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Productivity of U.S. LIS and ischool faculty

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ABSTRACT

This examination is the latest in a series of analyses of scholarly productivity by individuals and library and information science programs and ischools (limited to those with master's programs accredited by the American Library Association). Productivity is defined as numbers of publications authored and numbers of citations received in the years 2008 through 2013. The most productive individuals according to each measure are presented. Data are also collected for institutions (by adding the publications and the citations for all of the program's full-time tenured or tenure-track faculty). The institutional data are aggregated and the most productive programs are ranked. A principal result is that both individuals and programs are responsible for many more publications and citations than in the past.

1. Introduction

For any number of purposes—ranging from the tenure and promotion decisions of individuals to the evaluation of entire institutions—counts of publications and citations to published works are recorded and reported. These empirical measures frequently accompany the results of perception studies in an effort to use as many tools as possible for evaluation. Library and information science (LIS) programs are surveyed and ranked periodically, for example, by the magazine *US News & World Report*. Programs and their institutions pay close attentions to such perception rankings and are not trivial as a component of institutional assessment. These kinds of studies are sometimes criticized for their methodology and for perpetuation of a "halo" effect (high regard and reputation outlasting the actual quality of a program at a given time). Despite criticisms, perceptions do matter and they are taken seriously.

2. Problem statement

Comparative data on publications and citations by individuals and programs allow for the detection of trends. A major reason for undertaking this kind of investigation is to examine influence, both personal and institutional, on the library and information science field. The present study addresses which individuals and which programs are producing substantial numbers of publications (influence via direct communication with potential audiences) and citations (influence via incorporation into the audiences' own communicative acts). This research augments perception studies with empirical analysis of scholarly activities that are attended to by institutional accreditation agencies and such bodies as the Association of American Universities (AAU). In short, the data on publication and citation matter both locally and beyond. As has been mentioned, a systematic assessment of effectiveness, which uses consistent criteria, can help illuminate a field's progress toward effectiveness (Adkins & Budd, 2006, p. 375).

3. Past studies

The first extensive examination of productivity in the LIS education field was conducted by Hayes (1983), who tracked activity for the period 1969–1980. Hayes's study was replicated by Budd and Seavey (1996) for the years 1981–1992. A later investigation by Budd (2000) covered a shorter period, 1993–1998 (primarily because the institutional dynamics were changing rapidly, as was the nature of scholarly communication). A fourth iteration was conducted by Adkins and Budd (2006) and covered 1999–2004. The four studies were very straightforward in data collection and analysis and very consistent in procedure. The *Social Science Citation Index*, eventually included within Web of Science©, was used to define data collection. The formal questions guiding the inquiry have not changed over the last several studies: "How productive (in terms of research and publication) are LIS [and now, to an extent, ischool] faculty members? How do productivity levels vary by rank? Who are the most productive individuals? Which are the most productive programs?" (Budd & Seavey, 1996, p. 4). The present study asks these same questions and hopes to extend the possibility for some longitudinal analysis, within certain limits.

4. Procedures

4.1. Caveats and limitations

In previous iterations of this study the *Social Science Citation Index*, available via Web of Science©, has been used to collect data regarding

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publications and citations. The author does not have access to this tool, so for this version of the investigation Scopus© has been used. To an extent, this difference renders comparison between the present study and earlier sets of data problematic. There are important differences between the two databases that inevitable have some impact on the results reported here. For example, Web of Science© states that their core collection includes over 12,000 high-impact journals and 150,000 conference proceedings (http://thomsonreuters.com/en/products-services/scholarly-scientific-research/scholarly-search-and-discovery/web-of-science-core-collection.html), which indicates substantial coverage. On the other hand, Scopus© claims to cover over 21,000 journals, 70,000 books, and 6.5 million conference papers (http://www.elsevier.com/online-tools/scopus/content-overview). As will be seen, though, the dynamics of the programs and the publication and citation data illustrate substantive differences between the recent past and the more distant past. As is mentioned above, the distinctions between the results of this study and of earlier version are dramatic when it comes to volume. There are differences in coverages between the two tools.

