sharing, and collaborative research in general, geographical boundaries in many ways do not restrict international collaboration to the extent that they have in the past. Nevertheless, language barriers, cultural differences in how research is pursued, research requirements for librarians, or other factors still appear to be holding back international collaboration among academic library authors.

Opportunities exist for creating infrastructure to facilitate research collaboration internationally—this author echoes Dr. Zainab Yunusa-Kaltungo's call for "creating platforms for mentoring and collaboration between Northern and Southern researchers."[71] Two relevant existing initiatives to consider are R Voice and The Librarian Parlor. R Voice is a social-media-like (it actually grew out of a Facebook group) networking and discussion platform operated by Editage, where researchers from across disciplines and around the world can connect, ask questions, and share their advice.[72] The Librarian Parlor is a space in which to converse, ask questions, and share expertise specifically about library research. The Classifieds area of The Librarian Parlor provides mechanisms explicitly intended for researchers to seek collaborators, either for a conceptualized project or around broad, shared interests.[73] The models from these types of initiatives could be combined with technological enhancements, such as automated language translation and the gamification of central goals—for instance, earning badges for networking and forming collaborations with peers outside an individual's country, region, or language, with peers from a low HDI nation, or the like. In this way, one could create a robust platform that both enables and incentivizes library practitioner-researchers to mentor, learn, and network while also deliberately creating and cultivating research collaborations in a consciously diverse, international, and multilingual way. As Dr. Haseeb Md Irfanullah observes "research funding agencies could play an important role…by promoting such diversity in the authorship

of journal papers," and so perhaps funding opportunities from ALA, ACRL, IMLS, and similar organizations could facilitate the creation of such tools for academic library researchers.[74]

Limitations and Further Research

The foremost limitation of this study was that external collaboration can be difficult to gauge accurately, in the sense that an individual's current affiliation cannot represent the diversity of their past relationships. Though coauthors were affiliated with different countries and/or institutions at the time that an article was proofed and bylines were finalized, they may have shared an affiliation earlier in the project collaboration or prior to it. This complexity cannot be captured in the journal publication dataset, which necessarily reflects a snapshot of affiliations at one moment in time. Additionally, journal practices and author preferences varied in terms of documenting each author's institutional affiliation. While most authors listed something in terms of affiliation, it was sometimes only a post office box or an email address, with no institution or country discernible. Finally, the dataset represented only five years of publication, and it is possible that a larger dataset might have revealed more subtle trends.

As discussed above, future research should delve deeper into the comparatively low participation in these journal venues by international authors and librarians at non-doctoral institutions, perhaps first examining demographic data from submissions to identify whether the breakdown in diversity is occurring before or after submission; data would need to be anonymized to protect author privacy, yet details such as national affiliation and institution would be needed for analysis, so it is unclear whether journals would be willing or able to provide such a dataset. Additional research opportunities could include surveying academic library practitioners about their motivations to publish or not publish; interviewing underrepresented academic librarians about their experiences with and attitudes towards mainstream journals; and exploring how active practitioners may be sharing their valuable perspectives through alternate channels outside of scholarly publishing.

Conclusions

Taken altogether, the findings of this study as represented in eight journals paint a picture of recent trends in authorship in academic librarianship: significant increases in multiauthor papers as well as quantity of authors per collaboration, but also an increase in authors who are not academic library practitioners, and relatively few publications originating from outside doctoral universities and English-speaking Western nations. It is well understood that the field of academic librarianship faces challenges of limited diversity among its practitioners, and that diversity becomes even more limited when it is filtered through the barriers already present in scholarly communication systems. As existing initiatives from the Association of Research Libraries, the Association of American University Presses, and others work to increase diversity among practicing librarians and diversity in scholarly publishing, we must ensure that the scholarly journals which reflect the philosophies, workflows, and creativity of academic librarianship find more ways to ensure that they inclusively reflect a diverse global perspective beneficial to all researchers and practitioners.

Acknowledgements

I would like to gratefully acknowledge Danny Saheb for his assistance in looking up and compiling institutional Carnegie Classifications for this study's dataset.

Data Availability

The dataset generated and analyzed during the current study is available in the Scholarly Works @ SHSU institutional repository at https://shsu-ir.tdl.org/handle/20.500.11875/3601.

