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## Carnegie Classifications and Institution Productivity in Information Systems Research: A Scientometric Study

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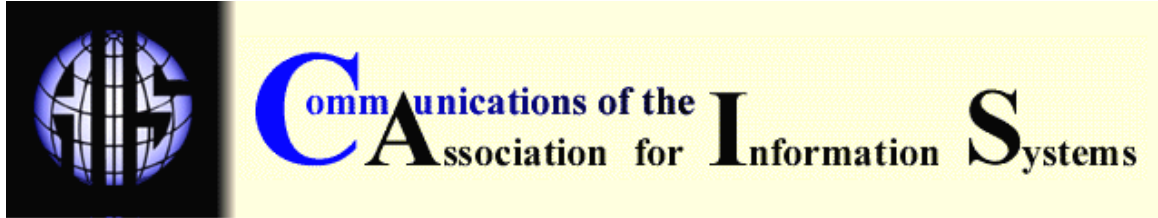
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## CARNEGIE CLASSIFICATIONS AND INSTITUTION PRODUCTIVITY IN INFORMATION SYSTEMS RESEARCH: A SCIENTOMETRIC STUDY

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### ABSTRACT

The purpose of this scientometric study is to examine which Carnegie Classification categories are represented by researchers in the leading information systems journals, determine which categories published the most in those journals, and whether different categories have different publishing patterns and frequencies. We reviewed publications from the seven leading IS journals (*CAIS*, *DSS*, *Information & Management*, *ISR*, *JAIS*, *JMIS*, and *MIS Quarterly*) during calendar years 2001 to 2005. As expected, Carnegie Classification categories designated as research universities with very high and high research activities dominated the publications in the leading journals. However, we also found that other categories were also major contributors and that there was a significant amount of collaboration across categories. Based upon our findings, we created a publication productivity profile for each of the Carnegie Classification Categories that published in the leading IS journals during calendar years 2001-2005.

**Keywords:** Carnegie Classifications; Information systems; information systems research; research productivity; academic research

### I. INTRODUCTION

The Carnegie Classification is one of the most widely recognized means for comparing U.S. colleges and universities. First published in 1973, the Carnegie Classifications were created to "be helpful to many individuals and organizations that are engaged in research on higher education" [Carnegie Commission on Higher Education 1973]. The Carnegie Foundation created categories that grouped colleges and universities according to institutional function and characteristics of their faculty and students. Historically, the Carnegie Classification has been used by researchers as a basis for evaluating a variety of issues in the higher learning industry, including cost efficiency [Robst 2001], antitrust issues in financial aids [Carlton et al. 1995], faculty time allocation [Milem et al. 2000], state appropriations and enrollments [Leslie and Ramey 1986], faculty motivation and satisfaction [Blackburn and Lawrence 1995], and salary differentials in the academic labor market [Barbezat 1987; Toutkoushian 1998]. Furthermore, many universities like to identify themselves based on how they are classified in the Carnegie listings (e.g., "We are a Research 1 university").

Since 1973, the classification has been updated five times (in 1976, 1987, 1994, 2000, and 2005) to reflect the changes that occurred in the higher learning landscape, both in the constellation of institutions and within the institutions themselves [McCormick and Zhao 2005]. The 2005 version includes a set of multiple parallel classifications, replacing the single classification system in the previous editions.

The Carnegie Foundation very clearly stresses that the university listings are a classification, and not a ranking. They do not assess quality of the institutions. Instead, the Carnegie Foundation focuses on the characteristics of the university. The 2005 Carnegie Classifications are significantly different from prior classifications.

The 2000 edition had 18 classifications, based primarily on what is taught, and the degree of graduate level involvement. The classifications included 2 doctoral/research, 2 masters, 3 baccalaureate, 1 associate, 9 specialized institutions, and 1 tribal [McCormick and Zhao 2005; Carnegie Foundation for the Advancement of Teaching 2000]. Universities with multiple doctoral programs (annually awarding 50 or more doctoral degrees from within at least 15 disciplines) were classified as *Doctoral/Research Universities – Extensive* (commonly referred to as Research 1 by the academic community). Universities that awarded at least 20 doctoral degrees overall, or 10 degrees across three or more disciplines, were classified as *Doctoral/Research Universities – Intensive* (commonly referred to as Research 2).

The Carnegie Foundation based the 2005 classifications on three major questions: “What is taught? To whom? In what setting?” [Carnegie Classification FAQs 2006]. This edition of the Carnegie Classifications has 33 categories: 3 doctoral/research (categories 15-17), 3 masters (categories 18-20), 3 baccalaureate (categories 21-23), 14 associates (categories 1-14), 9 specialized (categories 24-32), and 1 tribal institution (category 33). Classifications are based on, among other considerations, the level of undergraduate degrees awarded (associate or bachelor), the level of graduate degrees awarded (master/professional or doctoral), the proportion of bachelor’s degree majors in the arts and sciences and in professional fields, the extent to which an institution awards graduate degrees in the same fields in which it awards undergraduate degrees, the proportion of students who attend part- or full-time, achievement characteristics of first-year students, the proportion of entering students who transfer in from another institution, the number of fields represented by the degrees awarded, the mix or concentration of degrees by broad disciplinary domain, the distribution of full-time equivalent students across the undergraduate and graduate levels, and institutional size [Basic Classification Technical Details 2006].

The Carnegie Foundation does not classify institutions based on teaching quality. They suggest that this is best done at the department or classroom level rather than at the institutional level. They also do not assess the quality of research. Instead, they focus on the amount of research produced. Prior to the 2005 edition, federal funding was the sole basis for determining research activity. The new edition has dropped the federal funding factor and now uses a multi-measure index for determining research activity. The two primary indices are aggregate level and per-capita research activity. Doctoral/research institutions that scored *very high* on one or both of these indices were designated as “Research Universities with *very high* research activity” (Category 15); those that scored *high*, but not *very high*, on one or both of these indices were designated “Research Universities with *high* research activity” (Category 16); those that did not score *high* or *very high* on either index were designated “Doctoral/Research University” (Category 17) [Basic Classification Technical Details 2006]. The master’s universities (Categories 18, 19, and 20) may award both masters and doctoral degrees; however, their level of research activity and/or number of doctoral degrees awarded is less than those institutions in Categories 15, 16, or 17.

