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The Impact of Web-scale Discovery on the Use of a Library Collection

Abstract

Grand Valley State University Libraries implemented Serials Solutions' web-scale discovery tool, Summon, during the fall of 2009. This case study explores whether Summon had an impact on the use of the library's resources during its first semester of implementation. An examination of usage statistics showed a dramatic decrease in the use of traditional abstracting and indexing databases and an equally dramatic increase in the use of full text resources from full text database and online journal collections. The author concludes that the increase in full text use is linked to the implementation of a web-scale discovery tool.

NOTICE: this is the author's version of a work that was accepted for publication in *Serials Review*. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version is published in *Serials Review*, 2010; 36: 214-220, doi: 10.1016/j.serrev.2010.07.002.

The rise of the Internet over the last two decades has been in many ways a blessing and a curse for libraries. Libraries have been able to take advantage of the Internet to make more information than ever available to their users. Sophisticated online databases allow users to perform precise and complex searches, while aggregated content and open URL technology provide nearly seamless access between indexing and journal content. At the same time, while the myriad of databases available at most academic libraries provide users with more options than ever, they also have the effect of overwhelming users who have grown up using Google.

Google's simple interface, speed, breadth of content and quality results have set the standard for searching both among library users and within the library community. In contrast to Google, the nature of library research with its silos of content spread among hundreds of databases with dozens of different interfaces seems both antiquated and daunting.

Libraries, aware of this problem, have sought solutions that would allow users to access library resources without having to select a specific database or the library catalog. The solution identified by Roy Tennant and others during the late 1990s and early 2000s was federated searching.¹ Federated searching, also referred to as metasearching, allows users to search multiple resources at the same time, returning a single set of results. Many libraries thought that federated searching would allow libraries to compete with Google for the attention of users.² Academic libraries, like the one at Marist College, used federated search to compete against the simplicity and popularity of Google, while providing users with access to more scholarly resources.³

While Marist College described its experience with federated search as a "win-win situation" for the library and for users,⁴ over time more and more libraries and librarians have raised issues and concerns with the capabilities of federated search. Authors describe the implementation of federated search as "difficult, prolonged and complicated" and full of "compromises."⁵ Concerns are raised about

limits on the number of resources that can be simultaneously searched.⁶ The speed of federated search is also a concern, as it is dictated by the slowest-responding resource,⁷ and there are issues with the ability of these resources to merge, deduplicate and rank retrieved search results.⁸ These issues with federated searching and the development of Google Scholar led some to call for a new kind of resource that could compete with Google Scholar both in terms of speed and scope.⁹

In 2009 Serials Solutions announced the development of such a resource when it unveiled its web-scale discovery tool, Summon.¹⁰ Other vendors soon followed with similar products, such as Ebsco's Discovery Service and Primo Central from Ex Libris.¹¹ Unlike federated search tools, which search across a limited number of individual resources simultaneously, these resources pre-harvest content into one single index, allowing users to search across a greater amount of content. This single index also allows for quicker results than with federated searching. And while federated search tools have always struggled with deduplicating, merging and ranking search results from multiple resources, the single, pre-harvested indexes of web-scale discovery tools eliminate the need to merge results and allow for easier deduplication and better relevancy ranking.

For example, Summon searches across more than a half billion items, dwarfing the size of even the largest traditional library database. The index includes local holdings from a library's online catalog and institutional repositories, as well as content and metadata from more than six thousand publishers, database producers and content providers. Content included ranges from manuscripts and archival materials to journal articles, monographs and sound recordings. Because this content is preharvested into a single unified index, Summon is able to search across more content, provide better relevancy ranking and quicker results than even the best federated search tool. And unlike Google Scholar, Summon is tied to a library's resources. So while users can search across a broad range of content, they can also limit their search to content available at their own institution, which is easily accessed by the

user. Finally, unlike federated search or Google Scholar, Summon's normalized data also allows for a greater level of refinement both prior to searching and after results have been returned.

