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Analyzing COVID-19 Resources on Association of Academic Health Sciences Libraries' (AAHSL) Research Guides

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ABSTRACT

In this study, the authors analyzed 147 AAHSL member libraries' COVID-19 research guides to determine the volume and origin of links included. Through stratified sampling based on total enrollment of health sciences academic institutions, 51 eligible AASHL library websites were selected for inclusion in the study. Content from COVID-19 research guides was analyzed, and the origin of each link was categorized. Most AAHSL libraries have at least one COVID-19 research guide, while some have two or more. A total of 8,848 links within examined research guides were visited. Links to academic institutions including universities' own internal links were most common while news outlets, social media, and international government were linked least. Regarding individual organizations, the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH)were most frequently linked. The overwhelming majority of sampled health sciences libraries use research guides to share COVID-19 information with their users. It is necessary to further investigate how libraries can optimize research guides to benefit their users. These results and conclusions reveal information resource patterns in research guides at health sciences academic libraries and are consistent with those reached by researchers investigating academic libraries' research guides in 2020.

Introduction

Librarians are called to be gate-openers to knowledge; they are tasked with designing experiences that adequately serve library users.[1] Health sciences librarians are no exception. Kelley, Su, and Britigan indicated in 2016 that "health care providers and public health professionals have both the

opportunity and the responsibility to use health literate and culturally competent methods when conveying information to patients and the public."[2] In order to achieve these goals, innovative solutions have emerged in recent decades that have become standards of library practice. In academic health sciences libraries, one such standard is the research guide, a tool often built and maintained on library websites that are used to direct users to specific resources on particular subjects as determined by the needs of end-users. Research guides are known by several other names, most commonly including LibGuides,[3] subject guides, resource guides, and guides.

Research guides can be powerful tools for triaging information to increase its usability,[4] becoming increasingly valuable and necessary tools for not only patrons but also faculty and staff at academic libraries.[5] They are an accessible way to efficiently communicate information; this means that essentially anyone can create a research guide. Because of this, when it comes to maintaining and updating the guides, quality control challenges abound.[6] In 2014, Baker asserted that "the problem with the current generation of research guides is that many of them try to provide too much information: what might be termed the 'kitchen sink' approach."[7] This issue was brought to the forefront in 2020 in the midst of the COVID-19 pandemic and subsequent infodemic.[8]

How can this problem be solved? Few institutions maintain research guide protocols, while fewer still enforce such protocols.[9] Concerted efforts are certainly underway to improve the efficacy of academic library research guides,[10] but perhaps the best way forward is to take a close look at a series of research guides to "help reveal information resource patterns. This is particularly important in the case of the coronavirus pandemic both because this is a new disease and because the global response to the pandemic has been unprecedented."[11] The purpose of this study is to identify the information resource patterns of COVID-19-related research guides from Association of Academic Health Sciences Libraries' (AAHSL) member libraries.

The authors of this paper conducted a preliminary study in Fall 2020 focused on South Central Academic Medical Libraries (SCAMeL) member institutions. The data for this preliminary study were collected using a similar methodology to the one used in this study, beginning approximately 6 months after COVID-19 began spreading rampantly across the United States, so many institutions were still in the beginning stages of navigating strategies for sharing data related to this crisis. Several differences between the data sets were found, including a dramatic increase in average number of links per research guide. According to the first study's data, most information presented in COVID-19 research guides was publicly available; for the sample and time period examined in this study, more institutional resource links required that users log in before using resources in the guide.

While the authors noted several significant differences between data collected for the 2020 SCAMeL study versus those collected for this study in 2021, shared themes exist. Both studies revealed great variance in how research guides have been utilized among institutions. As with the institutions examined in this study, some of those examined in the SCAMeL investigation had large COVID-19 research guides, as measured by the number of links, while others had not developed COVID-19 research guides at all. Neither then nor now does there exist apparent consensus or consistency in how research guides are built to share COVID-19 resources, institutional policies, research, and course guides. Great variation in research guides used for these purposes can be seen even within single institutions with multiple COVID-19 research guides serving different purposes. This lack of consistency could be attributed to the versatile nature of research guides and similar research guide formats, but could also be a testament to the inefficacy of resource guide creation and maintenance, especially in times of crisis.