In the area of information systems (IS) research productivity, we have not seen any literature that ties IS researchers and their publication records with how their institutions fare in the Carnegie Classification, despite the fact that some of the categories in the classification are based on attributes related to research activities. Naturally, it should be of interest to our IS research

community to see if these categorizations are at all relevant. For example, they should be interested in whether IS researchers in the institutions categorized as “Research Universities with *very high* research activity” have been more productive than those in the “Research Universities with *high* research activity,” and whether there is a significant difference in IS research productivity between the “Research Universities” and the other categories. They may also be interested in the publication pattern of institutions in different Carnegie Classifications. For example, do universities within the same classification publish in the same journals, and as often?

Consequently, we conducted a scientometric study to determine if there is a relationship between the Carnegie Classifications and the universities which publish in the leading IS journals. Scientometrics is the quantitative investigation of the scientific process. It includes, but is not limited to, methods of evaluating journals and measuring the scientific impact of research and researchers [Davis 2001]. Scientometrics is also referred to as “research-on-research” [Straub 2006, p. 241]. In Information Systems, scientometric research has focused primarily on assessing the prestige of specific journals and research productivity of individuals [Chua et al. 2002]. Our focus is on research productivity at the institutional level, rather than the individual level.

Generally, universities with a research focus have greater research expectations and provide their faculty with greater research assistance and fewer teaching requirements than those universities with a teaching focus. The following research questions were addressed:

- What Carnegie Classification categories are represented by researchers who publish in the leading IS journals?
- Which Carnegie Classification institutions publish the most in the leading IS journals?
- Do institutions from different Carnegie Classification categories have different publishing patterns? Do they publish in the same journals? Is their publishing frequency similar?
- Can we establish a publication productivity profile for the Carnegie Classification institutions that publish in the leading IS journals?

## II. METHODOLOGY

In determining the leading IS journals, we relied upon the list of publications detailed in our previous paper [Clark and Warren 2006]. This list was based on a composite ranking of “pure IS” journals from former publications [Rainer and Miller 2005; Lowry et al. 2004; Peffers and Tang 2003; Mylonopoulos and Theoharakis 2001]. Each of these publications is listed on the *ISWorld* journal ranking web site [Saunders 2006] and classifies journals by discipline(s) of focus and/or rank according to popularity. Since we were interested in recent research, we focused on journal rankings published since 2000.

Rainer and Miller [2005] and Peffers and Tang [2003] identified and ranked journals which published “pure” IS research. Lowry, Romans, and Curtis [2004] and Mylonopoulos and Theoharakis [2001] ranked journals according to popularity. Table 1 lists the top ten top ranked IS journals from each of the publication surveys. Five journals (*MIS Quarterly*, *Information Systems Research*, *Journal of Management Information Systems*, *Decision Support Systems*, and *Information & Management*) ranked among the top ten “pure IS” journals in each of the studies. We also included *Communications of the Association for Information Systems* and *Journal of the Association for Information Systems*. They were included because 1) they are both published by AIS; 2) anecdotal evidence shows strong support and respect within the IS community; and 3) although relatively new publications, they were both ranked in the top 10 at least 50 percent of the time.

Note that although *DataBase*, *EJIS*, and *ISJ* were ranked equivalent to, or better, than either *CAIS* or *J AIS*, they were not included in the study. *CAIS* and *J AIS* would probably be much better represented if the same studies were conducted today, primarily because of the age of the

journals at the time these studies were conducted. The journal rankings used in this study were published between 2001 and 2005, and data collection was presumably earlier. *CAIS* was first published in 1999, and *J AIS* in 2000. Conversely, *DataBase* has been in publication since 1969, and *EJIS* and *ISJ* since 1990. Therefore, the “newness” of both *CAIS* and *J AIS* could be major contributing factors for their lack of representation on all rankings.

Our dataset consists of publications in the seven leading IS journals during the calendar years 2001-2005. The seven leading IS journals were identified as (in alphabetical order): *Communications of the Association for Information Systems* (*CAIS*), *Decision Support System* (*DSS*), *Information and Management* (*I&M*), *Information Systems Research* (*ISR*), *Journal of the Association for Information Systems* (*J AIS*), *Journal of Management Information Systems* (*JMIS*), and *MIS Quarterly* (*MISQ*). We reviewed the articles appearing in these journals during calendar years 2001 to 2005 and collected data pertaining to the articles and authors published during that time. We did not include letters to the editor or editorial notes. Chua et al. [2002] compared researcher productivity to a Poisson distribution. A researcher may publish several articles one year, and nothing the next. This may be attributed to a variety of causes, such as impending tenure, extended review or revision periods, publication queues, etc. The year 2001 was the first year in which all journals in our sample published a full year of articles. The period of 2001-2005 therefore accounts for variability in publication rates.

Table 1. Rank Order of “Pure IS” Journals

Rainer and Miller 2005	Peffer and Tang 2003	Lowry, Romans and Curtis 2004	Mylonopoulos and Theoharakis 2001
MISQ	MISQ	MISQ	MISQ
ISR	ISR	ISR	ISR
JMIS	JMIS	JMIS	JMIS
DSS	EJIS	DSS	DSS
I&M	I&M	<u>J AIS</u>	I&M
EJIS	<u>CAIS</u>	I&M	DB
JDBA	DSS	JCIS	EJIS
<u>CAIS</u>	DB	JIS	<u>CAIS</u>
JIM	<u>J AIS</u>	DB	ISJ
JSIS	ISJ	ISJ	JSIS

For each article published, we collected the following: name and number of authors per article; journal name, issue, and year; author affiliation, rank, degree-granting institution (if Ph.D.) and year graduated; and Carnegie classification of the current and Ph.D. granting university. If author information was not available within the journal, we searched other areas (university Web sites, ISWorld, dissertation abstracts, publication databases, etc.).

Of the 1,486 articles published in the leading IS journals during calendar years 2001-2005, 1,036 articles are associated with one or more Carnegie Classification institutions. That represents 70 percent of the publications during that time frame. Note that the Carnegie Foundation only classifies institutions within the United States and its dependent areas (e.g., Guam and Puerto Rico). A total of 1,384 U.S.-based authors contributed toward these publications: 1,242 are Carnegie Classification institution affiliates, 134 are affiliated with an industry within the United

States, and 8 are affiliated with U.S. academic institutions that are not classified by the Carnegie Foundation.

