An Examination of Systematic Reviews in the Engineering Literature

Introduction

Systematic reviews are a well-established method of research synthesis in medicine and the clinical sciences. Their use in other disciplines has been growing, especially in areas that collaborate with the health sciences. At our institution, requests for help with systematic reviews have become more frequent across several non-health-science fields, including engineering. Though there is considerable literature about systematic reviews in general, little has been written about systematic reviews in engineering disciplines. This study explores the use of systematic reviews in the engineering literature, and the need for engineering librarians to be familiar with the conventions of this methodology. This paper will examine systematic reviews in engineering by answering these three research questions:

1. Has there been an increase in the use of systematic reviews in the engineering literature?
2. Are systematic reviews more prevalent in some engineering disciplines than others?
3. Do systematic reviews see greater use than other types of papers?

We also examine the librarian's role in systematic reviews, so engineering librarians can be prepared to negotiate levels of responsibility and acknowledgement of their contributions.

Literature Review

Systematic reviews seek "to systematically search for, appraise and synthesis research evidence, often adhering to guidelines on the conduct of a review" [1, p. 95]. Though systematic reviews are most closely associated with health sciences disciplines, systematic review methodology has been applied in many fields outside of medicine. According to Foster and Jewell [2], systematic review standards emerged in the social sciences around the same time as they emerged in medicine, in the 1970s. More recently, systematic reviews have gained popularity in non-medical disciplines [3]. Researchers in conservation biology began incorporating systematic reviews in 2001 [4]. Kitchenham et al. [5] first proposed using systematic reviews in software engineering in 2004. We have also seen systematic review methodologies adapted for engineering education and related fields [6]. Riegelman and Kocher [7] found that the number of systematic reviews in CAB abstracts (life sciences) and PsycINFO (psychology) doubled between 2012 and 2016. Boice [8] similarly observed a large upward trend in the number of systematic reviews published in conservation biology journals in the last 20 years. Within the field of library and information studies, the majority of systematic reviews come from health sciences librarianship [9], and more are conducted in North America than other parts of the world [10].

Both review papers in general and systematic reviews in particular tend to see higher use than other journal articles. Miranda and Garcia-Carpintero [11] found that review articles are cited 2.95 times more often than original research articles, but overserved that the citation rate of review articles varied considerably based on research area. Royle et. al [12] demonstrated that systematic reviews get approximately 1.5 times the average citations as their journal impact factor. Sheble [13] demonstrated that this pattern may be field-specific, though her comparison was between traditional review articles and research synthesis papers.

So far, no paper has examined the prevalence of systematic reviews in engineering. Further, there is currently no understanding of whether certain engineering disciplines use systematic reviews more than others. This study will address these questions, in addition to demonstrating whether systematic reviews in engineering see higher than expected use and exploring librarian roles on systematic review teams.

Methods

In order to examine whether systematic reviews are being published in the engineering literature more frequently in recent years, we needed a representative sample of the engineering literature. Due to its comprehensive coverage of engineering disciplines, we selected the Compendex database as our stand-in for engineering literature as a whole. We searched for conference papers or journal articles with “systematic review” or “meta-analysis” in the subject, title or abstract for publication years 2000-2018. We then took the annual counts of all conference papers or journal articles published those same years. The proportion of research synthesis articles is plotted over time to confirm a trend.

The second stage of this study examined whether systematic review methodologies were more prevalent in some engineering disciplines than others. After examining the classification schemes of Inspec, Compendex, Web of Science and Scopus, we selected Web of Science as the preferred data source to address this question. All journals and books covered by Web of Science are classified into broad Research Areas (representing large disciplines), as well as more granular Web of Science Categories (representing the sub-disciplines in a Research Area). Each record in Web of Science is assigned the Research Areas and Categories of its source journal or book. We used the Research Area classifications to restrict our search to engineering journals, and we used the Categories to determine which engineering disciplines are using systematic reviews. We used the following search string to identify systematic reviews in Engineering:

> SU=("Metallurgy & Metallurgical Engineering" OR "Engineering") AND TS=(“systematic review” OR “meta analysis”) AND PY=(2000-2018)

Refined by: DOCUMENT TYPES: (REVIEW OR ARTICLE OR PROCEEDINGS PAPER) AND LANGUAGES: (ENGLISH)

We searched literature from 2000-2018 in the two engineering-based Research Areas, “Metallurgy & Metallurgical Engineering" and "Engineering.” We further refined the search to return English language articles, review papers and conference proceedings.