Grand Valley State University (GVSU), a comprehensive university in Allendale, MI, with approximately 24,000 students had implemented two different federated search products since 2004. Like many institutions, the GVSU Libraries were looking for a resource to simplify the search process for users. While GVSU had a current federated search implementation, concerns with the product's slow speed, relative complexity and lack of an intuitive interface led many within the library to believe this was not the ideal solution to students' information and research needs. When Serials Solutions unveiled Summon, GVSU identified this as a solution to their students' needs and moved quickly to acquire Summon, becoming the first commercial adopter of the product in July, 2009.¹² By the end of August, 2009, Summon was live and the primary search box on the library's homepage. This article examines the use of Summon at GVSU during its first semester of implementation and the impact the resource had on the use of the library's collections.

Literature Review

Because they are so new to the market, there is little in the literature on web-scale discovery tools like Primo Central, Ebsco Discovery Service and Summon. Marshall Breeding first discussed this category of product in 2005, just a few months after the launch of Google Scholar.¹³ Breeding argued that federated search could not compete with the power and speed of a resource like Google Scholar and called for the development of what he described as a "centralized search model."¹⁴ This model involved "gathering data on the universe of interest in advance and processing it into indexes that can provide instant results to searchers' queries."¹⁵ Aside from product announcements, the only other mentions of web-scale discovery tools in the literature discuss the potential they present to libraries and their users.¹⁶

In contrast, federated searching has a much more developed and wide ranging body of literature. Belliston, Howland and Roberts placed the literature in 2007 into four categories: “(1) discussions of the desirability and/or difficulty of creating a robust federated search tool, (2) reports on one or more specific federated search implementations, (3) comparisons of federated search products currently on the market to each other and/or to Google Scholar, [and] (4) views on how to implement a subject-specific federated searching tool.”¹⁷ Since then there has been the development of a fifth category of articles that examines librarians and end-users’ perceptions of and satisfaction with federated searching.

One of the first articles in this newer category was Belliston, Howland and Roberts’ study, which found undergraduates preferred federated searching over traditional search options, that they felt federated searching saved them time and that they were satisfied by their search results.¹⁸ In another article Tang, Hsieh-Yee and Zhang examined the differences between student and librarian perceptions of federated search, with librarians viewing federated search as a secondary resource and with students viewing it as a resource for accessing full text.¹⁹ In a similar study Lampert and Dabbour also found librarians did not consider federated search to be a starting point for research, while students found federated searching to be easier to use than traditional databases and that it met their expectations.²⁰ Likewise, in separate studies Armstrong, Ponsford and vanDuinkerken, and Williams, Bonnell and Stoffel found that undergraduate students were satisfied with federated searching.²¹ Ponsford and vanDuinkerken’s study also looked at faculty and graduate students and they found these users often wanted to do more complex searches that would allow them to use Boolean operators and limit results by year or to scholarly publications.²² An additional finding in Williams, Bonnell and Stoffel’s article was that undergraduate students used federated searching in concert with resources like traditional library databases and search engines like Google.²³ In contrast to many of the studies in this category, Wrubel and Schmidt discovered that while students felt federated search was a useful tool, they found it to be

more difficult to use than search engines like Yahoo and Google and that these users continued to turn to these more familiar resources.²⁴

Despite the large body of literature on federated search, there has been little written about the influence of federated search on the use of library resources. Some articles discuss the growth in use of federated search products,²⁵ while others compare the use of federated search products to standard databases like Academic Search Premier.²⁶ Still, few articles discuss whether increased use in federated search tools leads to an increase in the use of specific library resources. In an article that does examine this issue, the Loughborough University Library found that the implementation of the MetaLib federated search tool increased the use of databases.²⁷ Likewise, the University of Wisconsin-Eau Claire found that an increase in the use of federated search led to an increase in database searches.²⁸ However, neither article addresses whether they tried to separate out federated searches from searches in the native database, nor do they explore whether the increase in searches led to an increased use of journals, books or other library resources. In one article that does discuss the impact of federated search on the use of these kinds of resources, Newton and Silberger found following the implementation of federated search at Marist College the use of scholarly documents doubled, with an even large increase in the use of newspaper articles.²⁹

Summon at GVSU

At the start of the fall, 2009, semester the GVSU Libraries implemented Summon, making it the main search box on the library's web site.³⁰ Users had the option of clicking a tab and switching over to a catalog search box, but the main search box invited users to "Search Summon for Articles, Books & More." The Libraries also replaced the catalog search box with a Summon search box in Blackboard, the university's course management system. Some librarians added Summon search boxes to their

LibGuides and others introduced it through email communication to faculty and during instructional sessions. Aside from these efforts, the Libraries did little to publicize the addition of this resource.