Out of the 33 categories in the Carnegie Basic Classification, 10 were represented in our dataset. A total of 287 Carnegie Classification schools are represented in those 10 categories. They are detailed in Table 2. Note that Carnegie Classification Categories 15 and 16 had the greatest percentage representation (81 percent and 74 percent respectively). This was to be expected, since these represent the universities with the highest research activity. We actually expected greater representation from Categories 15 and 16. However, of the 45 institutions not in our dataset, 11 have no business college, school, or division; 10 do not have an IS department or division; and 18 have few (less than six) IS faculty with doctoral degrees. Only six of these institutions have six or more faculty with doctoral degrees teaching IS courses. However, when further researching these departments/divisions, five of them do not teach "mainstream IS." Their focus appears to be more toward the computer or decision sciences.

Table 2. Carnegie Class Institutions with Publications in the Leading IS Journals (2001-2005)

Classification Category	Descriptions	Total	Percent Represented
5	Public urban associates degree	1	1/97 = 1%
15	RU very high research activity	78	78/96 = 81%
16	RU high research activity	76	76/103 = 74%
17	Doctoral/research universities (RU)	31	31/84 = 37%
18	Masters – large programs	77	77/350 = 22%
19	Masters – medium programs	9	9/198 = 5%
20	Masters – smaller programs	1	1/141 = 1%
21	Baccalaureate arts & sciences	6	6/274 = 2%
22	Baccalaureate diverse fields	7	7/345 = 2%
29	Schools of business and management	1	1/65 = 2%

### III. FINDINGS AND DISCUSSION

We next discuss our findings to address our research questions. We will look at which of the different Carnegie Classification categories are represented in the leading IS journals, which Carnegie Classification institutions published the most in those IS journals, what kind of publishing patterns the different Carnegie Classification categories have, and the publication productivity profile of each of the institutions.

#### CARNEGIE CLASSIFICATION LEVELS REPRESENTED

Table 3 shows the number of articles published by each of the seven leading IS journals during calendar years 2001-2005, along with the number and percentages of articles credited to one or more Carnegie Classification Affiliates. Note that some of these articles by one or more affiliates may have also been co-authored by someone not affiliated with a Carnegie Classification institution. Table 3 shows the numbers in percentages. As shown, the Carnegie Classification institutions have the highest average percentage representation in ISR, followed by MISQ, JMIS, JAIS, and CAIS. Note that Student's t-test results indicate that the averages in these five journals are not significantly different.



Table 3. Publications by Carnegie Classification Affiliates

Journal	CCA/TOT 2001	CCA/TOT 2002	CCA/TOT 2003	CCA/TOT 2004	CCA/TOT 2005	CCA/TOT 2001-2005
CAIS	47/63 (74.60%)	53/62 (85.48%)	65/91 (71.43%)	53/71 (74.65%)	71/93 (76.34%)	289/380 (76.05%)
DSS	36/55 (65.45%)	26/42 (61.90%)	35/66 (53.03%)	42/83 (50.60%)	62/105 (59.05%)	201/351 (57.26%)
I&M	30/49 (61.22%)	23/46 (50%)	38/73 (52.05%)	41/72 (56.94%)	26/61 (42.62%)	158/301 (52.49%)
ISR	19/23 (82.61%)	21/24 (87.5%)	14/16 (87.5%)	20/20 (100%)	20/21 (95.24%)	94/104 (90.38%)
JAIS	7/8 (87.5%)	4/7 (57.14%)	12/16 (75%)	15/18 (83.33%)	12/14 (85.71%)	50/63 (79.37%)
JMIS	26/35 (74.29%)	28/36 (77.78%)	29/34 (85.29%)	34/35 (97.14%)	36/42 (85.71%)	153/182 (84.07%)
MISQ	14/16 (87.5%)	15/17 (88.24%)	20/22 (90.91%)	20/24 (83.33%)	22/26 (84.62%)	91/105 (86.67%)
<b>Total</b>	180/249 (72.29%)	169/234 (72.22%)	213/318 (66.98%)	226/323 (69.97%)	248/362 (68.51%)	1036/1486 (69.72%)

Note: CCA/TOT = ratio of articles by one or more Carnegie Classification Affiliates/total number of articles published.

To determine the degree of impact from each of the Carnegie Classifications, we calculated the number of full and partial article credits associated with each of the classifications in the data set (see Table 4). We defined a *Classification Category Article Credit* as each article in which one or more institutions from a given Carnegie Classification category has published. If one or more researchers from the same Carnegie Classification category co-authored a paper, that category would receive one credit. However, if one or more researchers from different Carnegie Classification categories co-authored a paper, each of the categories represented would receive a *Classification Category Article Credit*. Note that although the Carnegie Classification institutions contributed toward 1,036 articles, their *Classification Category Article Credits* are 1,394. This is because researchers from multiple Carnegie Classification categories co-authored articles.

A *Classification Category Partial Article Credit* was determined based on the number of authors for a given article. If two authors wrote the article, each author received .50 credits. If three authors, each author received .33 credits, and so on. Prior researchers [e.g. Lindsey 1980; Eom 1994; Im et al. 1998; Athey and Plotnickey 2002; Huang and Hsu 2005; Clark and Warren 2006] have used this method of partial credit when investigating research productivity.

A *Classification Category Author Contribution* was defined as the number of times an author from a Carnegie Classification category contributed (either author or co-author) toward a publication.

Authors received one contribution credit for each article published in the leading IS journals during calendar years 2001-2005.

Table 4. Carnegie Classification Category Representation in the leading IS Journals

Carnegie Classification Category	Number Of Schools	Classification Category Article Credits	Classification Category Partial Article Credits	Classification Category Author Contributions
5	1	1	0.25	1
15	78	603	428.38	1079
16	76	459	285.64	717
17	31	95	60.54	121
18	77	200	112.14	253
19	9	19	11.24	21
20	1	1	1.00	1
21	6	6	2.41	6
22	7	8	4.40	10
29	1	2	1.33	2
<b>Total</b>	<b>287</b>	<b>1394</b>	<b>907.33</b>	<b>2211</b>

As expected, Carnegie Classification Categories 15 and 16 were responsible for the majority of Classification Category Article Credits (76 percent), Classification Category Partial Article Credits (79 percent), and Classification Category Author Contributions (81 percent). We were surprised to see that Category 18 (large masters programs) exceeded Category 17 (doctoral/research universities). However, the Category 18 institution representation is significantly larger (77 vs. 31). Institutions are dynamic, with changing characteristics of their students, faculty, and programs, whereas the Carnegie Classifications are based on a “snapshot” of an institution at a given point in time. The 2005 Classifications are based on data collected during 2004. We expect the next Carnegie Classification edition to list some of the current Category 18 institutions in one of the doctoral/research classifications.