Once results were screened, we analyzed the Web of Science Categories assigned to each article to determine which engineering disciplines are using systematic review methodologies. We compiled a list of all of the Categories assigned to each article record and recorded how many articles that Category was assigned to.

In order to examine the question of whether systematic reviews see greater use than other types of articles, we elected to take a representative sample of our screened articles and compare their citation count two years post-publication to the Journal Impact Factor of their source title for the same year. We used numbergenerator.org to randomly select 10% of the screened articles published between 2001 and 2016, distributed to match the proportion of articles from each year. From these 85 articles, we were able to make the citation to JIF comparison for 71 articles, as the others were published in books or conference proceedings that did not have a JIF.

Results and Analysis

Result of publication frequency analysis

While the actual number of articles using a research synthesis methodology is not large compared to all engineering papers published, we can see that they are increasing each year (Fig.1).

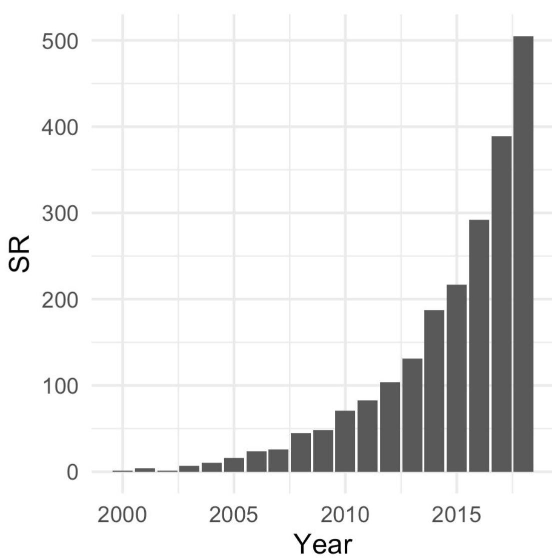

Fig. 1. Systematic reviews published in engineering journals, 2000-2018

However, the overall number of research papers being published each year is also increasing. For this reason, we also examined the proportion of papers using systematic reviews to see if this methodology makes up a larger share of the research literature than in previous years. Plotting the share of articles using these techniques over time clearly demonstrates that they are increasing beyond the overall rate of increase in publications (Fig.2).

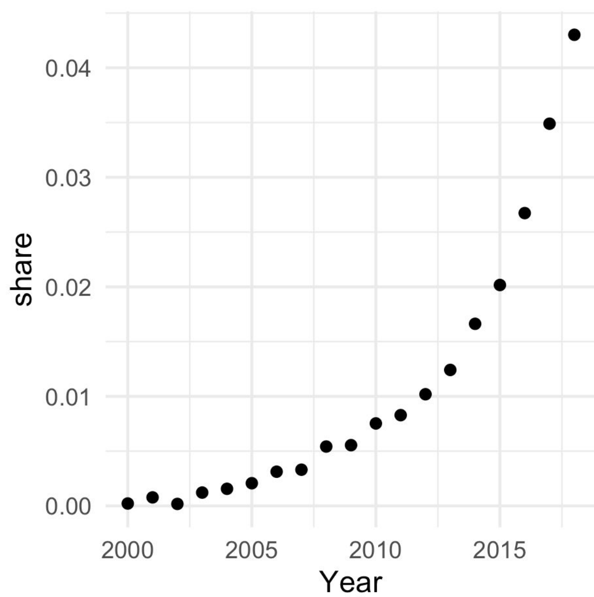

Fig. 2. Proportion of engineering papers using systematic review methodology, 2000-2018

Result of category analysis

Our search for engineering papers using research synthesis techniques returned 2277 results. These results were screened to identify systematic reviews, resulting in 1408 papers. Screening removed articles that did not follow a systematic review protocol. This also involved screening out meta-analyses that performed an analysis of data from multiple test sites as opposed to data sourced from multiple published papers. Once we had our set of systematic review papers, we analysed the Web of Science Categories assigned to each paper.