The greatest difference that becomes apparent with the time period covered by this study is the very nature of the programs themselves. The iCaucus, for example, originated in 2009 with the collaboration of 24 schools in North America. As of this writing there are now 65 members. It should be noted that a number of ischools do not have programs in librarianship that are accredited by the American Library Association (ALA). Again, as is mentioned above, the population here includes only the ALA-accredited programs in the United States, in keeping with the previous studies. Many of the programs included reside in ischools, but several ischools are not included in this population. The 50 ALA-accredited programs in the US form the population. The intention here is to conform as closely as possible to the populations included in the previous studies. It should also be noted that there is no assumption here that the ischools necessarily are responsible for more publications or citations by the faculty.

The reconfiguration of some schools to ischools presents some challenges for the present analysis. Some schools are still limited to ALA-accredited programs, so the dynamics of the faculty make-up has not changed substantively (although individuals have departed and arrived). In some ischools there are departments, units, or quasi-autonomous programs of library and information science (which are distinct from other degree programs that are offered within the school). In these instances, the personnel attached to that LIS unit or program form the basis for data collection and analysis here. The author's school is representative of such divisional structure, so only the faculty who are affiliated with the LIS program are counted here. At times, though, there is no apparent distinction within the school. Without any empirical foundation for isolation or omission, all of the faculty of the school are counted. In one instance, Drexel University, there has been a very recent merger with other programs; the earlier iteration of Drexel's ischool, excluding new faculty added to the school, forms the population for that school. It should be noted that Drexel now offers two doctoral programs (Computer Science and Information), which is indicative of some materials for of dichotomy within the school, which provides some further rationale for the decision to examine the pre-merger state of the school. As will be seen with the presentation of data, Drexel does not appear to suffer from the omission. It must be stated that the determination of which faculty members' publication and citation data are counted rest with the author, with some consultation with colleagues. This is done in order to be consistent with the previous studies; this means of counting was carried out in those examinations. In general, traditional LIS programs and ischools' LIS and information science programs are included. That inclusion, as will be seen, results in differences between the present findings and those of Adkins and Budd (2006).

One additional limitation of this study is that the data comprise a snapshot as of 2013 in terms of personnel and rank. Since data are not collected on a year-by-year basis, the list of personnel is taken to be representative of the given school as of that year. In order to arrive at the count, each individual's name is searched in Scopus©, and the data for the individual (stated as being affiliated with the school in question) are recorded. For example, if person X is indicated as affiliated with school Y, the publications and citations are recorded for individual X and school Y. If individual X was previously affiliated with school Z, the data for that time are recorded for school Z.

4.2. What comprises productivity?

Hardré, Beesley, Miller, and Pace (2011) provide an extensive review of productivity and both conceptual and empirical evaluations of the constitution of productivity. Teaching, research, and service are all discussed, but the literature they review is in agreement that, in research universities, research output is a necessary factor in the assessment of faculty (individually and in the aggregate). A faculty member must have research outputs, usually first in the form of publications, in order to succeed at their institutions. The insistence upon numbers of publications may be, at certain times and certain places, more explicit than tacit. For example representatives of universities may be more forthcoming with junior faculty regarding the level of productivity needed for earning tenure and promotion. Beyond that decision point, the institutions may have more less specifically stated criteria for annual reviews and/or promotion to the rank of professor. Hardré et al. (2011) indicate that productivity levels tend to be optimal when institutional expectations and individual motivation are in concert. Santo, Engstrom, Reetz, Schweinle, and Reed (2009) also review literature and reach the conclusion that the customary measure of productivity is the accumulation of published products. The definitions of productivity may not be universal (some include numbers of presentations and the dollar values of grants and contracts), but numbers of publications is a factor mentioned by almost every definer and observer of customs at research universities.