Background and literature review

Health sciences librarians and the COVID-19 infodemic

Librarians are expert information gate-openers,[1] both propping open the proverbial gates to knowledge pathways and helping to clear such pathways. Librarians are not only information providers but also educators. Health sciences librarians have a prominent role in education at their institutions, often collaborating closely with faculty and students to build robust and well-rounded curricula and resources.[12] King and Lapidus noted that "librarians' focus on information retrieval in response to human needs provides them with a vital role in interpreting information technology for professionals and students."[13] This trait—responsiveness to human need—became invaluable and central to the work of librarians in 2020.

While the role of health sciences librarians is constantly evolving, the COVID-19 pandemic transformed their daily work almost immediately. In early 2020, an urgent new focus was placed on continuation of library services during a time when users were largely forced to interact with library resources remotely. New priorities emerged and librarians took a central role in managing overwhelming amounts of information–and misinformation. Health sciences library users, both affiliated and unaffiliated, clinical and lay, had a sudden and immediate need to access and understand often complex, time-sensitive information about a singular topic, COVID-19. This demand coupled with an influx of reliable and dubious information led to an infodemic of immeasurable proportions.[14,15] Librarians have been central to efforts focused on managing this infodemic, driving reputable

information to users in need while derailing potentially damaging misinformation, disinformation, and so-called "Fake News."[14,16] According to Yuvaraj in 2020, "health science librarians have three important roles to play during the COVID-19 pandemic:

- To provide awareness on preventive measures relating to COVID-19
- To provide document delivery services during lockdown
- To support researchers working on COVID-19"[17]

Research guides: invaluable and imperfect

Health websites utilized during COVID-19 are known to have readability and credibility issues, making them difficult to understand at best.[18] Research guides, the oft-used evolution of the 1990s-era research Pathfinder, have been used by health sciences librarians throughout the COVID-19 pandemic to manage information and resources to be shared with users.[19] Research guides can increase the usability of information[4] and are useful to a wide range of library user populations.[5] Without a consistent protocol structure that addresses quality control issues, research guides often become overgrown, cumbersome, and difficult to use.[6,7,20]

However imperfect research guides may be, librarians have made great strides in assessing and leveraging their efficacy. In light of increased demand for remote access, librarians developed new service plans that incorporated research guides, often after analyzing existing research guides to synthesize lessons learned and develop user-friendly guides.[5,21,22] There does exist some established research to help guide librarians as they build research guides. In 2018, a failed study of research guide use among students gave insight on future directions for research in this realm and, perhaps more importantly, presented how assessment of research guides should not be carried out.[23] Long navigation menus have been shown to be more effective for students than their short navigation counterparts.[24] A 2015 study yielded valuable insight into the formatting of research guides with the end user in mind, offering a blueprint of sorts for effective research guide design,[25] while a COVID-19-era study offered insight on how to "pandemic-proof" health sciences libraries.[26] It is vital to recognize the work of Fraser-Arnott who published a study similar to this one, focused on academic libraries in general instead of health sciences libraries. This study found that research guides are commonly used and highly variable regarding included content; librarians and their research guides would benefit from a collaborative understanding of established practices and protocols to increase usability and reduce duplication of effort.[11] This idea is supported by a 2018 study that found much duplication in effort among

research guides at public universities, suggesting that co-ownership of research guides and greater active collaboration could reduce redundancy and increase usability.[27]

Methods

This study uses stratified sampling to collect data and analyze COVID-19 research guides at AAHSL member libraries to determine the volume and origin of links included.

Building the stratified sample

Examination of AAHSL member library research guides began with locating and gathering library information. Details about AAHSL member institutions were identified on the Member Institutions page on the AAHSL website and records were gathered on November 23, 2020.[28] Library names, locations, and AAHSL membership type were recorded. Additional information was then collected from the individual websites of each member institution, including the status of each as an educational institution (medical or health sciences school), location data, and parent institution name(s). For institutions with more than one membership record–in the case that there was more than one contact, for example–duplicate records were removed. Next, enrollment numbers were recorded for each AAHSL member institution and were collected from the Association of American Medical Colleges,[29] the American Association of Colleges of Osteopathic Medicine,[30] the Association of Faculties of Medicine of Canada,[31] and direct institution contact where necessary.[32] This set of data was used to select the sample for this research. AAHSL member institutions that met the following criteria were eligible for inclusion in this study:

1. For the purposes of this study, all institutions were required to be primarily academic in nature with medical schools based in the United States or Canada per AAHSL membership requirements.
2. AAHSL membership types (1), (2), or (3) were required. According to AAHSL, these are (1) U.S. Full memberships, (2) Canadian Full memberships, and (3) Associate memberships, which includes colleges of osteopathic medicine. For the purposes of this study, membership types (4) and (5) were excluded, eliminating both new and developing medical schools from the eligible sample list.
3. Enrollment data about eligible institutions needed to be both clear and readily available.
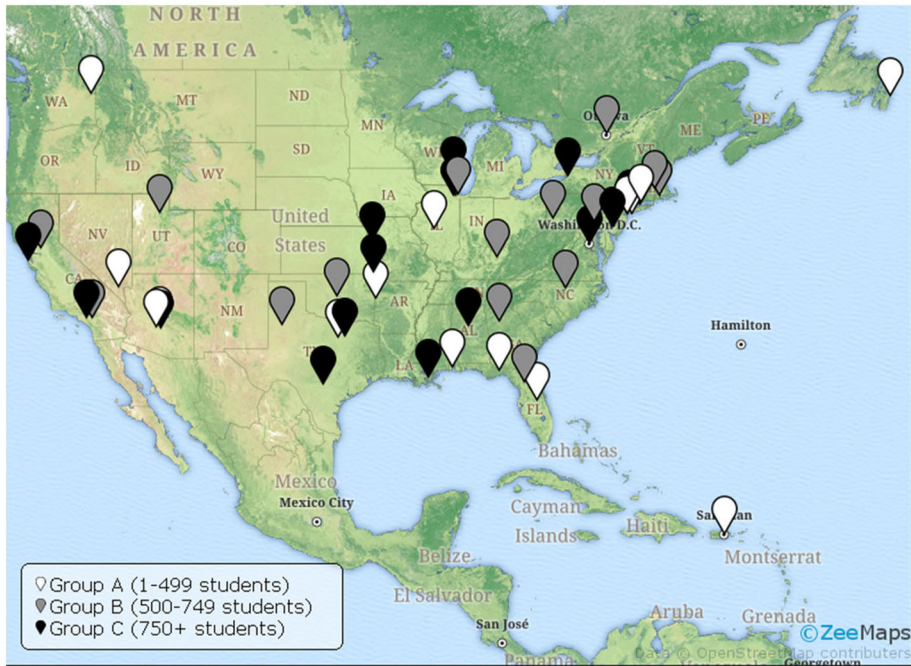
Figure 1. Geographical distribution of final sample.

At the time of this research, the AAHSL member directory contained 188 member records. Some records were not usable as they were duplicates or not eligible for the study. In the end, 147 total AAHSL libraries were eligible for inclusion in this sample. Libraries were organized, per the most recent enrollment data, in ascending order based on the number of enrolled students. Institutions were divided into three equal groups.

- Group A: 1–499 students enrolled
- Group B: 500–749 students enrolled, and
- Group C: 750 or more students enrolled

From a list of institutions arranged in ascending order of number of enrolled students, every 3rd institution was selected for inclusion in the final stratified sample, with one institution added to Group A and one added to Group B, in order to obtain a sample of 17 institutions from each group for a total sample size of 51 libraries. Sample institutions were geographically scattered throughout the United States and Canada, including one institution based in Puerto Rico and one in Newfoundland (Figure 1).

This stratification method was selected as the authors hoped to capture data from a range of institution sizes and locations; for the purposes of this study, enrollment data was the clearest measure of institution size.

Research guide data collection

Contact information for the 51 AAHSL libraries was used to determine the web address and the primary library used by each medical or health sciences institution in the sample. Each library's website was visited, and data were recorded between April 3 and April 21, 2021. Locating and analyzing the content of any existing COVID-19 research guides was the primary objective in this phase of research. The main pages of each library and links to COVID-19 research guides were visited. If links to those research guides were not obvious or prominently displayed, then subpages for Guides, LibGuides, Research Guides, or similar were visited. If needed, the search functions embedded within these subpages were utilized, searching with the terms "coronavirus" and/or "COVID."