Appendix A – Additional Tables Pertaining to Coding

TABLE A-1
Additional Rules Governing the Coding of Collaborations

Condition	Rule	Coding	Example
A coauthor lists multiple institutional affiliations, and one of those affiliations is shared with the other coauthors	Shared institution takes precedent	Internal	Author A is a student at University I and an employee at University II, while all other coauthors are employees at University I. In this case, the shared University I affiliation would be preferred, and the collaboration would be classified as Internal.
A coauthor lists multiple institutional affiliations that span international borders, but one country is shared with the other coauthors	Shared country takes precedent	National	Author A is affiliated with universities in both the United States and Spain. Author B is affiliated with a different university in Spain. The shared national affiliation with Spain would be preferred, and the collaboration would be classified as National.
Coauthors have affiliations with different libraries within a single campus	Campus affiliation takes precedence over individual library affiliation	Internal	Author A works at the main library and Author B works at the health sciences library, both at University Campus I. The collaboration would be classified as Internal.
Coauthors have affiliations within the same university system but on different campuses	Campus affiliation takes precedent over system affiliation	National	Author A works at the library of University I—City α campus, and Author B works at the library of University I—City β campus. The collaboration would be classified as National.
A coauthor's affiliation indicates retirement, and they are retired from the same institution of other coauthor affiliations	Previous affiliation takes precedent over retiree status	Internal	Author A and Author B work at University I. Author C is retired, but was formerly affiliated with University I. The collaboration would be classified as Internal.

TABLE A-2
Additional Rules Governing the Coding of Occupations

Condition	Rule	Coding
An author is both an employee in an academic library and also lists a non-library role (e.g., student in a graduate program outside of library science; adjunct instructor in a library science graduate program)	Library practitioner role takes precedent over other roles	LA
An author lists both current position and previous position at time of writing	Role at time of writing takes precedence over current role	Depends on role
An author is clearly employed in higher education, but library versus non-library cannot be determined even after searching	Academic but non-library role is assumed	A
An author is employed in a research capacity, but outside an institution of higher education (e.g., an independent research center or non-profit agency)	Role classified as Non-academic in this context	NA

TABLE A-3
Carnegie Basic Classifications and Abbreviations for This Paper

Basic Classification	Abbreviation	Code
R1: Doctoral Universities—Very high research activity	R1	1
R2: Doctoral Universities—High research activity	R2	2
D/PU: Doctoral/Professional Universities	D/PU	3
M1: Master's Colleges and Universities—Larger programs	M1	4
M2: Master's Colleges and Universities—Medium programs	M2	5
M3: Master's Colleges and Universities—Smaller programs	M3	6
Baccalaureate Colleges • Baccalaureate Colleges: Arts & Sciences Focus • Baccalaureate Colleges: Diverse Fields	Bac	7
Baccalaureate/Associate's Colleges • Baccalaureate/Associate's Colleges: Mixed Baccalaureate/Associate's Colleges • Baccalaureate/Associate's Colleges: Associate's Dominant	Bac/Assoc	8
Associate's Colleges • Associate's Colleges: High Transfer-High Traditional • Associate's Colleges: High Transfer-Mixed Traditional/Nontraditional • Associate's Colleges: High Transfer-High Nontraditional • Associate's Colleges: Mixed Transfer/Career & Technical-High Traditional • Associate's Colleges: Mixed Transfer/Career & Technical-Mixed Traditional/Nontraditional • Associate's Colleges: Mixed Transfer/Career & Technical-High Nontraditional • Associate's Colleges: High Career & Technical-High Traditional • Associate's Colleges: High Career & Technical-Mixed Traditional/Nontraditional • Associate's Colleges: High Career & Technical-High Nontraditional	Assoc	9
Special Focus Two-Year • Special Focus Two-Year: Health Professions • Special Focus Two-Year: Technical Professions • Special Focus Two-Year: Arts & Design • Special Focus Two-Year: Other Fields	Special (2yr)	10 (no records)

TABLE A-3
Carnegie Basic Classifications and Abbreviations for This Paper

Basic Classification	Abbreviation	Code
Special Focus Four-Year • Special Focus Four-Year: Faith-Related Institutions • Special Focus Four-Year: Medical Schools & Centers • Special Focus Four-Year: Other Health Professions Schools • Special Focus Four-Year: Engineering Schools • Special Focus Four-Year: Other Technology-Related Schools • Special Focus Four-Year: Business & Management Schools • Special Focus Four-Year: Arts, Music & Design Schools • Special Focus Four-Year: Law Schools • Special Focus Four-Year: Other Special Focus Institutions	Special (4yr)	11
Tribal Colleges	Tribal	12 (no records)

Appendix B – Author Nations Per Journal

CJAL	Count	Percent
Canada	22	73.3
United States	8	26.7

C&RL	Count	Percent
United States	456	84.0
Canada	30	5.5
Australia	14	2.6
Spain	7	1.3
Japan	5	0.9
Norway	4	0.7
Iran	4	0.7
United Arab Emirates	3	0.6
The Netherlands	3	0.6
Poland	3	0.6
China	3	0.6
Brazil	2	0.4
Unknown	2	0.4
Israel	2	0.4
Hong Kong	2	0.4
New Zealand	1	0.2
South Korea	1	0.2
Kazakhstan	1	0.2