In total, 94 separate Categories were present. Table 1 shows the results of all Web of Science Categories applied to at least 4% of papers (60 or more articles). A table with the rest of the category results can be found in Appendix A. In Web of Science, multiple Categories can be assigned to each journal or publication, so records will often have two to four Categories assigned to them. This is reflected in our results, as the sum of the papers in each category exceeds the number of papers examined (1408) and the summed percentages exceeds 100%.

Table I
Web of Science Categories applied to systematic reviews
in the engineering literature

Category	Count of Category	Percent
Engineering, Biomedical	630	44.7
Engineering, Electrical & Electronic	229	16.3
Engineering, Industrial	173	12.3
Dentistry, Oral Surgery & Medicine	172	12.2
Ergonomics	149	10.6
Engineering, Environmental	146	10.4
Environmental Sciences	128	9.1
Computer Science, Theory & Methods	76	5.4
Transportation	76	5.4
Operations Research & Management Science	75	5.3
Public, Environmental & Occupational Health	71	5.0
Green & Sustainable Science & Technology	70	5.0
Engineering, Civil	67	4.8
Social Sciences, Interdisciplinary	64	4.5
Surgery	60	4.3

The Categories most common in our results are: “Engineering, Biomedical” (45%); “Engineering, Electrical & Electronic” (16%); “Engineering, Industrial” (12%); “Dentistry, Oral Surgery & Medicine” (12%); “Ergonomics” (11%); “Engineering, Environmental” (10%); and “Environmental Sciences” (9%). These seven disciplines each represent over 120 papers. All other Categories represent less that 6% of results or fewer than 80 papers.

Result of citation analysis

Of the 71 articles examined, 66 had higher citation counts than their JIF (93%), with 5 articles under-performing expected journal citation levels. Fig. 3 plots the citations each article received compared to the JIF of the source publication. The line has a slope of 1, so all points above the line are instances of the article receiving a higher number of citations than expected. This result was as expected given what we learned from our literature review, but it was interesting to see it confirmed for engineering.

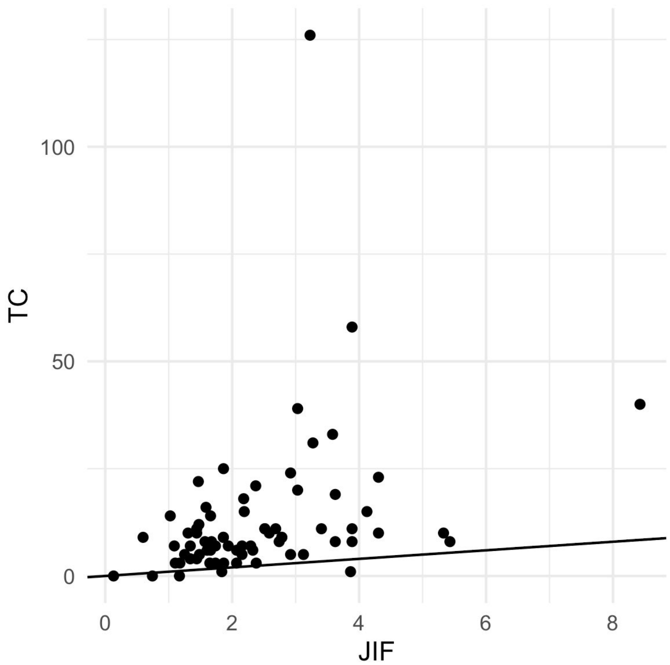

Fig. 3. Number of citations compared to JIF.

Discussion

There is a clear upward trend in both the number of engineering papers using systematic review methodology, as well as the share of the literature this represents. This reflects our experience with the questions we have been receiving about this methodology from researchers in our Faculty of Engineering, as well as researchers in other non-health-science disciplines. Given the importance of the search strategy to the quality of a systematic review, librarians need to be prepared to address these questions with authority.

For our second research question we examined engineering disciplines to determine those in which systematic reviews were most common in (Table 1). The results included 94 separate Web of Science categories, meaning that systematic reviews are being adopted across engineering disciplines. The top ten categories show a range of subjects, including biomedical engineering, electrical engineering, industrial engineering, environmental engineering, computer science and ergonomics. This shows how varied the disciplines that are adopting systematic reviews are.