There are numerous studies that seek to measure the publication productivity of faculty in various subject fields (see, for example, Monk-Turner & Fogerty, 2010). The present study exists in a kind of tradition of those investigations of publishing activity within a number of disciplines. As is mentioned above, the database Scopus© is used here for the purposes of collecting data on faculty for publications. Since Scopus© does not include books as publications (although citations to books are included), that type of publication is not counted; this limitation is in keeping with the sources used in the previous studies, so there is some consistency that obtains throughout the series of examinations. So, productivity measures are limited to counts of journal articles and some proceedings included in the database. These measures are used both for individuals and schools. Most, but not all, of the sources included in the databases are in the category of "Social Sciences and Humanities," which numbers more than 5200 publications. The other categories of Scopus© are also searched, so an additional 18,300 publications are included. To reiterate, this source database differs from Web of Science© but there is internal consistency in the calculations of productivity, since Scopus© forms the single source for this study. The difference does affect comparisons across time, so such comparisons should be approached with care.

4.3. Data collection

In order to identify the population of individuals to be included in this investigation, the Web site of each of the ALA-accredited programs for the period 2008–2013 was searched. The full-time tenured and tenure-track faculty for each program forms the population. No adjunct or part-time instructors are counted, nor are professors of practice, teaching professors, or research professors. The individuals listed as being a member of a faculty for the period of the search are included as being faculty affiliated with that institution. This means that some individuals who departed, retired, or passed away prior to the search of the current Web site will not be included with that institution. Faculty

who have recently joined the program are counted as being part of that institution. One reason for this means of data collection is that Scopus© lists only the current affiliation for individuals. For example, if person A joined program B in 2011, the database will aggregate publications under program B's institution. It becomes extremely difficult to execute a more detailed analysis. This feature does not affect the collection of data relating to individuals, but could have some unknown impact on the reporting of institutional data.

The procedures for calculation mirror that for the Adkins and Budd (2006) study:

> The total number of publications and citations for individuals for each program are cumulated. Per capita figures are obtained by ascertaining the size (number of full-time faculty) of each program for the time period. That figure is the denominator and the total publications and citations are, respectively, the numerators (p. 376).

Further, and in keeping with previous iterations of this study, co-authored publications are counted as full credit to the author. That is, no partial credit is awarded for a co-authored publication (or co-citation). There also is no exclusion for self-citation; all citations received by any individual are counted.

5. Findings

5.1. Productivity of individuals

Data are aggregated for individuals by rank (as defined above). Table 1 illustrates the numbers of individuals in each of the three ranks, plus the percentages of those at each rank who have at least one publication and one citation to her or his credit.

The data were gathered by using the site, http://archive.org/web/, to search for the program information for the first five years of the study. By employing this method the ranks of faculty could be determined for each year and the aggregate numbers of faculty, plus the aggregate percentages of those with at least one publication and at least one citation could be determined. While the overall numbers here are lower than those in the Adkins and Budd (2006, p. 378), the percentages are considerably higher. It must be mentioned that the difference could be due to higher publication and citation rates in themselves, or the difference between the source databases.

Table 2 lists the twenty most productive individuals for the time period, ranked by numbers of publications. The affiliations of the faculty have been examined; the data represent the publications (and, in later tables, citations) of faculty while they were affiliated with the institutions that form the population of this study.

Only one individual, John Carlo Bertot, appears on the list here and the ranked list in the Adkins and Budd (2006) study. It should be noted that, in the intervening years some people have retired or otherwise left active work on faculties. A difference exists between the two lists; the one for the present study eliminates editorials and regular columns from total publications, since those kinds of publications are not peer reviewed. [N.B.: It may be that the list here does include some works that have not been peer reviewed, but there is no ready means of determining this.] A comparison of the Adkins and Budd (2006) study and the present one shows that individuals, in general, have many more publications in the more recent period. Again (and this will not be pointed out further), the difference could be due to the nature of the two databases. That said, the lack of duplication in the two lists indicates that some other factors may be in play. One of these factors may be the inclusion of different individuals across the two time periods because of the recruitment or inclusion of individuals as a result of alterations due to the formation of ischools which may have broader programmatic dynamics. Some of the more recently added individuals may come from disciplines (computer science, engineering, and others) where publication dynamics differ from traditional library and information science.

Table 1
Publication and citation productivity by rank.