C&UL	Count	Percent
United States	203	94.0
Australia	6	2.8
Canada	3	1.4
Kenya	2	0.9
United Arab Emirates	1	0.5
Hong Kong	1	0.5

JAL	Count	Percent
United States	497	54.0
China	77	8.4
Canada	37	4.0
United Kingdom	28	3.0
Australia	26	2.8
Spain	23	2.5
Hong Kong	21	2.3
Greece	19	2.1
South Africa	19	2.1
Japan	16	1.7
Malaysia	13	1.4
Belgium	11	1.2
Pakistan	8	0.9
Jordan	8	0.9
New Zealand	8	0.9
Nigeria	8	0.9
Singapore	8	0.9
Iran	7	0.8
Chile	7	0.8
Hungary	7	0.8
Slovenia	7	0.8
India	6	0.7
South Korea	5	0.5
Turkey	5	0.5
Israel	5	0.5
Croatia	4	0.4
Germany	4	0.4
Qatar	4	0.4
Republic of Korea	4	0.4
Guam	4	0.4
Zimbabwe	3	0.3
Ecuador	3	0.3
United Arab Emirates	3	0.3
Kuwait	2	0.2
Finland	2	0.2
Ukraine	2	0.2
Brazil	1	0.1
Czech Republic (Czechia)	1	0.1
Egypt	1	0.1
Fiji	1	0.1
The Netherlands	1	0.1
Serbia	1	0.1
Saudi Arabia	1	0.1
Norway	1	0.1
Ghana	1	0.1

NRAL	Count	Percent
United Kingdom	96	37.2
United States	64	24.8
Ireland	23	8.9
Australia	19	7.4
Canada	14	5.4
Nigeria	6	2.3
Finland	6	2.3
New Zealand	4	1.6
Botswana	4	1.6
Ghana	4	1.6
Austria	3	1.2
The Netherlands	3	1.2
Pakistan	3	1.2
Sweden	2	0.8
Spain	2	0.8
Hong Kong	1	0.4
Kuwait	1	0.4
South Africa	1	0.4
United Arab Emirates	1	0.4
Japan	1	0.4

PAL	Count	Percent
United States	32	84.2
Canada	6	15.8

portal	Count	Percent
United States	324	83.9
Spain	13	3.4
Canada	11	2.8
Nigeria	6	1.6
Chile	6	1.6
United Kingdom	5	1.3
Norway	4	1.0
Russia	3	0.8
Vietnam	2	0.5
Ireland	2	0.5
Sri Lanka	2	0.5
Pakistan	2	0.5
Poland	1	0.3
Australia	1	0.3
Hong Kong	1	0.3
Germany	1	0.3
China	1	0.3
South Africa	1	0.3