We also were surprised to see that researchers from an associate level institution (Category 5) published in the leading IS journals. Their contribution is small, but they are to be commended.

We further refined this study of research contribution by determining the *Classification Category Article Credits* (see Table 5) and *Classification Category Partial Article Credits* (see Table 6) and relative contributions per journal. As shown, Categories 15 and 16 dominate the publications in each of the seven leading IS journals. This domination is apparent in regard to both Classification Category Article Credits and Classification Category Partial Credits. Category 15 institutions have the highest Classification Article Credits in DSS, ISR, JAIS, JMIS, and MIS, whereas Category 18 institutions have the highest in CAIS and I&M. Furthermore, Category 15 institutions have the highest Classification Category Partial Credits in DSS, ISR, JMIS, and MISQ, whereas Category 16 institutions have the highest in CAIS, I&M, and JAIS. This adds credence to the journals in the Clark and Warren [2006] dataset being the leading IS journals. Another interesting finding is that Category 18 outperformed Category 17 in both Classification Category Article Credits and Classification Category Partial Credits in every journal. This is despite the fact



that Category 18 institutions are only classified as large masters programs and Category 17 institutions are classified as doctoral/research universities.

Table 5. Carnegie Classification Category Article Credits Based on Class and Journal

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ
5		1 (0.39%)					
15	114 (29.84%)	147 (57.87%)	57 (24.67%)	72 (60.50%)	28 (40%)	110 (52.88%)	75 (57.79%)
16	136 (35.61%)	65 (25.59%)	93 (40.26%)	36 (30.35%)	27 (38.67%)	65 (31.25%)	37 (28.46%)
17	36 (9.42%)	13 (5.12%)	25 (10.82%)	3 (2.52%)	2 (2.86%)	11 (5.29%)	5 (3.85%)
18	82 (21.47%)	21 (8.27%)	48 (20.78%)	7 (5.88%)	10 (14.29%)	21 (10.10%)	11 (8.46%)
19	10 (2.62%)	1 (0.39%)	4 (1.73%)		1 (1.43%)	1 (0.48%)	2 (1.54%)
20	1 (0.26%)						
21	1 (0.26%)	3 (1.18%)	1 (0.43%)		1 (1.43%)		
22	2 (0.52%)	3 (1.18%)	1 (0.43%)	1 (0.84%)	1 (1.43%)		
29			2 (0.87%)				
<b>Total</b>	<b>382</b>	<b>254</b>	<b>231</b>	<b>119</b>	<b>70</b>	<b>208</b>	<b>130</b>

Table 6. Carnegie Classification Category Partial Credits Based on Class and Journal

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ
5		0.25 (0.15%)					
15	76.484 (29.72%)	106.02 (62.48%)	34.66 (25.80%)	57.75 (68.62%)	18.06 (41.16%)	81.58 (58.91%)	53.83 (67.74%)
16	89.011 (34.59%)	42.89 (25.28%)	54.36 (40.47%)	21.83 (25.94%)	18.17 (41.41%)	41.141 (29.71%)	18.24 (22.95%)
17	26.835 (10.43%)	7.27 (4.28%)	15.83 (11.79%)	1.5 (1.78%)	1.33 (3.03%)	5.61 (4.05%)	2.16 (2.72%)
18	54.688 (21.25%)	10.5 (6.19%)	24.73 (18.41%)	2.75 (3.27%)	5.33 (12.15%)	9.66 (6.98%)	4.48 (5.64%)
19	6.83 (2.65%)	0.5 (0.29%)	2.33 (1.73%)		0.33 (0.75%)	0.5 (0.36%)	0.75 (0.94%)
20	1 (0.39%)						
21	0.5 (0.19%)	1.25 (0.74%)	0.33 (0.25%)		0.33 (0.75%)		
22	2 (0.78%)	0.99 (0.58%)	0.75 (0.56%)	0.33 (0.39%)	0.33 (0.75%)		
29			1.33				

			(0.99%)				
<b>Total</b>	257.348	169.67	134.32	84.16	43.88	138.491	79.46

**CARNEGIE CLASSIFICATION INSTITUTIONS REPRESENTED**

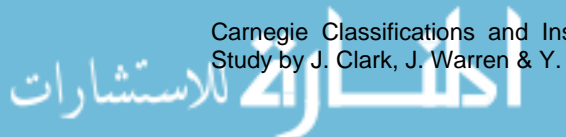
Table 7 provides a further breakdown of the Carnegie Classification categories, based on the number of institutions within each category, and the number of full and partial articles credited to each institution within each category. Institutional Partial Credits was defined as the total number of partial credits allocated to institutions within a given Carnegie Classification Category. For example, if an article had two co-authors, one from Category 15 and one from Category 16, Categories 15 and 16 would each receive a partial credit of .50 for that given article. *Institutional Article Credits* was defined as the total number of credits allocated to institutions within a given Carnegie Classification category. For example, if an article is co-authored by researchers within the same institution, that institution is credited with one *Institutional Article Credit*. If an article is co-authored by two or more researchers from different institutions (regardless of their Carnegie Classification category), each institution receives one *Institutional Article Credit*. *Classification Category Institution Contributions* was defined as the number of times an institution from a Carnegie Classification category contributed (either author or co-author) toward a publication. Note that Classification Category 15 had the highest values in all columns denoting article credits. Please refer to Appendix A for a breakdown of article credits during calendar years 2001-2005 for each of the seven leading IS journals.

Overall, the 287 Carnegie Classification institutions contributed toward 1,036 articles and received 1,394 Classification Category Article Credits and 1,733 Institutional Article Credits. Of the 287 institutions in our dataset, there were 795 contributions toward the 1,036 publications. These figures denote co-authoring among the affiliates.