Rank	Number in rank	At least one pub. (%)	At least one citation (%)
Assistant	249	73.09	59.84
Associate	238	77.31	76.47
Professor	189	79.37	80.42

Table 2
Most publications — individuals.

Rank	Number	Individual
1	119	Hu, Xiaohua Tony
2	90	Brusilowsky, Peter
3	83	Yang, Christopher
4	78	Joshi, James
5	77	Lewis, Michael
6	76	Jaeger, Paul
7	65	Karimi, Hassan
8	64	He, Daqing
9	62	Oard, Douglas
10	61	Stahl, Gerry
11 T	58	Bertot, John Carlo
11 T	58	Shah, Chirag
13 T	55	Druin, Allison
13 T	55	Lin, Jimmy
15 T	54	Hislop, Gregory
15 T	54	Sugimoto, Cassidy
17 T	50	Crowston, Kevin
17 T	50	Golbeck, Jennifer
17 T	50	Grubesic, Tony
17 T	50	Wobbrock, Jacob

One question that might arise at this time (and is reflected in the data in Table 2), is whether new or revised norms are being established for publication productivity. It should be noted that the most productive individuals distinguish themselves by virtue of relative, not normative, elements. Norms are generally established locally, by specific institutions. For example, in institution 1 the faculty as a whole is representative of mainstream social science, so the publication expectations and norms may tend to emulate other social sciences. In institution 2 the faculty may be more representative of science and engineering, so expectations and norms follow that trend. It may well be that institutions 1 and 2 cannot easily be compared directly; the distinctions in faculty background should be taken into account. Further, in institution 3 there may be a mix of faculty representing the social sciences *and* science and technology. It would be up to that institution to establish expectations based on the composition of the faculty. In short, norms are difficult to identify, much less establish. The bottom line is that the individuals listed in Table 2 have distinguished themselves.

Individuals may also be compared by the numbers of citations they receive. Table 3 presents the twenty individuals with the most citations.

Nicholas Belkin is the only person who appears in this table and in the one in Adkins and Budd (2006, p. 379). As is the case above, some individuals have retired or left active faculty work. For example, if Tefko Saracevic were still active, he would have sufficient citations to be listed in Table 3. Other individuals may have more citations than in the previous period, but not enough to be listed in the table. As is also the case with Table 2, changes in personnel may have an effect on those represented in the table. While bibliometric tests are not conducted here, the measures of productivity do follow a trend which indicates that few individuals contribute large numbers of publications and citations, while most individuals contribute few items (at times, even zero publications and citations).

Table 3
Most citations — individuals.

Rank	Number	Individual
1	1935	Brusilovsky, Peter
2	1460	Ellison, Nicole
3	1452	Preece, Jennifer
4	1278	Lewis, Michael
5	1190	Golbeck, Jennifer
6	1110	Bailey, Diane
7	1032	Chen, Chaomei
8	979	Jaeger, Paul
9	966	Ko, Andrew
10	964	Butler, Brian
11	955	Joshi, James
12	946	Belkin, Nicholas
13	918	Dedrick, Jason
14	868	Stanton, Jeffrey
15	867	Marchionini, Gary
16	843	Jacso, Peter
17	839	Gasser, Les
18	836	Crowston, Kevin
19	822	Herring, Susan
20	819	Lin, Jimmy

5.2. Productivity by program

In addition to analysis by individuals, it is possible to determine aggregate data by institutions. Table 4 illustrates the programs with the most total publications, in ranked order.

Most of the programs listed here also appeared in the Adkins and Budd (2006) study, although in different orders. For example, Maryland improved from a tie for the twentieth place in the earlier list to second in the current one. Drexel also improved from sixteenth to first. It could be that the transformation to ischools, with more inclusive personnel policies, contributes to the changes in rankings but, again, no assumptions are made regarding the membership as ischools. Other institutions, such as Pittsburgh, saw improvements in the ranking. Mirroring the increases in individual publications is the increase in aggregate institutional publications. While Indiana ranked first in the earlier list (Adkins & Budd, 2006, p. 380) with 88 publications, Drexel now ranks first with 582. Explanations stated above probably apply here. Almost all of the institutions fit into the Carnegie Classification of Research University—Very High research activity institutions, but some notable programs do not such as Drexel, Kent State, North Texas, and University of Wisconsin, Milwaukee (Research University—High research activity) and Simmons (Master's College and Universities (Larger Programs)).