After one semester of making Summon available to users the Libraries wanted to determine how much Summon was being used. The problem was that Serials Solutions had not released a statistics function for Summon. To overcome this, the Libraries decided to examine the usage statistics for other resources. It was unclear whether this would provide us with any meaningful data or if we would be able to link any of the statistics back to Summon, but after examining statistics from Google Analytics, database providers, journal publishers and the Libraries' link resolver we were able to develop a picture of the impact Summon was having on the use of our collections.

Methodology

To examine whether Summon was having an impact on the use of library resources, usage statistics from September through December, 2009, were compared to the same period the year before (2008) and to the first eight months of 2009 (January through August). To provide additional context, January through August, 2009, was compared to the first eight months of 2008. The Libraries used database search statistics from the COUNTER Database Report 1 (DR1), as well as full-text article downloads from the COUNTER Journal Report 1 (JR1). Databases and journal publishers that did not supply COUNTER compliant statistics for the 24 months being examined (January, 2008, though December, 2009) were excluded from this study.

Statistics from the Libraries' link resolver, Serials Solutions' 360 Link, were also used in this study. Serials Solutions provides click-through statistics by provider and database, as well as by title and ISSN, and both of these reports were examined. These reports provide information on where users of the Libraries' link resolver were going, but do not provide information on where the user is coming from. So it is possible to determine how many times users accessed articles in a database like Academic

Onfile or how many times they accessed online articles from a specific journal like *Nature* or *The Chronicle of Higher Education*, but it is not possible to determine what specific resource a user was coming from, be it Summon or one of the library's subject databases.

Finally, the Libraries used statistics from Google Analytics to examine how users were accessing Encore, the Libraries' main catalog interface. Google Analytics' Traffic Sources and Referring Sites reports were used to track both the percentage and total number of people accessing Encore via Summon.

Database Use

From 2006 through 2008 the GVSU Libraries saw steady growth in the use of online databases, but 2009 saw use decline. The cause of the decrease in use, at least in the first eight months of 2009, was unclear. The library had not made any major changes to its web site and the university had seen a slight increase enrollment. Moreover, the drop in use was widespread across most database platforms and across disciplines. Databases from CSA, Wilson and FirstSearch were all down in the first eight months of 2009, with the percent decrease in usage being greater in the last four months of the year. Overall, Ebsco databases were up for the year both between January and August and between September and December. However, if statistics for Academic Search Premier and CINAHL are excluded there is a marked difference between the first eight months of 2009, when databases saw a large increase in use, and the last four months of the year when use actually dropped.

Looking at specific databases, there were some that saw an increase in use from September through December, with others seeing their use essentially unchanged, but the vast majority of the Libraries' databases saw a steep decline in use during the fall semester compared to the same period during previous year and when compared to the first eight months of 2009. Table 1 shows a sampling of databases, illustrating that while some like Academic Search Premier saw an increase in use, others like

CINAHL and Econlit saw consistent use. For the majority of databases, however, there was a large drop in use compared to the fall semester in 2008 and compared to January through August, 2009. This was true regardless of platform, subject or discipline.

Insert Table 1

Full Text Use

Two sources of information were used to examine the use of full text. Click-through statistics from the Libraries' link resolver were an important source of information because Summon is only an index and relies on the link resolver to connect users to full text journal articles. In addition to click-through statistics, full text downloads from the JR1 report were used to confirm the numbers seen in the link resolver statistics. Most full text sources, be it aggregator databases or publisher-specific journal packages, saw a decrease in click-throughs from January through August, 2009. At the same time, most of these resources saw dramatic increases in their use from September through December, 2009, when compared to the same period in 2008.

Aggregator databases. Table 2 illustrates the click-through statistics for aggregator databases. Across the board, they saw dramatic increases in click-throughs during the fall semester compared to the previous year. The table is broken into categories for general aggregator databases, like General Onefile, more subject-specific databases like GenderWatch, and then databases with a great deal of news content, such as LexisNexis Academic.