However, this adoption is not uniform. The distribution of disciplines showed a strong representation in medical fields. Nearly 45% of all systematic reviews examined fall under biomedical engineering. Other medical-related Categories with high representation in the data include “Dentistry, Oral Surgery & Medicine” (12%), and “Surgery” (4%). After biomedical engineering, the next most common category is “Engineering, Electrical & Electronic” at 16%.

This shows that non-medical disciples are not using systematic reviews nearly as much as medical disciplines. These results are not surprising, as systematic reviews are most commonly associated with health sciences, and medical science have utilized systematic review methodologies far longer than other science disciplines.

Two other disciplines we were interested in examining were software engineering and environmental sciences or environmental engineering. These areas are of interest as there is existing research about systematic reviews conservation biology [8] and software engineering [14]. Boice [8] demonstrated that systematic reviews have become more common in conservation biology, so we would predict that related engineering disciplines would also adopt systematic review methodologies. The categories “Engineering, Environmental” and “Environmental Sciences” were applied to ten and nine percent of articles in total, showing that environmental engineering has adopted systematic reviews. The other area of interest was computer science and software engineering, as shown by the categories “Computer Science, Theory & Methods” (5%), “Computer Science, Interdisciplinary Applications” (4%), Computer Science, Information Systems (3%), “Computer Science, Software Engineering” (3%). Software engineering literature first began discussing systematic reviews in 2004 [5], and since then Kitchenham and others [14], [15] have published both guidelines to and research about systematic reviews in software engineering. Further, software engineering is the only discipline where discipline-specific systematic review guidelines (see [5]) have been widely adopted. Given this, it is surprising that none of these disciplines represented more than 5% of the systematic reviews examined.

One limitation of this methodology is that Web of Science categories are applied at the publication-level not the article-level, meaning that these categories may not fully represent the discipline of the actual systematic review.

We learned from our literature review that review papers in general, and systematic reviews in particular, tend to see higher citation counts than standard research articles. It was therefore not surprising to see that a sample of our identified systematic review papers showed 93% of them outperforming their journals. Miranda and Garcia-Carpintero [11] termed this discrepancy “overcitation,” and identified certain Web of Science categories in which it is more likely to occur: “Engineering Electrical Electronic”, “Chemistry Multidisciplinary”, “Physics Applied”, “Materials Science Multidisciplinary”, “Engineering Chemical”, “Physics Condensed Matter”, “Physics Multidisciplinary”, “Optics”, “Endocrinology Metabolism”, “Chemistry Physical” and “Plant Sciences.” The only overlap between this list and our top categories is with Engineering, Electrical & Electronic.

They also found that research areas with few reviews see more “overcitation” of these reviews, and postulate that this points to a deficiency of reviews in these research areas. While we cannot speculate as to the appropriate proportion of systematic reviews in a particular field, it would be interesting to revisit this question if research synthesis methodologies become more prevalent in engineering disciplines to see whether the same citation patterns apply.

During the article screening portion of this work, we noted some confusion about the definition of a systematic review, as the term was often applied to ordinary literature reviews. This miss-labeling of literature reviews as systematic reviews supports Grant and Booth’s [1] findings that authors are inconsistent in the labeling of review types, which can lead to confusion about different types of reviews. It is important that researchers familiarize themselves with the different types of reviews and their respective methodologies so that they can choose the review type that fits their research goals.

While the goal of this study was not to evaluate the quality of systematic reviews, we did observe some poor systematic review search methodologies. Papers described only searching in one search engine, or restricting their search to only the top journals in the field. Other papers did not share a full search strategy. These poor search methods are consistent with observations from other studies of systematic reviews that found authors only searched one database [8] or used poor quality searches [16], [17]. In particular, “many published systematic reviews have been found to contain errors in the design and conduct of the searches that could affect their quality” [18, p. 2]. These observations also demonstrate the importance of including librarians in systematic reviews, as Koffel [18] found that systematic reviews were more likely to follow recommended search methods if librarians were involved.