In one sense, and apparently in application here, size matters. The programs with more faculty tend to be represented by having more publications. This factor is almost axiomatic; a program with twenty-five faculty is highly likely to have more publications than a program with eight faculty. For example, in this study Drexel had 29 faculty, while Missouri had 8. Even so, that program with twenty-five faculty would have to include several quite productive individuals in order to rank highly on the list in Table 4. The per capita numbers illustrate that many of the institutions with large numbers of total publications also have large numbers of per capita publications. Some of the changes in the rankings can be accounted for by programs increasing in size (such is the case with the University of Wisconsin, Milwaukee). There are few overall changes to the two lists. Queens, Hawaii, South Florida, and Wayne State appear in the list of twenty-one institutions in the Adkins and Budd (2006) study, but not the present one. Oklahoma, North Texas, and Kentucky appear in the present list of twenty programs.

Another possible institutional measure (which normalizes the effect of faculty size, to an extent) is that of per-capita publications. Table 5 presents these data.

As is the case with total publications, there are some changes in the present study from the previous one. Again, the numbers are larger for per capita publications, reflecting the overall increases in publication numbers. These per capita numbers are, perhaps, most reflective of the increase in productivity in recent years, since they demonstrate that individuals are publishing more works (probably leading to the increases in institutional publication). Five programs appear in the 2006 study, but not in the current one: Arizona, Wayne State, Texas Woman's, Iowa, and South Florida. The five new institutions that are now ranked are: Michigan, Albany, Oklahoma, Wisconsin–Madison, and Kentucky.

The next measure is total citations received by faculties at the institutions; Table 6 presents these data.

As Adkins and Budd (2006) write, “Whereas productivity alone is one measure of program prestige, the influence of faculty work is another” (p. 382). Many of the programs represented in rankings in 2006 are in the list for the present study. Three programs from the earlier examination—Simmons, Long Island, and Queens—are not included in Table 6. Three different institutions, including Hawaii, Buffalo, and Albany, are included here. As is true of other measures, the numbers listed in Table 6 are much larger than in the earlier study. Michigan remains first here, but with nearly five times the citations as in 2006. The explanations offered above may obtain here as well.

Table 4
Total publications by institution.

Rank	School	Publications
1	Drexel	582
2	Maryland	574
3	Pittsburgh	424
4	Washington	368
5	Michigan	362
6 T	Syracuse	299
6 T	Texas	299
8	North Carolina, Chapel Hill	276
9	Florida State	251
10	Wisconsin, Milwaukee	217
11	Indiana	210
12	Illinois	205
13	Rutgers	202
14	Missouri	140
15	Tennessee	139
16	Simmons	102
17	Kent State	99
18	UCLA	92
19	Oklahoma	84
20	North Texas	76

Table 5
Publications per capita by institution.

Rank	School	Publications
1	Maryland	23.92
2	Pittsburgh	20.17
3	Drexel	20.07
4	Indiana	17.50
5	Michigan	16.45
6	Washington	13.63
7	Texas	13.59
8	Rutgers	13.47
8	Florida State	13.31
10	North Carolina, Chapel Hill	11.04
11	Missouri	10.77
12	Tennessee	10.69
13	Syracuse	9.06
14	Wisconsin, Milwaukee	8.68
15	Albany	7.67
16	Oklahoma	7.64
17	Illinois	7.59
18	Wisconsin, Madison	6.89
19	UCLA	6.57
20	Kentucky	6.00

Table 6
Total number of citations by institution.