Each of the research guides was analyzed in depth. All links on every page and subpage within the applicable research guides were clicked and opened, totaling 8,848 links. Not included in this data collection were:

- Links presented within feeds, such as social media and RSS feeds, because of their dynamic and ever-changing nature
- Linked librarian contact/biographical information
- Links that were part of an embedded third-party source such as dashboards or microsites. Each embedded dashboard or microsite, though, was counted as one single link.

Categorizing data

It is crucial to understand which sources libraries were most likely to direct users to for information access. Data were compiled and recorded in a spreadsheet. The original web source of each link was tallied as it was counted and put into categories. Links were attributed to the source to which the link led. For example, if a link led to a health information flyer generated by the CDC that is hosted on the CDC website, that link was classified as a CDC link. If the same health information flyer generated by the CDC was hosted on the library's own website, that link was classified as a University/Medical School (internal) link. Note that these categories do not include links that lead to funding announcements or links within RSS and social media feeds. For the purpose of this research, each link is attributed to one category only. The total number of links to each source category and the total number of links in each research guide were recorded. To facilitate ease of use, the categories were divided into families by type (Appendix 1). The topics covered in the guides' links were not analyzed as they were out of scope for this study.
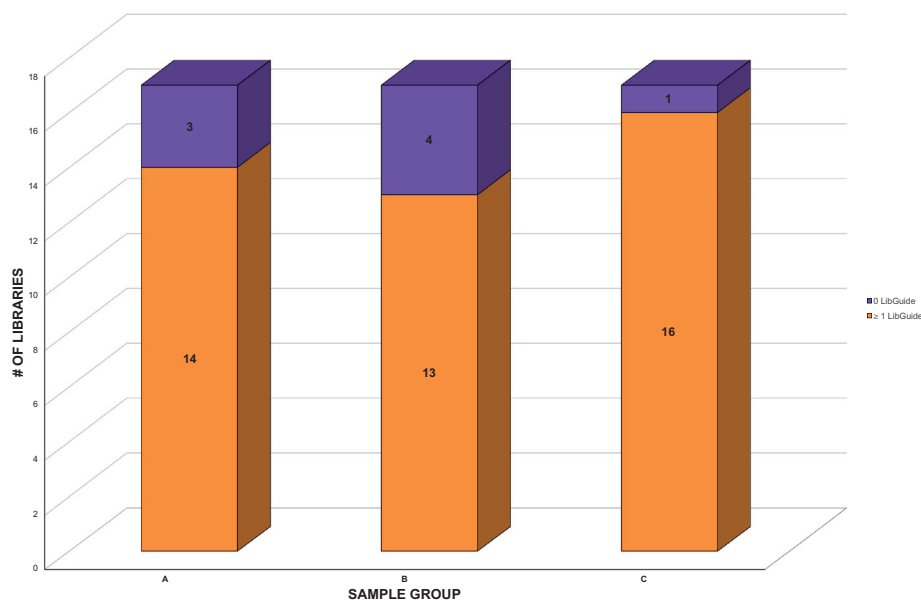
Figure 2. Presence of research guides by library.

Results

COVID-19 research guides and links

Of the 51 libraries in the sample, 43 (84.3%) had at least one COVID-19 research guide; 8 of the 51 libraries had no published COVID-19 research guide at the time data were collected. The library with the most COVID-19 research guides (3) was the University of Utah's Spencer S. Eccles Health Sciences Library. Of the 43 libraries that did have published research guides, 8 had two or more. Group C, which consisted of institutions with the largest enrollment, contained only 1 institution which did not maintain a COVID-19 research guide; Group A and Group B had 3 and 4 institutions, respectively, without such research guides. Figure 2 indicates how many libraries do and do not have research guides from each sample group (A, B, and C).

COVID-19 research guide size, as measured by number of links, varies greatly. The median number of links within a research guide was 87 and the mean was 161.6. The average number of links in a Group C research guide is more than twice the average of Group B (Figure 3).