Librarian Role

Because systematic reviews attempt to locate all studies on a particular topic or intervention, the search strategy is of utmost importance. In addition to being comprehensive, the search must be transparent and reproducible; it is common to have the search strategy for a systematic review undergo peer review by another librarian before searching is carried out. This emphasis on quality search has led to the adoption of a variety of librarian roles in the execution of a systematic review. A 2018 scoping review [19] identified eighteen roles filled by librarians in systematic reviews. In addition to the expected roles of searching, source selection, and evaluation, the authors also documented librarians acting in planning, question formulation and peer review roles. The roles described are not mutually exclusive; often a librarian will take on several of these roles as part of a given systematic review project.

Gore and Jones [20] offer advice to library managers considering the impact systematic review support may have on their libraries. Some libraries have developed policies and guidelines that spell out what level of librarian involvement constitutes a basis for co-authorship. It is important that librarians understand the substantial time commitment involved in participation in systematic review projects, and that there is consideration in their institution of whether such support is to be routinely offered, or whether it becomes part of a fee-for-service scheme. If they are willing to engage in this work, librarians should advocate for their inclusion in systematic review research teams. Several agencies [21], [22] recommend the involvement of a librarian or information specialist in the review, and evidence has shown that librarian involvement is associated with adherence to recommended methods and improved quality of the search process [18], [23]–[25].

Engineering Librarians interested in offering a systematic review service will need to develop expertise both in systematic review protocols and in the various databases and grey literature sources being searched. They may want to partner with colleagues to set up peer support systems for training and review of strategies. We suggest Riegelman and Kocher's excellent model [26] as a starting point for this service development. If, instead of a systematic review service, librarians are interested mainly in supporting researchers in this work, the focus should be on encouraging the development of clear research questions and robust search strategies. This can be done through workshops, libguides and other familiar methods of library information sharing and instruction.

Conclusion

This research explored the adoption of systematic reviews in the engineering literature. We showed that the use of systematic reviews in engineering has increased significantly since 2000 and systematic reviews represent an increasing share of the research literature. We also explored which engineering disciplines are adopting systematic review methodologies and demonstrated that systematic reviews in engineering are outperforming their journal impact factors. The increasing use of systematic reviews in engineering and associated disciplines brings interesting opportunities for academic librarians supporting these research areas. Whether advising on protocol development or taking a more involved role in the systematic review team, systematic reviews offer additional opportunities for collaboration with our researchers. In particular, librarians working with biomedical, environmental, and computer engineering subject areas can expect to see an interest in these types of studies. We hope that by becoming more aware of systematic review protocols and best practices, librarians can position themselves to offer the expert searching advice needed to generate the highest quality reviews.

References

[1] M. J. Grant and A. Booth, "A typology of reviews: an analysis of 14 review types and associated methodologies," *Health Information & Libraries Journal*, vol. 26, no. 2, pp. 91–108, 2009, doi: 10.1111/j.1471-1842.2009.00848.x.