Table 7. Article Contributions by Institutions within Each Classification Category

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions	Classification Category Institution Contributions
5	1	0.25	1	1	1
15	603	428.384	824	78	326
16	459	285.642	559	76	252
17	95	60.535	97	31	56
18	200	112.138	216	77	132
19	19	11.24	19	9	13
20	1	1	1	1	1
21	6	2.41	6	6	6
22	8	4.4	8	7	7
29	2	1.33	2	1	1
<b>Total</b>	1394	907.329	1733	287	795

The ratio of Classification Category Institution Article Credits per Number of Institutions Contributing can be used to indicate the average productivity level of the contributing institutions



within each category. As shown in Table 8, the overall ratio of articles per institution is 6.04. This means that, on average, Carnegie Classification institutions published 6.04 articles in the leading IS journals during calendar years 2001-2005. Category 15 has the highest ratio of 10.56, followed by Category 16 (7.36), Category 17 (3.13), Category 18 (2.81), Category 29 (2.0), Category 19 (2.11), and Category 22 (1.14). All the remaining classes in our list have a ratio of 1.00, which means that every institution within those categories is credited with only one article. We should also note that only Categories 15 and 16 have a ratio that is above the overall ratio of 6.04. This again suggests that those two categories were the most productive. The institutions with the highest number of publications in a given journal are listed in Table 9. The range of journal publications credited to unique institutions within a given Carnegie Classification Category is shown in Appendix B.

Table 8. Ratio of Institutional Article Credits per Number of Institutions Contributing

Classification Category	Institutional Article Credits (A)	Number of Institutions Contributing (B)	Ratio A/B
5	1	1	1.00
15	824	78	10.56
16	559	76	7.36
17	97	31	3.13
18	216	77	2.81
19	19	9	2.11
20	1	1	1.00
21	6	6	1.00
22	8	7	1.14
29	2	1	2.00
<b>Total</b>	1733	287	6.04

Table 9. Universities with Greatest Number of Publications in a Given Journal

Class	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ
Georgia State University	21			8			
University of Arizona		15					
University of Central Florida			8				
University of Minnesota						15	
University of Oklahoma							9
Washington State University					5		

Table 10 shows the number of distinct institutions, per Carnegie Classification category, that published in the leading IS journals during calendar years 2001-2005. As shown, the lowest number of Carnegie Classification institutions published in JAIS, and the greatest number

published in *CAIS*. However, as noted in Table 3, there were far fewer *J AIS* publications (63) than *CAIS* publications (380) during calendar years 2001-2005.

Table 10. Carnegie Classification Institution Publishing Outlets

ClassificationCategory	CAIS	DSS	I&M	ISR	J AIS	JMIS	MISQ	Total
5		1						1
15	48	62	44	44	27	55	46	326
16	52	42	52	24	24	42	16	252
17	14	11	17	1	2	7	4	56
18	41	19	32	6	9	15	10	132
19	5	1	3		1	1	2	13
20	1							1
21	1	3	1		1			6
22	1	3	1	1	1			7
29			1					1
<b>Total</b>	163	142	151	76	65	120	78	795

Appendix C lists the institutions (by Carnegie Classification category) that have met or exceeded the average article count of one or more journal publications. Each Carnegie Classification label lists the average Institutional Article Count (Classification Category Count divided by the number of institutions publishing in a given journal). The Overall Average column is equal to the Classification Category Article Count divided by the total number of institutions in that category that published in the leading IS journals. Institutions are listed in rank order, according to the highest Overall Average score. Only values that meet or exceed the average for any column are displayed. Institutions which published in the leading IS journals, but did not meet or exceed the Classification Category Article Credit average for any of the journals, or the Overall Average, were not listed.

The institutions with the five highest Overall Average Institutional Article Credits are Georgia State University, University of Minnesota, Indiana University, The University of Texas at Austin, University of Arizona, and University of Georgia. All except for Georgia State University (Classification Category 16) were Category 15 institutions. No institutions in any of the Carnegie Classification categories met or exceeded the average Classification Category Article count for each journal.

Appendix D lists the institutions (by Carnegie Classification category) that have met or exceeded the average partial count of one or more journal publications. Each Carnegie Classification label lists the average Institutional Partial Count (Classification Category Partial Count divided by the number of institutions publishing in a given journal) for each journal. The Overall Average column is equal to the Classification Category Partial Count divided by the total number of institutions in that category that published in the leading IS journals. Only values that met or exceeded the average for any column are displayed. Institutions that published in the leading IS journals, but did not meet or exceed the Classification Category Partial Credit average for any of the journals, or the Overall Average, were not listed.

As shown in Appendix D, Georgia State University (Category 16) has the greatest overall scores. It is the only institution in any Carnegie Classification Category to have exceeded the average Classification Category Partial Count for each journal. College of Lake County is the only Associate level institution to have published in the leading IS journals. University of Richmond (Category 20) and Babson College (Category 29) are also the only institutions represented within their Classification category.

The institutions with the five highest Institutional Partial Credit values were Georgia State University (Category 16), University of Minnesota (Category 15), University of Arizona (Category 15), Indiana University (Category 15), and University of San Francisco (Category 17).

Four of the institutions which had the highest overall average Institutional Partial Credit values for their category had values more than 100% greater than the next institution in that category. These include Georgia State University (Category 16), University of San Francisco (Category 17), Bentley College (Category 18), and Pennsylvania State University – Penn. State Erie (Category 22).

**PUBLICATION PRODUCTIVITY PROFILE FOR CARNEGIE CLASSIFICATION CATEGORIES**

As shown in Table 11, all Carnegie Classification categories do not publish in each of the leading IS journals. Furthermore, there is a wide variance in the percent of publications per journal per Carnegie Classification category. As shown in Appendix C and D, expecting institutions in each category to publish the average number of articles per journal per category is not reasonable. Georgia State University was the only institution able to meet that standard in terms of Institutional Partial Credit. No university was able to meet that standard in terms of Institutional Article Credit. Therefore, we propose a publication productivity profile based on the Average Classification Category Credits (full or partial) times the percent of publications (full or partial) for a given journal.

Using the publication percentages in Table 11 and the Average Classification Category *Article* Credits in Appendix C, the Article Publication Productivity Profile for each Carnegie Classification category is shown in Table 12. Allowing for round-off, the “Total” values in the last column of Table 27 closely resemble the Overall Average values for each Carnegie Classification Category in Table Appendix C.

Table 11. Allocation, by Carnegie Classification Category, of publications in the leading IS journals

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ
5		100%					
15	18.91%	24.38%	9.45%	11.94%	4.64%	18.24%	12.44%
16	29.63%	14.16%	20.26%	7.84%	5.88%	14.16%	8.06%
17	37.89%	13.68%	26.32%	3.16%	2.11%	11.58%	5.26%
18	41.0%	10.5%	24.0%	3.62%	5.50%	10.5%	5.50%
19	52.63%	5.26%	21.05%		5.26%	5.26%	10.53%
20	100%						
21	16.67%	50.00%	16.67%		16.67%		
22	25.00%	37.50%	12.50%	12.50%	12.50%		
29			100%				

As shown, Classification Category 15 has the greatest publication expectations (partial count of 10.56 leading publications over five years), followed by Classification Category 16 (partial count of 7.36 publications over 5 years). Note that categories 15 and 16 also have the greatest publication requirements for each journal.