Two institutions had research guides with over 1,000 links each, while 8 institutions had no COVID-19 research guide whatsoever. Kansas City University of Medicine and Biosciences maintained 2 COVID-19 research guides, one of which contained 0 links about sharing health information about the evolving COVID-19 pandemic. It only solicited materials for their archive. The research guide with the most links belonged to George
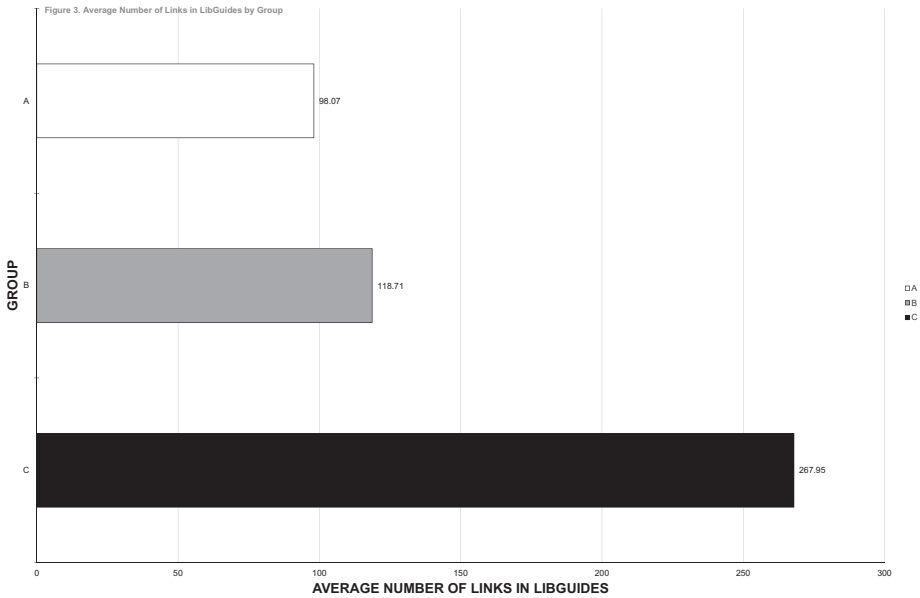
Figure 3. Average number of links in LibGuides by Group

A — 98.07

B — 118.71

C — 267.95

AVERAGE NUMBER OF LINKS IN LIBGUIDES

Figure 3. Average number of links in research guides by sample group (A, B, and C).

Washington University Medical Center's Himmelfarb Health Sciences Library with 1,683 links, nearly 10 times the mean number of links of other research guides in this sample. This voluminous research guide was used as a repository for internally-generated reports, each of which was made available as an individual link, thus dramatically increasing the size of the guide beyond the average at other institutions. Two research guides from Texas Tech University Health Science Center's library had five links each, the fewest number of links among the guides in the study. Of the 10 research guides with the most links, 7 of them belong to Group C, the group with the highest enrollment numbers.

AAHSL libraries employed mixed approaches when relating COVID-19 health information to their users and the general public. This may account for some of the outliers and variation seen in the data.

Link origins

The total raw number of links present in the research guides was 8,848, not including those present in embedded materials and feeds. The originating website of the linked content within research guides was categorized. To facilitate ease of use, the categories were divided into families by type (Appendix 2).