[2] M. J. Foster and S. T. Jewell, "Introduction to Systematic Reviews," in *Assembling the Pieces of a Systematic Review: A Guide for Librarians*, M. J. Foster and S. T. Jewell, Eds. Lanham (MD): Rowman & Littlefield, 2017, pp. 1–13.
[3] S. Young and E. Eldermire, "The big picture: finding, evaluating, and applying systematic reviews across disciplines," in *Assembling the pieces of a systematic review: a guide for librarians.*, M. J. Foster and S. T. Jewell, Eds. Lanham (MD): Rowman & Littlefield, 2017, pp. 13–29.
[4] A. S. Pullin and T. M. Knight, "Effectiveness in Conservation Practice: Pointers from Medicine and Public Health," *Conservation Biology*, vol. 15, no. 1, pp. 50–54, 2001, doi: 10.1111/j.1523-1739.2001.99499.x.
[5] B. A. Kitchenham, T. Dybå, and M. Jørgensen, "Evidence-based Software Engineering," *26th International Conference on Software Engineering*, p. 9, 2004.
[6] M. Borrego, M. J. Foster, and J. E. Froyd, "Systematic Literature Reviews in Engineering Education and Other Developing Interdisciplinary Fields," *Journal of Engineering Education*, vol. 103, no. 1, pp. 45–76, 2014, doi: 10.1002/jee.20038.
[7] M. Kocher and A. Riegelman, "Systematic reviews and evidence synthesis: Resources beyond the health sciences," *C&RL News*, vol. 79, no. 5, p. 248, May 2018, doi: 10.5860/crln.79.5.248.
[8] J. Boice, "An Exploration of Systematic Review Publication Trends in Conservation Biology Journals," *Issues in Science and Technology Librarianship*, no. 91, Jun. 2019, doi: 10.29173/istl2.
[9] D. Koufogiannakis, "The State of Systematic Reviews in Library and Information Studies," *Evidence Based Library and Information Practice*, vol. 7, no. 2, pp. 91–95, Jun. 2012, doi: 10.18438/B8Q021.
[10] J. Xu, Q. Kang, and Z. Song, "The current state of systematic reviews in library and information studies," *Library & Information Science Research*, vol. 37, no. 4, pp. 296–310, Oct. 2015, doi: 10.1016/j.lisr.2015.11.003.
[11] R. Miranda and E. Garcia-Carpintero, "Overcitation and overrepresentation of review papers in the most cited papers," *Journal of Informetrics*, vol. 12, no. 4, pp. 1015–1030, Nov. 2018, doi: 10.1016/j.joi.2018.08.006.
[12] P. Royle, N.-B. Kandala, K. Barnard, and N. Waugh, "Bibliometrics of systematic reviews: analysis of citation rates and journal impact factors," *Systematic Reviews*, vol. 2, no. 1, p. 74, Sep. 2013, doi: 10.1186/2046-4053-2-74.
[13] L. Sheble, "Changing approaches to research synthesis affect social and intellectual structures of science," *Proceedings of the Association for Information Science and Technology*, vol. 53, no. 1, pp. 1–10, 2016, doi: 10.1002/pra2.2016.14505301076.
[14] B. Kitchenham, O. Pearl Brereton, D. Budgen, M. Turner, J. Bailey, and S. Linkman, "Systematic literature reviews in software engineering – A systematic literature review," *Information and Software Technology*, vol. 51, no. 1, pp. 7–15, Jan. 2009, doi: 10.1016/j.infsof.2008.09.009.
[15] B. Kitchenham *et al.*, "Systematic literature reviews in software engineering – A tertiary study," *Information and Software Technology*, vol. 52, no. 8, pp. 792–805, Aug. 2010, doi: 10.1016/j.infsof.2010.03.006.
[16] C. M. Faggion, M. A. Atieh, and S. Park, "Search strategies in systematic reviews in periodontology and implant dentistry," *Journal of Clinical Periodontology*, vol. 40, no. 9, pp.

883–888, 2013, doi: 10.1111/jcpe.12132.
[17] S. Golder, Y. Loke, and H. M. McIntosh, “Poor reporting and inadequate searches were apparent in systematic reviews of adverse effects,” *Journal of Clinical Epidemiology*, vol. 61, no. 5, pp. 440–448, May 2008, doi: 10.1016/j.jclinepi.2007.06.005.
[18] J. B. Koffel, “Use of Recommended Search Strategies in Systematic Reviews and the Impact of Librarian Involvement: A Cross-Sectional Survey of Recent Authors,” *PLOS ONE*, vol. 10, no. 5, p. e0125931, May 2015, doi: 10.1371/journal.pone.0125931.
[19] A. J. Spencer and J. D. Eldredge, “Roles for librarians in systematic reviews: a scoping review,” *J Med Libr Assoc*, vol. 106, no. 1, pp. 46–56, Jan. 2018, doi: 10.5195/jmla.2018.82.
[20] G. C. Gore and J. Jones, “Systematic Reviews and Librarians: A Primer for Managers,” *Partnership: The Canadian Journal of Library and Information Practice and Research*, vol. 10, no. 1, Jul. 2015, doi: 10.21083/partnership.v10i1.3343.
[21] Institute of Medicine, *Finding What Works in Health Care: Standards for Systematic Reviews*. 2011.
[22] C. Lefebvre *et al.*, “Chapter 4: Searching for and selecting studies,” in *Cochrane Handbook for Systematic Reviews of Interventions*, 2nd ed., J. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M. Page, and V. Welch, Eds. Chichester (UK): John Wiley & Sons, pp. 76–108.
[23] M. L. Rethlefsen, A. M. Farrell, L. C. Osterhaus Trzasko, and T. J. Brigham, “Librarian co-authors correlated with higher quality reported search strategies in general internal medicine systematic reviews,” *Journal of Clinical Epidemiology*, vol. 68, no. 6, pp. 617–626, Jun. 2015, doi: 10.1016/j.jclinepi.2014.11.025.
[24] D. Meert, N. Torabi, and J. Costella, “Impact of librarians on reporting of the literature searching component of pediatric systematic reviews,” *Journal of the Medical Library Association : JMLA*, vol. 104, no. 4, pp. 267–277, Oct. 2016, doi: 10.3163/1536-5050.104.4.004.
[25] M.-I. Metzendorf, “Why medical information specialists should routinely form part of teams producing high quality systematic reviews – a Cochrane perspective,” *Journal of the European Association for Health Information and Libraries*, vol. 12, no. 4, pp. 6–9, 2016.
[26] A. Riegelman and M. Kocher, “A Model for Developing and Implementing a Systematic Review Service for Disciplines outside of the Health Sciences,” vol. 58, no. 1, p. 7, 2018.