Table 12. Publication Productivity Profile Based on Overall Average Classification Category  
*Article Count and Percent*

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ	Total
5		1.000						1.00
15	1.997	2.575	0.998	1.261	0.490	1.926	1.314	10.560
16	2.181	1.042	1.491	0.577	0.433	1.042	0.593	7.359
17	1.186	0.428	0.824	0.099	0.066	0.362	0.165	3.130
18	1.152	0.295	0.674	0.102	0.155	0.295	0.155	2.827
19	1.110	0.111	0.444		0.111	0.111	0.222	2.110
20	1.000							1.000
21	0.167	0.500	0.167		0.167			1.000
22	0.285	0.428	0.143	0.143	0.143			1.140
29			2.000					2.000

Using the partial publication percentages in Table 13 and the Average Classification Category *Partial Article Credits* in Appendix D, the Partial Article Publication Productivity Profile for each Carnegie Classification category was calculated and the results are shown in Table 14. Allowing for round-off, the 'Total' values in the last column of Table 14 closely resemble the Overall Average values for each Carnegie Classification category in Appendix D. We had expected the average number of leading publications per institution per category to have been higher. However, there is wide variance among and within the categories.

Table 13. Allocation, by Carnegie Classification Category, of Partial Publications in the Leading IS Journals

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ
5		100.00%					
15	17.85%	24.75%	8.09%	13.48%	4.22%	19.04%	12.57%
16	31.16%	15.02%	19.03%	7.64%	6.36%	14.40%	6.39%
17	44.33%	12.01%	26.15%	2.48%	2.20%	9.27%	3.57%
18	48.77%	9.36%	22.05%	2.45%	4.75%	8.61%	4.00%
19	60.77%	4.45%	20.73%		2.94%	4.45%	6.67%
20	100.00%						
21	20.75%	51.87%	13.69%		13.69%		
22	45.45%	22.50%	17.05%	7.50%	7.50%		



29			100.00%				
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These publication productivity profiles are provided only as guidelines. Obviously, some institutions may focus more heavily on one or more journals. If so, they can adjust their profile accordingly. We contend that individual institutions are far better at ranking journals based on their specific characteristics. Also, these profiles are based on historical data. Institutions may move from one category to another, they may become more or less productive, or the “basket” of leading IS journals may change.

#### IV. CONCLUSIONS

This study contributes to scientometric research in that it looks at researcher and institution productivity in the leading pure IS journals. Our study was based on research conducted by the Carnegie Classification institutions. We believe that this is the first study that focuses on pure-IS research productivity and its association with the new Carnegie Classifications.

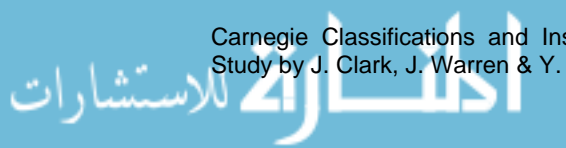
Table 14. Publication Productivity Profile Based on Overall Average Classification Category  
*Partial Article Count and Percent*

Classification Category	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ	Total
5		0.250						0.250
15	0.981	1.359	0.444	0.740	0.232	1.046	0.690	5.492
16	1.171	0.564	0.715	0.287	0.239	0.541	0.240	3.758
17	0.865	0.234	0.510	0.048	0.043	0.181	0.070	1.952
18	0.712	0.137	0.322	0.036	0.069	0.126	0.058	1.460
19	0.758	0.056	0.259		0.037	0.056	0.083	1.248
20	1.000							1.000
21	0.083	0.208	0.055		0.055			0.401
22	0.285	0.141	0.107	0.047	0.047			0.628
29			1.330					1.330

The results of our study confirm the relevance of the Carnegie Classification to the information systems research community. Research institutions with very high (Category 15) and high (Category 16) Carnegie Classifications had the highest publication rates in the leading IS journals.

Our study also shows that publishing in the leading IS journals was not exclusive to institutions in the very high or high research categories. Although other categories also contributed, there was a significant amount of collaboration among the different categories, especially with researchers from Categories 15 and 16 institutions. For example, of the 254 articles published by Category 18, 50% were in collaboration with researchers from Category 15 and/or 16.

Our Publication Productivity Profile provides current scientometric results for institutions that wish to establish specific publication expectations and requirements of their IS faculty. Chua et al. [2002] suggest that institutions create journal lists targeted toward their strengths and future objectives. We agree. However, institutions in each of the Carnegie Classification Categories that publish in the leading IS journals can use these results as a benchmark by reviewing the



performance of their peer institutions. Note that the Publication Productivity Profile is based on publications per institution. Institutions with smaller departments should have lower expectations of their faculty, whereas institutions with larger departments should have greater expectations. This could help to assure that IS scholars are treated fairly during the tenure and promotion process, creating a "level playing ground" [Dennis et al. 2006; Kozar et al. 2006] both within and among Carnegie Classification Categories. University faculty members and tenure committee members may find this study to be beneficial because it may provide insights that can guide them in their tenure and promotion decisions in two ways: First, institutions that desire to evaluate faculty members they are considering for tenure can use the results of this study to compare their research productivity with similar Carnegie Classification institutions. Second, institutions that are trying to move up in their classification can focus on the research profile of their target classification and evaluate their faculty accordingly. Thus, our study provides institutions in each classification category with an additional tool for establishing reasonable expectations of their faculty's performance in research and publication. This is in line with Lowry et al. [2004] who advocate the use of multiple evaluation techniques.

### LIMITATIONS

A main limitation of this research is the small set of journals included in the study. Although the journals have been carefully selected based on the results of previous studies, including more journals in the "basket" would likely provide a more comprehensive picture of the IS publication landscape in conjunction with the Carnegie Classifications. Furthermore, our focus is on "pure IS journals," which does not include highly respected journals such as *Management Science*, which publishes research in several areas, including IS. However, we contend that if Information Systems is to remain a distinct research field, the IS researchers should focus their publications in IS journals, as opposed to those geared toward other fields.