The resources referenced most often were Academic Institutions with 2,439 links (27.6%); a close second were Research Sources with 2,237 links (25.3%). The resources that were referenced least were News Outlets with
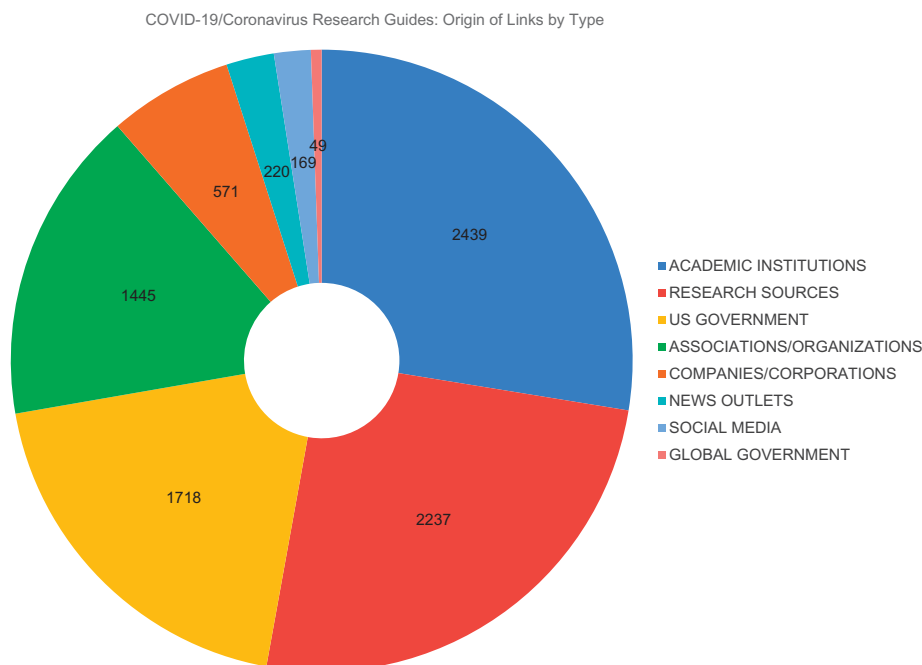
Figure 4. COVID-19/coronavirus research guides: origin of links by type.

220 links (2.5%), Social Media with 169 links (1.9%), and Non-US Government with 49 links (0.6%). Of individual organizations, most linked were the Centers for Disease Control and Prevention (CDC) (6.5%, 575 links) and the National Institutes of Health (NIH) (6%, 529 links) (Figure 4).

Discussion

This study provides insight into how AAHSL libraries shared information about COVID-19 through research guides. Stratifying the sample by enroll-ment numbers of the academic institutions allows for a better understand-ing of the research guides' number of links and information resource patterns. Research guides with the greatest number of links came from the group of institutions with the largest enrollment, which possibly indicates an increased burden placed on larger institutions to develop and maintain current resources. Overall, smaller institutions maintained research guides with fewer links.

Interestingly, the information resources linked most often in the research guides were produced by the academic institutions themselves, specifically internal university/medical school's resources, demonstrating that most libraries were sharing content from their own institutions rather than link-ing to external content. Additionally, many links in the research guides led

to individually published scholarly articles, publishers' websites, academic journal websites, preprints, and preprint servers.

There are opportunities for further research in this area, as one of the limiting factors of this study was that the authors did not assess the credibility of the linked content on the research guides because it was beyond the scope of the study. Another limitation was that the authors did not analyze the topics that were covered in the COVID-19-related research guides.

Conclusion

Academic health sciences libraries must be vigilant in efforts to develop and maintain resources that remain relevant to their users, even in times of crisis. While it is clear that the overwhelming majority of AAHSL libraries use research guides as tools to share COVID-19 resources with their user populations, research guide formats vary greatly among and even within institutions. AAHSL institutions with enrollment of 750+ include more links in their research guides; however, the quantity of links does not necessarily equate with the quality of the research guide. Having too many resource links within a research guide often make it difficult to navigate. AAHSL libraries leverage the features of research guides and similar platforms in a variety of ways. This study demonstrated that AAHSL libraries' research guides are primarily linked to internal content generated by their own institutions/medical schools.

The authors' conclusions are consistent with those of Fraser-Arnott's 2020 examination of academic library research guides; "significant variation is possible between subject guides in terms of audience, structure, and content," and examining research guides at a range of similar institutions can deepen research guide developers' understating of how to best serve their target populations, particularly during times of widespread disaster such as the COVID-19 pandemic.[11] As society begins to more broadly accept and expect digital offerings, research guides could become an even more critical means for disseminating organized information on a given topic. Certainly, more consideration should be given to examining how to develop meaningful user experiences in research guides at academic health sciences institutions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are openly available in the University of North Texas Data Repository at https://digital.library.unt.edu/ark:/67531/metadc1836376/

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Appendix 1. Description of categories