Appendix A

Category (Con't)	Count of Category	Percent
Surgery	60	4.3
Computer Science, Interdisciplinary Applications	55	3.9
Engineering, Manufacturing	54	3.8
Engineering, Multidisciplinary	54	3.8
Psychology, Applied	51	3.6
Transplantation	49	3.5
Materials Science, Biomaterials	48	3.4
Cardiac & Cardiovascular Systems	46	3.3
Computer Science, Information Systems	39	2.8
Computer Science, Software Engineering	39	2.8
Sport Sciences	38	2.7
Education, Scientific Disciplines	37	2.6
Computer Science, Artificial Intelligence	36	2.6
Cell & Tissue Engineering	35	2.5
Orthopedics	34	2.4
Psychology	33	2.3
Cell Biology	31	2.2
Construction & Building Technology	31	2.2
Neurosciences	30	2.1
Rehabilitation	30	2.1
Medicine, Research & Experimental	28	2
Management	27	1.9
Telecommunications	27	1.9
Biotechnology & Applied Microbiology	26	1.8
Instruments & Instrumentation	25	1.8
Medical Informatics	23	1.6
Transportation Science & Technology	22	1.6
Engineering, Chemical	21	1.5
Engineering, Mechanical	21	1.5
Water Resources	21	1.5
Energy & Fuels	20	1.4
Biophysics	18	1.3
Behavioral Sciences	17	1.2
Chemistry, Analytical	16	1.1
Materials Science, Multidisciplinary	15	1.1
Computer Science, Cybernetics	14	1
Computer Science, Hardware & Architecture	14	1
Business	12	0.9
Education & Educational Research	12	0.9
Mathematical & Computational Biology	12	0.9

Automation & Control Systems	10	0.7
Health Care Sciences & Services	10	0.7
Biology	8	0.6
Ecology	7	0.5
Physiology	6	0.4
Ethics	5	0.4
History & Philosophy Of Science	5	0.4
Multidisciplinary Sciences	5	0.4
Philosophy	5	0.4
Radiology, Nuclear Medicine & Medical Imaging	5	0.4
Robotics	5	0.4
Engineering, Aerospace	4	0.3
Geosciences, Multidisciplinary	4	0.3
Physics, Applied	4	0.3
Environmental Studies	3	0.2
Mathematics, Interdisciplinary Applications	3	0.2
Acoustics	2	0.1
Communication	2	0.1
Economics	2	0.1
Engineering, Geological	2	0.1
Food Science & Technology	2	0.1
Geography	2	0.1
Imaging Science & Photographic Technology	2	0.1
Mechanics	2	0.1
Nanoscience & Nanotechnology	2	0.1
Optics	2	0.1
Regional & Urban Planning	2	0.1
Biochemical Research Methods	1	0.1
Chemistry, Multidisciplinary	1	0.1
Development Studies	1	0.1
Health Policy & Services	1	0.1
Mathematics, Applied	1	0.1
Metallurgy & Metallurgical Engineering	1	0.1
Psychology, Multidisciplinary	1	0.1
Remote Sensing	1	0.1
Social Issues	1	0.1
Sociology	1	0.1
Statistics & Probability	1	0.1
Thermodynamics	1	0.1
Urology & Nephrology	1	0.1