Two of the leading European IS journals, *EJIS* and *ISJ*, were not included in our study. They were not listed in all four journal rankings utilized to determine the leading IS journals, and unlike *CAIS* and *JAIS*, we did not consider their publication age a factor in preventing their inclusion in each of these journal rankings. It is also important to note that the purpose of this study is to report research productivity for Carnegie Classification Institutions. Since the Carnegie Foundation only classifies institutions within the United States and its dependent areas, and since *EJIS* and *ISJ* cater primarily to European researchers, they are not included.

Previous researchers have used citation indexes in their analyses of journal rankings and researcher productivity. However, we maintain that the citation indexes do not fully reflect the impact of relatively new, highly regarded journals (e.g., *CAIS*, *JAIS*). There is usually not enough citation data available to provide an adequate evaluation because of the two-year time lag between the citation and the date of publication (Barnes 2005; Cooper et al. 1993).

### FUTURE RESEARCH POSSIBILITIES

Future research can include a survey that studies the preferred and target journals of IS researchers in each Carnegie Classification category for publishing their research based on the tenure and promotion requirements of the institutions with which they are affiliated. The results from this kind of survey will include a publication productivity profile that indicates the needs and desires of IS researchers from each institution to publish in particular journals. This can then be compared with the actual publication records of the institutions in each category in the journals. This should reveal the success rates of the institutions in each Carnegie Classification category.

Although the number of US-based researchers who publish in *EJIS* and *ISJ* is relatively small, the number seems to be increasing. If this trend continues, *EJIS* and/or *ISJ* may indeed, become one of the primary research outlets for Carnegie Classification Institutions. Therefore, we suggest broadening the span of journals to be included in future studies.

The journal ranking studies on which we based our journal basket were primarily perception surveys, one of the two most widely used scientometric methodologies in such studies [Chua et al. 2002]. Future research can employ citation analysis, an alternative methodology. The IS field and its journals are maturing and stabilizing, thereby making citation analysis more viable. A different methodology may provide significantly different findings [Straub 2006], allowing a richer perspective on the issue.

We propose updating this information on an annual or biennial basis. We also suggest employing a multi-collection method to include surveys to IS researchers, citation index analyses, and the tabulation of researcher publications from the leading IS journals. This will provide a scientometric study of IS research over an extended period of time, enabling institutions and researchers to better follow publication trends in the context of the latest version of the periodically updated Carnegie Classifications.

### ACKNOWLEDGEMENTS

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- Editor's Note:* The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web, can gain direct access to these linked references. Readers are warned, however, that
1. these links existed as of the date of publication but are not guaranteed to be working thereafter.
  2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions references.
  3. the author(s) of the Web pages, not AIS, is (are) responsible for the accuracy of their content.
  4. the author(s) of this article, not AIS, is (are) responsible for the accuracy of the URL and version information.
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**APPENDIX A: ARTICLE CREDITS DURING CALENDAR YEARS 2001-2005**

Table A1. Credits from CAIS Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	0
15	114	76.484	157	48
16	136	89.011	166	52
17	36	26.835	36	14
18	82	54.688	90	41
19	10	6.83	10	5
20	1	1	1	1
21	1	0.5	1	1
22	2	2	2	1
29	0	0	0	0
<b>Total</b>	<b>382</b>	<b>257.348</b>	<b>463</b>	<b>163</b>

Table A2. Credits from DSS Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	1	0.25	1	1
15	147	106.02	197	62
16	65	42.89	81	42
17	13	7.27	14	11
18	21	10.5	22	19
19	1	0.5	1	1
20	0	0	0	
21	3	1.25	3	3
22	3	0.99	3	3
29	0	0	0	
<b>Total</b>	<b>254</b>	<b>169.67</b>	<b>322</b>	<b>142</b>

Table A3. Credits from I&M Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	
15	57	34.66	66	44
16	93	54.36	111	52
17	25	15.83	26	17
18	48	24.73	50	32
19	4	2.33	4	3
20	0	0	0	
21	1	0.33	1	1
22	1	0.75	1	1
29	2	1.33	2	1
<b>Total</b>	<b>231</b>	<b>134.32</b>	<b>261</b>	<b>151</b>

Table A4. Credits from ISR Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	
15	72	57.75	103	44



Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
16	36	21.83	45	24
17	3	1.5	3	1
18	7	2.75	7	6
19	0	0	0	
20	0	0	0	
21	0	0	0	
22	1	0.33	1	1
29	0	0	0	
<b>Total</b>	<b>119</b>	<b>84.16</b>	<b>159</b>	<b>76</b>

Table A5. Credits from JAIS Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	0
15	28	18.06	36	27
16	27	18.17	31	24
17	2	1.33	2	2
18	10	5.33	13	9
19	1	0.33	1	1
20	0	0	0	0
21	1	0.33	1	1
22	1	0.33	1	1
29	0	0	0	0
<b>Total</b>	<b>70</b>	<b>43.88</b>	<b>85</b>	<b>65</b>

Table A6. Credits from JMIS Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	0
15	110	81.58	150	55
16	65	41.141	85	42
17	11	5.61	11	7

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
18	21	9.66	23	15
19	1	0.5	1	1
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
29	0	0	0	0
<b>Total</b>	208	138.491	270	120

Table A7. Credits from MISQ Publications

Classification Category	Classification Category Article Credits	Institutional Partial Credit	Institutional Article Credits	Number of Institutions Contributing
5	0	0	0	0
15	75	53.83	115	16
16	37	18.24	40	4
17	5	2.16	5	10
18	11	4.48	11	2
19	2	0.75	2	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
29	0	0	0	78
<b>Total</b>	130	79.46	173	110

**APPENDIX B: RANGE OF PUBLICATIONS BY JOURNAL AND INSTITUTION CALENDAR YEARS 2001-2005**

Classification Category	CAIS Max-Min	DSS Max-Min	I&M Max-Min	ISR Max-Min	JAIS Max-Min	JMIS Max-Min	MISQ Max-Min
5		1 – 1 (1)					
15	12 – 1 (48)	15 – 1 (62)	4 – 1 (44)	7 – 1 (44)	5 – 1 (27)	15 – 1 (55)	8 – 1 (46)
16	21 – 1 (52)	8 – 1 (42)	8 – 1 (52)	8 – 1 (24)	3 – 1 (24)	9 – 1 (42)	9 – 1 (16)
17	17 – 1 (14)	2 – 1 (11)	5 – 1 (17)	3 – 3 (1)	1 – 1 (2)	3 – 1 (7)	2 – 1 (4)
18	16 – 1 (41)	2 – 1 (19)	6 – 1 (32)	2 – 1 (6)	2 – 1 (9)	4 – 1 (15)	2 – 1 (10)
19	4 – 1 (4)	1 – 1 (1)	2 – 1 (3)		1 – 1 (1)	1 – 1 (1)	1 – 1 (2)
20	1 – 1 (1)						
21	1 – 1 (1)	1 – 1 (3)	1 – 1 (1)		1 – 1 (1)		
22	2 – 2 (1)	1 – 1 (3)	1 – 1 (1)	1 – 1 (1)	1 – 1 (1)		
29			2 – 2 (1)				

Note: Values in parentheses denote the number of institutions within the Carnegie Classification Category, which contributed toward the publications.