Category	Description	Family
CDC	Links lead directly to the Centers for Disease Control and Prevention (CDC) website in any language. In addition, one link is counted and added to this category for each instance of embedded CDC microsites within each LibGuide	U.S. government
Corporations/companies	Links lead directly to websites for companies that function primarily as for-profit institutions, and primarily use the .com Top Level Domain (TLD). This does not include otherwise-classified companies	Companies/corporations
Databases/sets	Links lead directly to websites that function primarily as quantitative databases and/or data sets. This includes links directly to online forms like Google Sheets containing data, GitHub, ArcGIS, and other similar websites and services. These links lead directly to the websites of such services. This excludes data generated/stored using such web tools, but hosted on otherwise-classified websites such as university websites	Research sources
Domestic (U.S.) news	Links lead directly to individually published news articles and websites of US-based companies which function primarily as news providers/sources	News outlets
FDA	Links lead directly to the U.S. Food & Drug Administration (FDA) website	U.S. government
International government	Links lead directly to government websites other than those part of the U.S. government, including all webpages managed and published by international governmental bodies	Non-U.S. government
International news	Links lead directly to individually published news articles and websites of non-US-based companies which function primarily as news providers/sources	News outlets
LitCovid	Links lead directly to the LitCovid website, including direct links to search strategies and links to pre-populated searches. Links to individual scholarly articles are not included in this category, but instead are classified in the Publishers/Journals/Articles category	U.S. government
MedlinePlus	Links lead directly to the MedlinePlus website	U.S. government
NIH	Links lead directly to institutions under the National Institutes of Health (NIH) umbrella, excluding links more specifically attributed to other explicitly-counted NIH websites, including PubMed, MedlinePlus, and LitCovid	U.S. government
Organizations/associations	Links lead directly to websites for companies that function primarily as not-for-profit institutions, and primarily use the .org Top Level Domain (TLD). This	Organizations/associations

Continued.

Category	Description	Family
	does not include otherwise-classified companies	
Publishers/journals/articles	Links lead directly to individually published scholarly articles, websites of companies/organizations functioning primarily as academic publishers, websites of academic journals, preprints, and preprint servers. This also includes resources hosted on academic publishers' websites that are not necessarily article- or journal-based, such as COVID-19 resource guides	Research sources
PubMed	Links lead directly to the PubMed website, including direct links to search strategies and links to pre-populated searches. Links to individual scholarly articles are not included in this category, but instead are classified in the Publishers/Journals/Articles category	U.S. government
Social media	Links lead directly to social media pages of any kind including Twitter, Facebook, and YouTube. If a video is embedded in the LibGuide and contains a link to YouTube or another social web video hosting service, it is counted as a link	Social media
University/medical school (external)	Links lead directly to resources generated by and hosted on the websites of universities, medical schools, and academic institutions outside the university/med school's own websites, primarily with the .edu Top Level Domain (TLD). Links to individual scholarly articles are not included in this category, but instead are classified in the Publishers/Journals/Articles category	Academic institutions
University/medical school (internal)	Links lead directly to resources under the umbrella of the university/med school's own websites, primarily with the .edu Top Level Domain (TLD). Links to individual scholarly articles are not included in this category, but instead are classified in the Publishers/Journals/Articles category. This includes links to resources generated by the university itself, those leading to other library research guides, and those which require SSO login credentials to access	Academic institutions
U.S. government	Links lead directly to U.S. government websites, primarily with the .gov Top Level Domain (TLD). This excludes links more specifically attributed to other explicitly-counted websites, including CDC, PubMed, MedlinePlus, LitCovid, FLA, and NIH websites	U.S. government
World Health Organization (WHO)	Links lead directly to the World Health Organization (WHO) website in any language. In addition, one link is counted and added to this category for each instance of embedded WHO microsites within each LibGuide	Organizations/associations