Rank	School	Number
1	Maryland	7952
2	Drexel	6454
3	Pittsburgh	6097
4	Syracuse	5945
5	Washington	5709
6	Michigan	5673
7	Illinois	4206
8	North Carolina, Chapel Hill	3785
9	Texas	3670
10	Indiana	2568
11	Florida State	2444
12	Rutgers	2390
13	Tennessee	1674
14	UCLA	1494
15	Wisconsin, Milwaukee	1463
16	Missouri	1369
17	Hawaii	1091
18	Buffalo	817
19	Albany	787
20	North Texas	730

In keeping with the previous study, the next measure is per capita citations. Table 7 illustrates these data.

It should be no surprise by now that there are some changes to the lists of rankings. Three institutions from the previous investigation are no longer ranked—Queens, Wisconsin–Milwaukee, and Long Island (Adkins & Budd, 2006, p. 383). The three programs that are now ranked are: Albany, Buffalo, and Oklahoma. There is some variation in the rankings; one thing to be noted is the increase in per capita citations by all of the ranked programs. It should be mentioned one more time that the difference could be caused, in part, by the differences in the databases used and the numbers of publications covered by Scopus©. Whereas none of the programs averaged 100 citations per capita in 2006, the top sixteen institutions exceed 100 per capita in the present study.

Tables 4 through 7 are used, as they were in the 2006 study (see Adkins & Budd, 2006) to establish cumulative program rankings. A twentieth place ranking in any category earns the program one (1) point; a first place raking earns that program twenty (20) points. The numbers in the four tables for each program are added together to arrive at the cumulative rankings. These ranking are presented in Table 8

Four programs were ranked in 2006 (Queens, Simmons, Arizona, and Catholic) that are not ranked in the current examination. The four institutions that replace them are: Texas, Albany, Oklahoma, and Buffalo. There has been some movement from 2006 to the present; the reasons for the movement are subject to some of the caveats and speculations already noted here. It has also been noted above that the present investigation (and the series of productivity studies) constitute a different kind of evaluation from perception studies. That said, the rankings presented in Table 8 can be compared, to an extent, to the rankings presented in *US News & World Report* (see, for example, http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-library-information-science-programs/library-information-science-rankings). Fifteen of the top twenty programs measured here by productivity (see Table 8) are also included in the top twenty-one (given ties for scores) in the perception rankings. The overlap does demonstrate some consistency, but the absence of some programs in perception rankings may present some cause for transcending simple perception when it comes to evaluating institutions. Also, almost all of the ranked programs in Table 8 are not ischools. This does not indicate any causality, but it is some evidence for transition among the programs.

Table 7
Per capita citations by institution.

Rank	School	Number
1	Maryland	331.33
2	Pittsburgh	234.50
3	Michigan	257.86
4	Drexel	222.55
5	Indiana	214.00
6	Washington	211.44
7	Syracuse	180.15
8	Texas	166.82
9	Rutgers	159.33
10	Illinois	155.78
11	North Carolina, Chapel Hill	151.40
12	Hawaii	136.38
13	Tennessee	128.77
14	Florida State	128.63
15	UCLA	106.71
16	Missouri	105.31
17	Albany	87.44
18	Buffalo	81.70
19	Catholic	64.29
20	Oklahoma	63.00

Table 8
Overall ranking by institution.

Rank	Score	School
1	78	Maryland (ischool)
2	74	Pittsburgh (ischool)
3 T	72	Drexel (ischool)
3 T	72	Michigan (ischool)
5	62	Washington (ischool)
6	54	Indiana (ischool)
7	53.5	Texas (ischool)
8	52.5	Syracuse (ischool)
9	47	North Carolina, Chapel Hill (ischool)
10	42	Rutgers (ischool)
11	41	Florida State (ischool)
12	38	Illinois (ischool)
13	31	Tennessee (ischool)
14	27	Missouri (ischool)
15	24	Wisconsin, Milwaukee (ischool)
16	18	UCLA (ischool)
17	13	Hawaii
18	12	Albany
19	8	Oklahoma
20	6	Buffalo

As has been noted, there have been changes in rankings over time. For the purposes of comparison, Table 9 presents the top twenty cumulative ranked institutions in the present study and the top twenty in the Adkins and Budd (2006) study. As is apparent, there are some notable changes in the rankings.