Insert Table 2

Journal collections. Like many other institutions, GVSU has a large number of "big deal" journal collections, as well as periodical backfiles like JSTOR and Periodical Archive Online (PAO). These collections mirrored aggregator databases in that use was generally down or steady during the first eight months of 2009, but then saw a sharp increase in use between September and December. Table 3

shows click-through statistics for the Libraries' major journal collections. There were some notable exceptions from the general trend found in most collections, including ProjectMuse and ACM Digital Library, which actually saw decreases in use during the fall semester, as well as Sage, which essentially saw no change in use. All three collections are completely included in the Summon database, though, so it is difficult to determine why they saw either no change in use or a decrease in use, but it was not because there was a lack of indexing in Summon.

Insert table 3

In addition to looking at click-through statistics from the link resolver, full-text downloads from the JR1 report were also examined. As illustrated in table 4, these results mirrored the statistics from the link resolver, showing that usage increased during the last four months of the year when compared to the same period in 2008. Exceptions included lower-use collections like IEEE, Project Muse and Wiley. Table 4 also shows there generally was an even greater increase in use over the previous year during November and December, 2009, when compared to the fall semester as a whole.

Insert table 4

Individual journals. Use of individual titles was examined and overall the trends matched what was seen in the journal packages and aggregator databases. Aggregated click-through statistics were examined for the five thousand journal titles with the highest use in 2008. Journals in the top five thousand saw at least 12 uses in 2008 so none of these titles would necessarily be considered low-use titles. The majority of these journals saw a large increase in use between September and December, 2009, when compared to the same period in 2008. On average, these journals saw their use increase by sixty-six percent, totaling an additional 81,371 click-throughs. This reversed an overall decline in use during the first eight months of 2009. However, it should not be assumed that all journals saw an increase in use. Thirty-six percent of these journals did see their use decrease compared to the same period in 2008.

This is in comparison to the top 250 journals, which saw only 20% of its titles' use decrease. This may suggest that lower use journals were more likely to have their use decrease during the last four months of 2009.

A closer examination was done of the one hundred titles from the fall, 2008, and fall, 2009, semesters with the highest use based on link resolver click-throughs. Of those that were in the top 100 in the fall of 2008, fifty-one dropped out of that tier in 2009. While it is possible that some of these titles were not indexed in Summon during the fall semester, all were indexed at the time of this analysis. In addition, the majority of titles that dropped in ranking actually saw an increase in use during the last four months of 2009.

An examination was also made of the titles that moved into the top 100 in the fall of 2009. Some were titles that were newly online at GVSU that year, such as *Perceptual and Motor Skills*, while others like *Scientific American* were standard titles that in 2008 had been just outside the top 100. One category of publications that saw a large number of titles move into the top 100 in 2009 was newspapers. This in some ways mirrors what Marist College found when it implemented federated search and saw a large increase in the use newspapers.³¹

All the newspapers in the top 100, whether they were in there in 2008 or whether they moved into the top 100 in 2009, saw strong increases in use. The *New York Times*, for example, saw an additional 3,276 click-throughs during the last four months of 2009, an increase of 202%, while the *Grand Rapids Press*, the local newspaper for GVSU, saw use increase by more than 400% with an additional 1,110 click-throughs compared to the same period in 2008. In addition, nearly half of the newspapers that had moved into the top 100 had seen zero click-throughs in the fall of 2008, even though all of them had been available to users.

Monograph Usage

When Summon was implemented, the Summon search box became the primary search box on the Libraries' homepage. Users had the option of switching the search box to the Libraries' Encore catalog overlay by clicking on a tab. They could also click on a link on the homepage that would take them to the main Encore search page. Using Google Analytics, the library was able to track from what website a user who accessed Encore originated. During the fall, 2009, semester most people continued to access the catalog via the library's homepage, but throughout the semester an increasing percentage of people accessed Encore via Summon, going from 34% in September and 37% in October to 42% in November and 43% in December.