PSQ	Count	Percent
United States	78	96.3
Canada	3	3.7

Appendix C – Further Visualization of Authorship by HDI and Carnegie

FIGURE C1
Author Country HDI

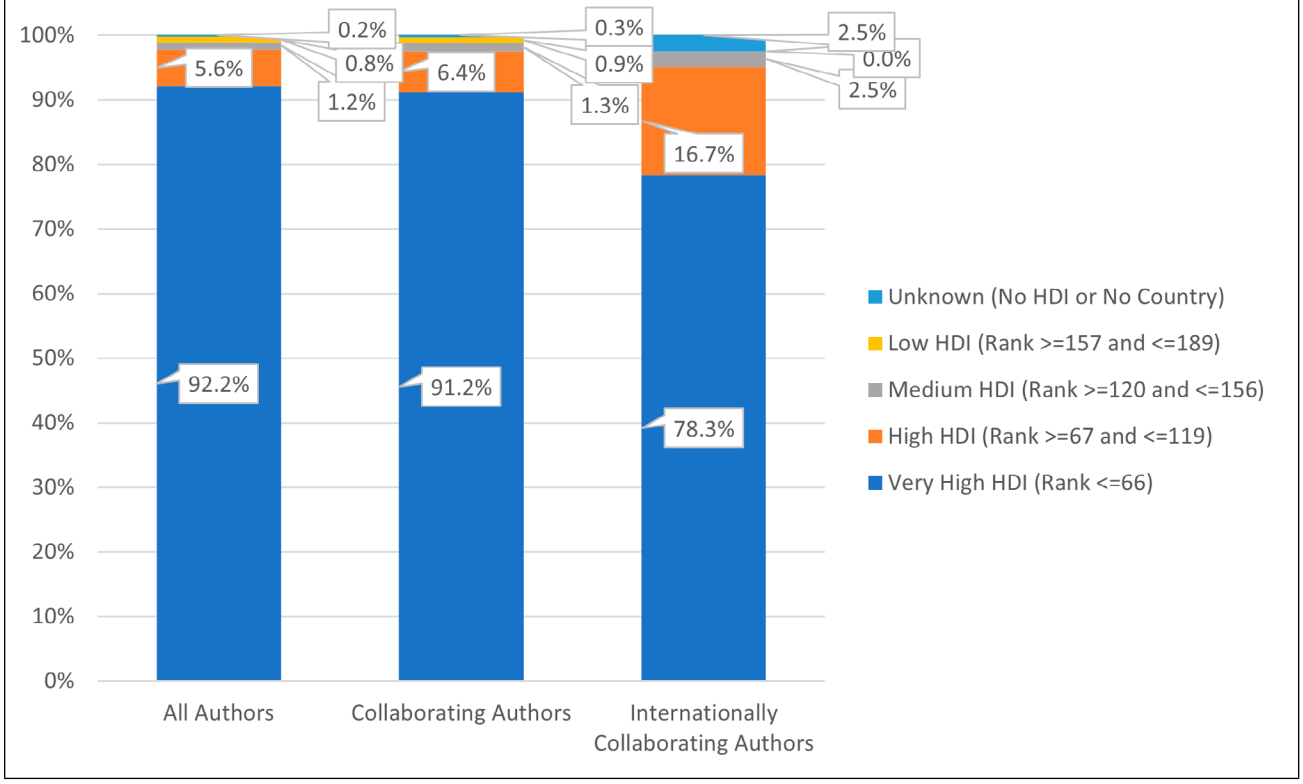
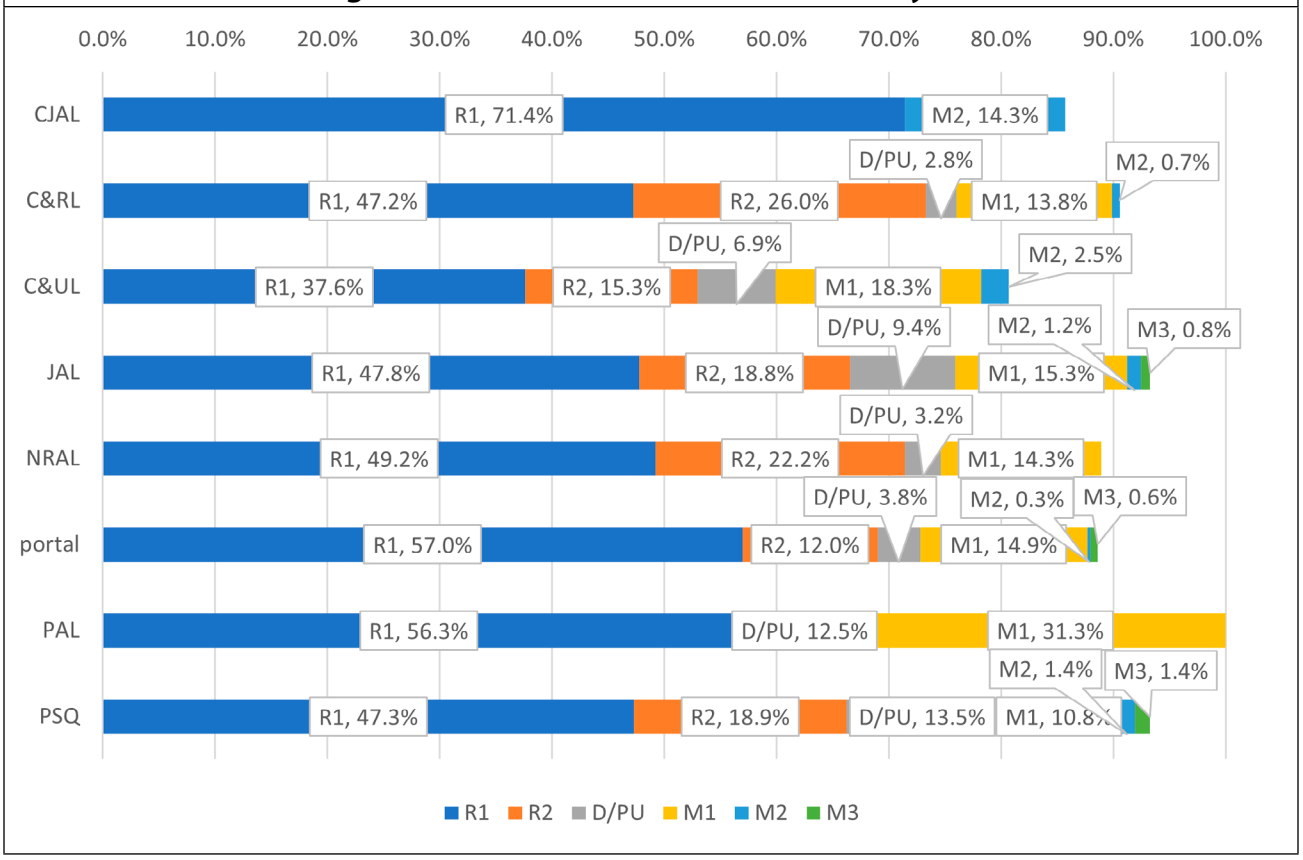


FIGURE C2
Carnegie Classification of Author Institution by Journal



Note: To remain readable, this figure only includes doctoral-level and master-level classifications, but the gap between the end of a colored bar and the 100 percent mark on the horizontal axis illustrates how much (or how little) of that journal's authorship came from institutions with any other classifications.