Appendix 2. COVID-19/coronavirus research guides: number of links by library

Institution and library name (LibGuide)	# of links	Group
George Washington University Medical Center Himmelfarb Health Sciences Library (LibGuide 1)	1,683	C
University of Alabama at Birmingham Lister Hill Library of the Health Sciences (LibGuide 2)	1,092	C
University of Nevada Las Vegas UNLV Health Sciences Library	359	A
University of Florida UF Health Science Center Library AND Borland Library	356	B
Emory University Woodruff Health Sciences Center Library (LibGuide 2)	342	B
George Washington University Medical Center Himmelfarb Health Sciences Library (LibGuide 2)	336	C
Drexel University Libraries (LibGuide 2)	291	C
A. T. Still University of the Health Sciences A. T. Still Memorial Library	290	C
Tulane University Rudolph Matas Library of the Health Sciences	268	C
New York Medical College Health Sciences Library	255	C
Kansas City University of Medicine and Biosciences KCU Libraries (LibGuide 1)	254	C
University of Texas Southwestern Medical Center UTSW Library	216	C
University of South Alabama Charles M. Baugh Biomedical Library	205	A
Loyola University of Chicago Loyola Health Sciences Division Health Sciences Library	196	B
Zucker School of Medicine at Hofstra/Northwell Health Sciences Library	178	A
Loma Linda University Del E. Webb Memorial Library	164	B
University of Arizona College of Medicine – Phoenix Arizona Health Sciences Library	159	A
University of Pennsylvania Penn Biomedical Library	149	C
Medical College of Wisconsin MCW Libraries	139	C
Emory University Woodruff Health Sciences Center Library (LibGuide 1)	137	B
Duke Medical Center Library and Archives Duke Medical Center Library and Archives	134	B
Rowan University – Cooper Medical School Library	115	A
University of Utah Spencer S. Eccles Health Sciences Library (LibGuide 1)	103	B
Texas Tech University Health Sciences Center TTUHSC Libraries (LibGuide 1)	101	B
University of Utah Spencer S. Eccles Health Sciences Library (LibGuide 3)	92	B
University of Massachusetts Medical Center Lamar Soutter Library	87	B
Yale University Harvey Cushing/John Hay Whitney Medical Library	76	B
Brown University Champlin Memorial (Medical) Library	73	B
Penn State College of Medicine Harrell Health Sciences Library Research and Learning Commons	73	B
University of California, San Francisco Library	71	C
University of Texas Health Science Center TMC Library, Health Sciences Resource Center	70	C

Continued.

Institution and library name (LibGuide)	# of links	Group
Universidad Puerto Rico Biblioteco Conrado F. Asenjo (LibGuide 1)	58	C
University of Alabama at Birmingham Lister Hill Library of the Health Sciences (LibGuide 1)	58	A
Florida State University Charlotte Edwards Maguire Medical Library	55	A
University of Central Florida College of Medicine Harriet F. Ginsburg Health Sciences Library	55	A
NYU Langone Health NYU Health Sciences Library	51	A
Quinnipiac University Edward and Barbara Netter Library	50	A
Drexel University Libraries (LibGuide 1)	47	C
Memorial University of Newfoundland MUN Health Sciences Library	46	A
Mayo Clinic Mayo Clinic Libraries	44	B
Arkansas College of Health Taylor Health Sciences Library	44	A
University of Pittsburgh University of Pittsburgh Health Sciences Library System	44	A
Albert Einstein College of Medicine D. Samuel Gottesman Library	41	C
University of Kansas Medical Center A.R. Dykes Library	38	C
Southern Illinois University School of Medicine SIU Medical Library	36	A
University of Buffalo Medical School Library	31	C
Western University of Health Sciences Harriet K. and Philip Pumerantz Library	30	C
University of Utah Spencer S. Eccles Health Sciences Library (LibGuide 2)	24	B
Universidad Puerto Rico Biblioteco Conrado F. Asenjo (LibGuide 2)	16	A
Rush University Medical Center Library of Rush University Medical Center and McCormick Educational Training Center (METC)	11	B
Texas Tech University Health Sciences Center TTUHSC Libraries (LibGuide 2)	5	B
University of North Texas Health Science Center Gibson D. Lewis Library	0	A
Washington State University Spokane Academic Library	0	A
Dartmouth College Dartmouth Biomedical Libraries	0	A
University of California, Davis Blaisdell Medical Library	0	B
University of Ottawa Health Sciences Library	0	B
University of Oklahoma Health Sciences Center Robert M. Bird Health Sciences Library	0	B
University of Kentucky UK Medical Center Library	0	B
Midwestern University Library	0	C
Kansas City University of Medicine and Biosciences KCU Libraries (LibGuide 2)	0	C

Measured by raw number of links present in research guides (8,848 links total, not including those present in embedded materials and feeds).