Discussion

When examining the use of electronic resources during the last four months of 2009 there are two very clear trends. First, the use of abstracting and indexing databases, which had generally been declining during the first eight months of the year, continued to decrease. In fact, these resources generally saw an even greater decrease in use during the last four months of 2009. The second trend could be seen in the use of full text sources. During the first eight months of 2009 the use of these resources mirrored databases, with use generally being down, but during the last four months of the year these resources generally saw dramatic increases in use. This sharp decline in database use combined with a steep increase in full text downloads and link resolver click-throughs suggests Summon had a dramatic impact on user behavior and the use of library collections during this time period.

Breaking down walls. The Libraries found that Summon was able to drive users to resources regardless of whether the content provider had directly partnered with Serials Solutions to make their content available in Summon. Both Elsevier and JSTOR journals saw an additional 11,000 downloads during the last four months of 2009. Yet neither JSTOR nor Elsevier were "content partners" with Summon during the four months studied. This meant that Serials Solutions was not directly receiving content from

either Elsevier or JSTOR for inclusion in the Summon index. However, because Summon includes content from indexes developed by database producers like ProQuest, Gale, Thomson Reuters and H.W. Wilson, journal articles from JSTOR and Elsevier journals that were included in these indexes were discoverable to Summon users.

Web-scale discovery services represent a dramatic change in how libraries provide access to collections. Silos that existed based on subject content, publisher or content provider in many ways no longer exist or are no longer important. It does not matter that Elsevier's ScienceDirect content is not directly ingested into Summon. What matters is that a source—any source—that is in Summon provides indexing to the articles within ScienceDirect.

Database use. The drop in use for core subject databases as shown in table 1 is one of the more troubling trends identified in this study. If these specialized subject databases still play an important role in the research process and bring a level of sophisticated indexing and searching that is not available from a tool like Summon, then libraries must identify ways to reconnect users to these resources. At GVSU, we are looking at ways to do this through our online subject guides and through our instruction program, but it is an area of ongoing concern.

Less disturbing was the decrease in searches in large multidisciplinary aggregators, like General OneFile, or large subject aggregators without specialized or sophisticated indexing, like SocINDEX. Over the years these resources have served two major needs for libraries. They provide relatively inexpensive access to large amounts of full text, and they provide a good starting point for the library to point first and second-year students. In a reimagined world with web-scale discovery products they still fill this first role, as all of GVSU's major full text collections saw sizeable increases in article downloads after the implementation of Summon. However, one must call these resources' role as a basic starting place for first and second-year students into doubt. The scope and scale of Summon dwarfs a resource like

Academic Search Premier and provides access to a much larger body of literature. It seems clear that specialized and sophisticated indexing found in databases like PsycInfo and Web of Science will continue to play a major role in the research process. However, the ongoing importance of subject databases that are valuable simply because of the sheer size of their index must be called into question.

Scholarly Journals and Newspapers. The large increase in newspaper use shown in the analysis of link resolver click-throughs suggests that Summon may be meeting an untapped demand for aggregated news content. At the same time, the overall increase in the use of scholarly journals, shown through both the analysis of journal package use and through the analysis of individual journal titles, suggests that users were able identify and access scholarly journal content using Summon. That said, additional research on how users navigate Summon to narrow their findings is necessary to determine to what degree users are simply relying on the results that returned first or whether they are taking advantage of the facets and other tools in Summon to refine their results lists.

Monographs. The analysis of Google Analytics data suggests that users were able to identify and select book content in Summon. As with newspapers and scholarly articles, books were not “lost” within Summon’s massive index. The statistics also suggest that the use of Summon intensified during the last two months of the semester. As discussed above, the percentage of users reaching Encore from Summon was highest during those two months. That data is corroborated by the statistics in table 4 showing that the percent increase in article downloads was generally highest during the last two months of the year. This assumes there is a fairly steady ratio of searches to downloads or catalog referrals. Once Serials Solutions makes usage statistics available for Summon the library will be able to further examine this aspect.

Areas of future research. With a category of products as new as web-scale discovery resources, there is no shortage of areas needing further examination. Based on what was seen in this study it seems clear

that additional studies are needed to examine why and how patrons are using these resources and how easily they are meeting their information needs, especially compared to more specialized library databases. Studies of usage statistics over a longer period of time are needed to further examine the impact of web-scale discovery resources on the use of library collections. Studies examining the impact of instruction, promotion and the placement of search boxes on the use of web-scale discovery would also help libraries maximize the use of these kinds of resources. Finally, this early examination suggests that these resources increase the use of libraries' electronic collections, but the impact on the use of print collections, and monographs in general, still needs to be explored.