Appendix D – Collaboration Types Per Journal

FIGURE D1
Collaboration Types in CJAL

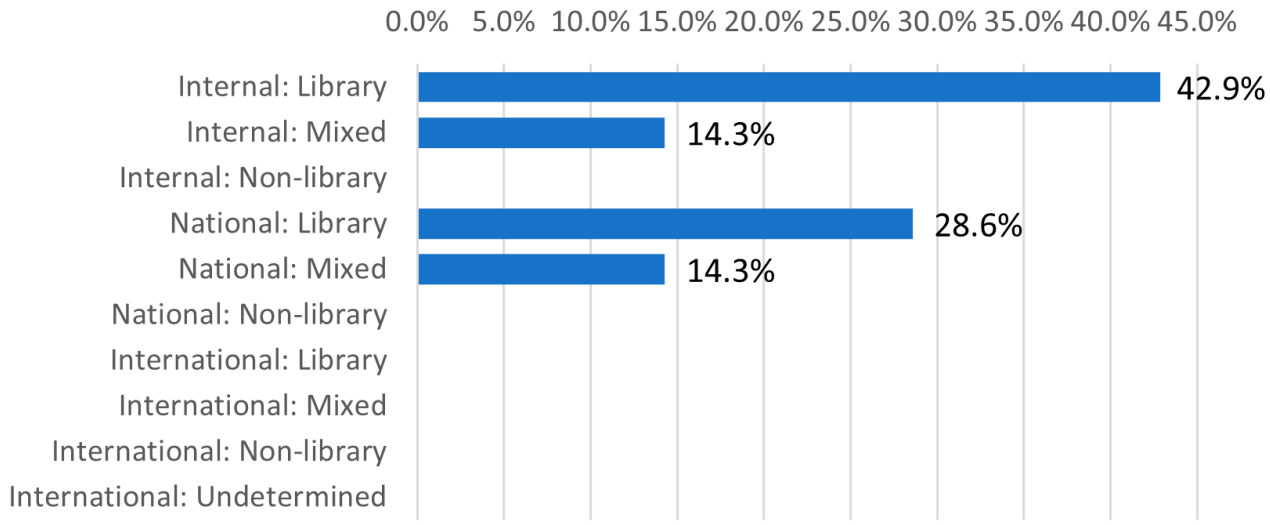


FIGURE D2
Collaboration Types in C&RL