6. Discussion

There are, of course, some aspects of academic work and success that are not evaluated here. For example, the quality of instruction is not a factor that is addressed. That kind of assessment would require very different methods and would depend on multifarious elements. Also, the employment success of graduates is not included; that too would necessitate different methods. The only things measured here are publications and citations, and they are included, in large part, because they form essential components of the evaluation of individuals at research universities. Given the limitation, a few other factors should be mentioned. For the most part (though by no means exclusively), the ranked lists of individuals represent more senior scholars who have had years of experience building up scholarly records. This realization is probably even more readily reflected in the citation list. Such a dynamic should not be surprising, since time is on the side of the productive research and publisher.

The nature of the programs and the changes that have taken place in recent years deserves a bit more attention. Budd (2000) noted then that

Table 9
Overall ranking by institution (comparison of studies).

Present study		Adkins and Budd (2006)	
1	Maryland	1	Indiana
2	Pittsburgh	2	Rutgers
3 T	Drexel	3	Tennessee
3 T	Michigan	4	UCLA
5	Washington	5	North Carolina
6	Indiana	6	Illinois
7	Texas	7 T	Missouri
8	Syracuse	7 T	Syracuse
9	North Carolina	9	Washington
10	Rutgers	10	Michigan
11	Florida State	11	Florida State
12	Illinois	12	Maryland
13	Tennessee	13	Wisconsin, Milwaukee
14	Missouri	14	Pittsburgh
15	Wisconsin, Milwaukee	15	Hawaii
16	UCLA	16	Queens
17	Hawaii	17	Drexel
18	Albany	18	Simmons
19	Oklahoma	19	Arizona
20	Buffalo	20	Catholic

many LIS programs were evolving then from straightforward library and information studies schools to programs with a greater interdisciplinary element; also, there were mergers at that time that broadened the scope of schools. The alteration of schools, their personnel, and the very nature of what has morphed into ischools obviously had beginnings well before the present collection of data. With the ischool movement, though, the pace of change has accelerated and the make-up of schools has continued transformation. There has been some work in the past (see Hildreth & Koenig, 2002) on the mergers of programs, but little investigation has taken recently into the changes that have taken place. For example, it would be useful to have a better understanding of the academic backgrounds of the faculties of schools at this time. It seems evident that more faculty have degrees in fields other than LIS, but what are those other fields, and what impact have these faculty had on the scope and nature of their schools? If the numerical data presented here are an indication, the impact of the transformations may be profound.

To reiterate, "productivity" is a somewhat limited measure here. There are modes of communication—books, chapters (for the most part), blogs, Web sites, software, data sets, and other forms—that are not included in the source database. As Adkins and Budd (2006) state, "The choice of research tool has implications for the inclusive representation of LIS researchers" (p. 388). Still, the journal article remains, more or less, the coin of the realm for decisions such as tenure and promotion. The types of products included do represent the mainstream media and attributive mechanisms that all academic disciplines engage in (see, for example, Joy (2006) and Henderson (2011)).

7. Conclusion

Understanding of the scholarly activities of the faculty and institutions is still vital to gaining knowledge of behaviors of both individuals and schools, and, as such, remains important. As is mentioned above, few individuals contribute most to the production of publications and citations. Identification of the most productive of the individuals provides an indication of influence, principally direct influences, on the audiences for library and information science research. The individuals mentioned in the tables have developed records of productivity in both arenas (publication and citation), and their inclusion in the lists provide explicit acknowledgement of the accomplishments. In a similar manner, the inclusion of the institutions and their publication and citation data offer pointers to the productivity of entire programs. The tables indicate a couple of conclusions: (1) the programs that are parts of ischools tend to lead the way in productivity (although it should be noted that being in an ischool may not be a *cause* of productivity), and (2) the overall rankings suggest that, while the size of a program does have an impact on total publications and citations, smaller programs are responsible for some degree of influence as well. Taken as a whole, the present study offers indicators of productivity and influence while at the same time presenting comparative longitudinal data. It may be of special note that the results presented in this study offer the most comprehensive snapshot of the present state of productivity and influence as measured by publications and citations.

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