Conclusion

Despite the lack of direct usage statistics from Summon, this analysis of usage statistics suggests that Summon was widely adopted in its first semester of use and that it is increasing access to the library's resources. Five years after Marshall Breeding called for a new kind of resource to compete with Google Scholar,³² it appears that category of resource is at hand. This is not to say that Summon or any other web-scale discovery tool is perfect, nor is it to say that users will suddenly stop using Google for academic research. Libraries expecting these things will be disappointed. Still, the results of this study suggest that this new category of resource has the potential to radically change how users interact with and discover the wealth of information available within library collections.

Notes

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Table 1 Difference in Database Searches by Database: 2008-2009

	January-August			September-December		
	2008	2009	% Change	2008	2009	% Change
Academic Search Premier	155,944	173,056	11%	135,447	184,964	37%
CINAHL	58,497	73,061	25%	35,639	45,167	27%
SPORTDiscus	10,497	16,484	57%	8,727	10,459	20%
LGBT Life	1,769	3,278	85%	2,916	3,311	14%
Social Work Abstracts	4,292	6,908	61%	5,699	5,943	4%
Public Administration Abstracts	1,590	2,701	70%	1,860	1,857	0%
SocINDEX	27,977	23,518	-16%	20,742	20,446	-1%
ERIC	30,442	23,915	-21%	14,681	14,178	-3%
Business Source Complete	28,880	30,757	6%	20,673	19,686	-5%
PsycINFO	69,183	74,320	7%	48,837	45,722	-6%
America: History & Life	7,289	7,953	9%	7,312	6,771	-7%
Sociological Abstracts	9,918	7,329	-26%	6,801	5,931	-13%
EconLit	8,048	7,076	-12%	5,644	4,788	-15%
MLA	7,258	7,546	4%	8,549	7,232	-15%
Social Sciences Abstracts	1,629	1,135	-30%	1,304	1,088	-17%
Historical Abstracts	5,619	6,221	11%	6,543	5,378	-18%
LLBA	7,528	6,780	-10%	5,887	4,701	-20%
Physical Education Index	6,247	5,365	-14%	4,140	3,239	-22%
GeoRef	4,067	4,632	14%	2,988	2,168	-27%
PAIS	7,364	5,695	-23%	5,264	3,841	-27%
Philosopher's Index	10,516	3,852	-63%	4,252	2,707	-36%
Social Services Abstracts	9,411	7,558	-20%	7,600	4,179	-45%
RILM	2,176	1,508	-31%	1,902	1,050	-45%
Biography Index	263	248	-6%	344	174	-49%
Film & Television Literature Index	3,123	3,521	13%	3,860	1,881	-51%
Art Abstracts	2,014	1,283	-36%	1,703	765	-55%
Library Literature	427	468	10%	293	133	-55%
International Political Science Abstracts	4,888	6,128	25%	5,555	2,347	-58%
Alt HealthWatch	4,882	5,729	17%	3,695	1,528	-59%
Bibliography of the History of Art	1,624	1,553	-4%	1,889	773	-59%
Biological and Agricultural Index	2,282	1,658	-27%	1,900	776	-59%
Wilson Select Plus	54,132	48,281	-11%	35,331	14,151	-60%
Anthropology Plus	3,430	3,371	-2%	3,945	1,513	-62%
Humanities Abstracts	702	879	25%	1,031	365	-65%
GEOBASE	2,644	1,960	-26%	1,936	572	-70%
AGRICOLA	3,986	2,333	-41%	3,370	975	-71%
History of Science, Technology and Medicine	885	954	8%	779	212	-73%
ArticleFirst	5,114	3,203	-37%	2,737	725	-74%
Book Review Digest	106	176	66%	197	51	-74%
Alternative Press Index	3,183	1,557	-51%	1,877	452	-76%
Electronic Collections Online	2,905	2,159	-26%	2,446	484	-80%
Essay and General Literature Index	240	201	-16%	226	36	-84%
Applied Science & Technology Abstracts	340	302	-11%	425	55	-87%
General Science Abstracts	313	527	68%	370	40	-89%
Wilson Business Abstracts	759	605	-20%	475	31	-93%