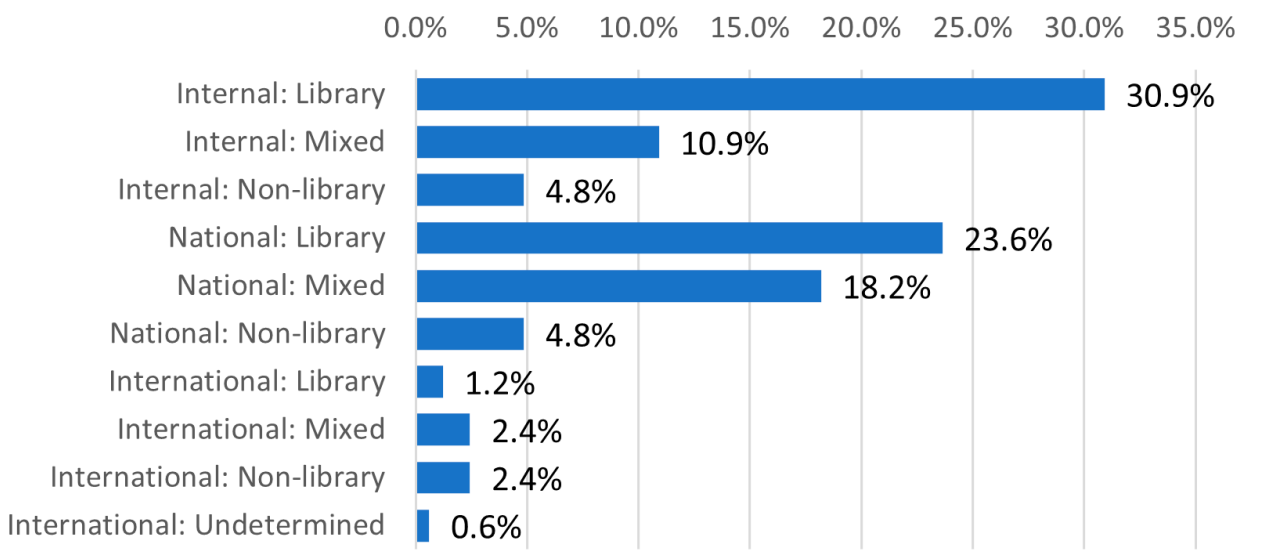


FIGURE D3
Collaboration Types in C&UL

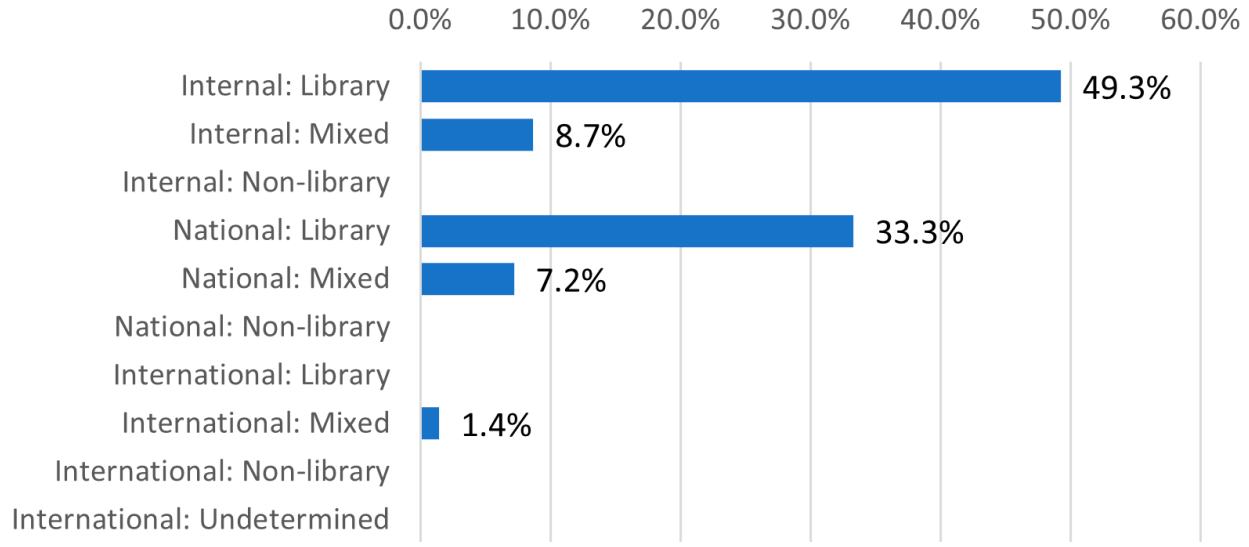


FIGURE D4
Collaboration Types in JAL

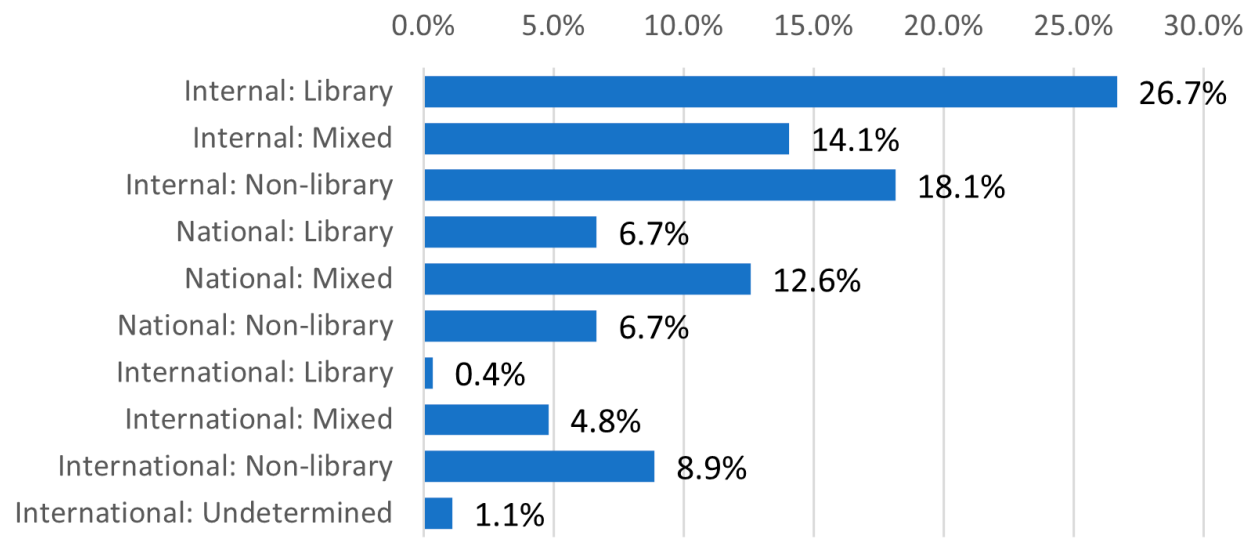


FIGURE D5
Collaboration Types in NRAL

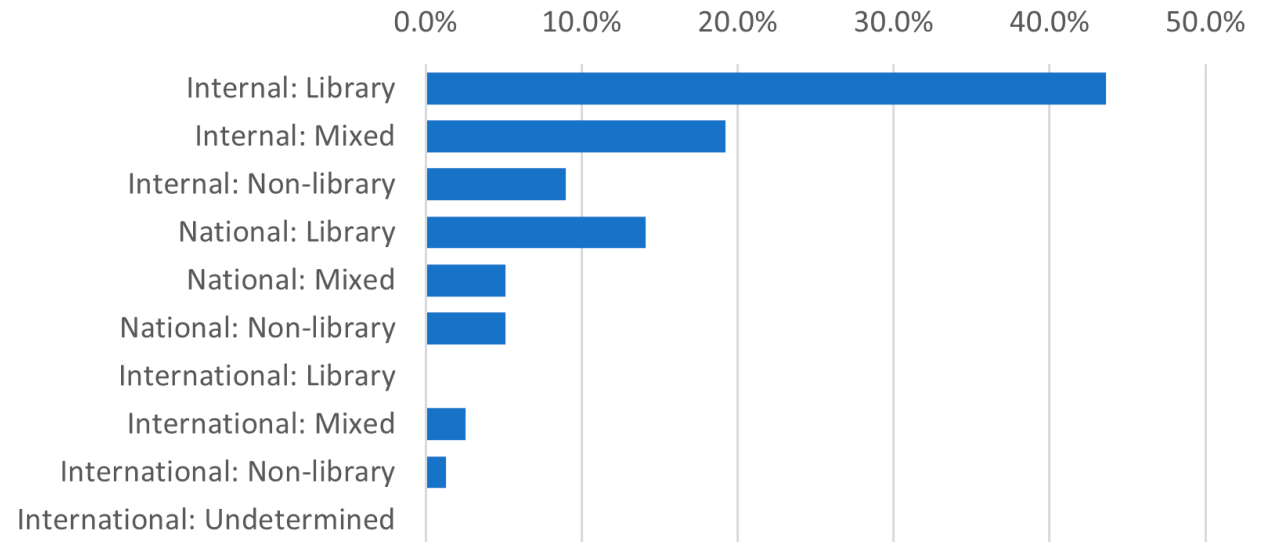


FIGURE D6
Collaboration Types in portal

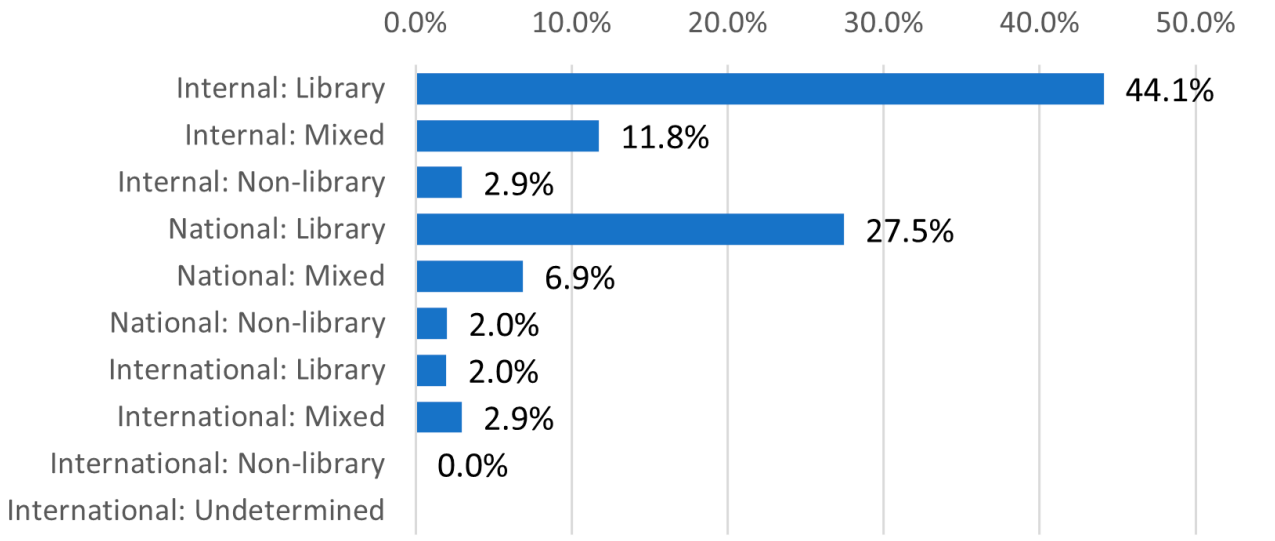


FIGURE D7
Collaboration Types in PAL