Table 2 Difference in Link Resolver Click-Throughs by Database: 2008-2009

	January-August			September-December			
	2008	2009	% Change	2008	2009	% Change	Additional Click- Throughs
General Databases							
Academic Search Premier	33,575	25,806	-23%	17,335	33,227	92%	15,892
General OneFile	8,281	5,853	-29%	4,557	12,706	179%	8,149
Academic OneFile	10,110	7,332	-27%	4,973	8,202	65%	3,229
Subject-Specific							
ABI/INFORM Global	6,465	5,466	-15%	3,507	15,924	354%	12,417
PQ Medical	14,814	13,987	-6%	7,705	16,176	110%	8,471
GenderWatch	405	697	72%	240	2,010	738%	1,770
PQ Criminal Justice	779	812	4%	369	1,631	342%	1,262
SocINDEX	5,801	4,958	-15%	3,488	4,352	25%	864
Literature Resource Center	474	324	-32%	222	572	158%	350
News Focused							
LexisNexis Academic	7,469	6,096	-18%	4,378	32,483	642%	28,105
Ethnic NewsWatch	426	335	-21%	521	3,199	514%	2,678
PQ Historical Newspapers	290	308	6%	235	1,466	542%	1,231
ABI/INFORM Dateline	28	39	39%	30	1,037	3,357%	1,007
InfoTrac Custom	729	377	-48%	206	1,170	468%	964
Newspapers							

Table 3 Difference in Link Resolver Click-Throughs by Journal Collection: 2008-2009

	January-August			September-December			
	2008	2009	% Change	2008	2009	% Change	Additional Click-Throughs
JSTOR	14,886	13,159	-12%	9,149	22,537	146%	13,388
Elsevier	13,603	13,220	-3%	8,538	13,730	61%	5,192
Blackwell	13,494	11,264	-17%	7,512	11,421	52%	3,909
Sage	9,595	12,593	31%	8,548	11,667	36%	3,119
Springer	14,455	10,875	-25%	8,119	9,576	18%	1,457
Wiley	4,391	3,582	-18%	2,442	3,648	49%	1,206
Periodical Archive Online	2,172	1,972	-9%	1,861	2,897	56%	1,036
Project Muse	1,916	2,551	33%	1,894	2,356	24%	462
Oxford University Press	2,276	2,243	-1%	1,732	2,136	23%	404
IEEE	1,030	783	-24%	383	538	40%	155
American Chemical Society	1,014	892	-12%	688	797	16%	109
Annual Reviews	461	525	14%	259	320	24%	61
ACM Digital Library	156	1,150	637%	480	99	-79%	-381

Table 4 Difference in Full-Text Downloads by Journal Collection: 2008-2009^{ab}

	January-August			September-December			November-December		
	2008	2009	% Change	2008	2009	% Change	2008	2009	% Change
JSTOR	157,167	143,204	-9%	120,286	131,445	9%	53,761	69,849	30%
Elsevier	27,935	30,518	9%	21,671	32,730	51%	9,075	19,747	118%
Sage	23,932	24,328	2%	15,537	17,084	10%	6,473	8,467	31%
Springer	14,218	18,092	27%	10,638	14,156	33%	5,961	9,415	58%
Periodical Archive Online	3,175	1,463	-54%	2,210	2,955	34%	1,024	1,636	60%
Project Muse	6,042	8,473	40%	7,425	7,022	-5%	3,731	4,107	10%
Oxford University Press	5,473	6,187	13%	4,191	5,086	21%	1,774	2,319	31%
IEEE	1,044	950	-9%	788	427	-46%	270	146	-46%
Wiley	6,469	7,279	13%	4,656	3,737	-20%	1,599	1,686	5%
Blackwell	22,719	18,269	-20%	11,420	13,275	16%	3,864	5,358	39%
Annual Reviews	1,732	2,532	46%	1,089	1,132	4%	453	642	42%

^aACS statistics for 2008 were incomplete and excluded from this evaluation.

^bCOUNTER-compliant statistics were not available for ACM Digital Library, so it was excluded from this evaluation.