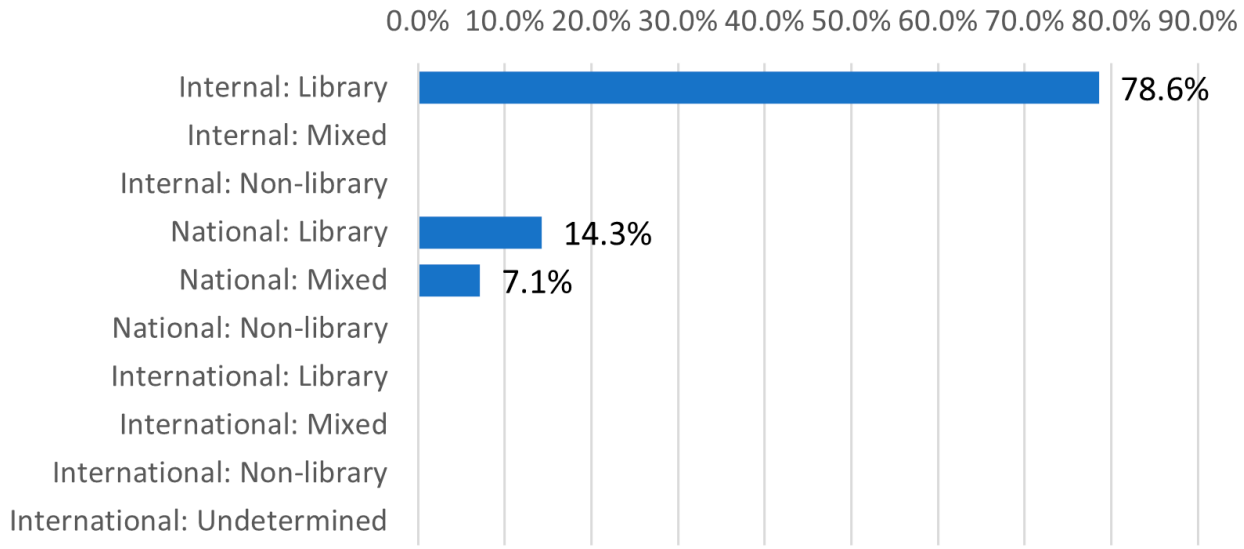
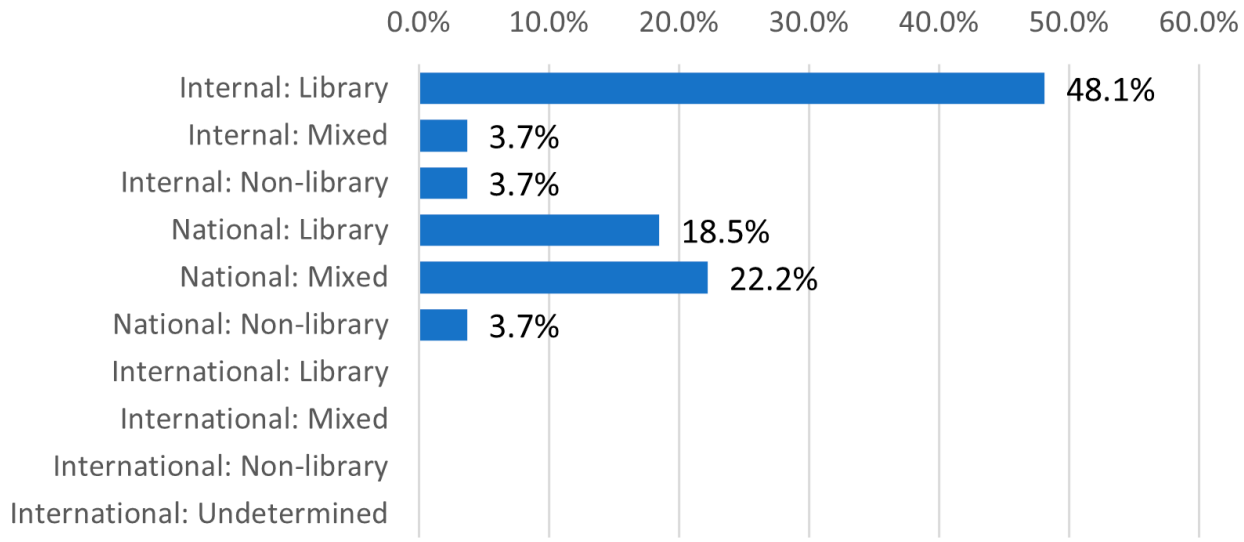


FIGURE D8
Collaboration Types in PSQ



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