Example: 48 institutions in Carnegie Classification Category 15 published in CAIS. Of these 48 institutions, the maximum number of publications in CAIS was 12, and the minimum number was 1.

**APPENDIX C: INSTITUTIONAL ARTICLE COUNT: INSTITUTIONS MEETING OR EXCEEDING THEIR CARNEGIE CLASSIFICATION AVERAGE - BY JOURNAL OR OVERALL**

Classification Category 5 University	CAIS	DSS	I&M	ISR	JAIS	JMIS	MISQ	Overall Average
College of Lake County	0.00	1	0.00	0.00	0.00	0.00	0.00	1.00
University of Minnesota-Twin Cities	6			3	3	15	5	35
Indiana University-Bloomington	9		2	4		4	8	31
University of Texas at Austin, The	4	7		5		5	8	31
University of Arizona		15				8		30
University of Georgia	11	4	3				8	30
University of Pittsburgh-Main Campus	9			4		5	4	26

Washington State University	12		2		5			25
Georgia Institute of Technology-Main Campus	4	8		4		6		23
University of Maryland-College Park		5		6	2		5	23
University of Southern California	4			6		5	5	23
University of South Florida	4	4	3	3		3	3	21
University of Michigan-Ann Arbor	4	7		3				20
University of Connecticut		7					4	18
Arizona State University at the Tempe Campus		7	2	3				17
Carnegie Mellon University				7		5		16
University of Kentucky		7	4			3		16
Pennsylvania State University-Main Campus				3		5		15
University of California-Irvine	5			3	2	4		15
University of Pennsylvania		6				7		15
Florida State University	4						4	14
Michigan State University						3	3	14
SUNY at Buffalo		6						14
Boston University	5	4						13
Case Western Reserve University	5				2		3	13
Cornell University-Endowed Colleges	5	6						13
Massachusetts Institute of Technology						3		13
University of Virginia-Main Campus							4	13
Virginia Polytechnic Institute and State Univ		6	2					13
University of Florida		9						12
University of South Carolina-Columbia			3			3		12
Emory University			2				3	11
North Carolina State University at Raleigh						3		11
University of North Carolina at Chapel Hill			2					11
Louisiana State Univ & Ag & Mech & Hebert Laws Ctr	5							

New York University				4			3	
Texas A & M University						5		
University of Illinois at Chicago			4					
University of Notre Dame				3				
University of Cincinnati-Main Campus			2					
University of Hawaii at Manoa							3	
University of Nebraska at Lincoln	4							
Ohio State University-Main Campus		5						
Purdue University-Main Campus		4						
University of Illinois at Urbana-Champaign		4						
University of Wisconsin-Madison				3				
Iowa State University			2					
Rutgers University-New Brunswick			2					
University of Rochester						5		
University of Utah			2					
<b>Classification Category 16 University</b>	<b>CAIS 3.19</b>	<b>DSS 1.93</b>	<b>I&amp;M 2.13</b>	<b>ISR 1.88</b>	<b>JAIS 1.29</b>	<b>JMIS 2.02</b>	<b>MISQ 2.50</b>	<b>Overall Average 7.36</b>
Georgia State University	21	4	7	8	3		5	57
University of Central Florida	4	8	8	2	2	3		29
University of Houston-University Park	11			2	2		5	21
University of Oklahoma Norman Campus				3		2	9	19
Clemson University			4		2	6	3	17
Drexel University	4	3		2		4		16
University of Wisconsin-Milwaukee	6	3				4		16
Texas Tech University	4	4				2		15
Auburn University Main Campus	6	2	3			1		13
University of Arkansas Main Campus			3	2		2		13
San Diego State University	4		3		2	2		12
Southern Illinois University Carbondale			6					12
<b>Classification Category 16 University</b>	<b>CAIS 3.19</b>	<b>DSS 1.93</b>	<b>I&amp;M 2.13</b>	<b>ISR 1.88</b>	<b>JAIS 1.29</b>	<b>JMIS 2.02</b>	<b>MISQ 2.50</b>	<b>Overall Average 7.36</b>

University of Nevada-Las Vegas			4	3		5		12
Temple University	7							11
University of Texas at Arlington, The			3		2	2		11
University of Texas at Dallas, The				6		2		11
Boston College							3	10
Claremont Graduate University	9							10
Oklahoma State University-Main Campus		2				3		10
Syracuse University	5					2		10
Lehigh University	4	3						9
Miami University-Oxford		3	3					9
University of Maryland-Baltimore County		4						9
Brigham Young University		2						8
College of William and Mary	4	2						8
New Jersey Institute of Technology		2				3		8
University of Dayton								8
University of North Carolina at Greensboro			4					8
Baylor University						2		
George Mason University		3				2		
Northeastern University						2		
Ohio University-Main Campus		3						
University of Toledo			4			2		
Virginia Commonwealth University			4					
Wake Forest University	4					2		
Florida International University		3						
University of Denver	5							
University of North Texas			4					
Florida Atlantic University-Boca Raton	4							
University of Akron Main Campus		2						
University of Missouri-St. Louis				2				
Northern Illinois University			3					
University of Alabama		2						



University of Mississippi Main Campus		2						
University of Rhode Island		2						
University of Texas at El Paso, The						2		
<b>Classification Category 17 University</b>	<b>CAIS 2.57</b>	<b>DSS 1.28</b>	<b>I&amp;M 1.53</b>	<b>ISR 3.00</b>	<b>JAIS 1.00</b>	<b>JMIS 1.57</b>	<b>MISQ 1.25</b>	<b>Overall Average 3.13</b>
University of San Francisco	17							18
Southern Methodist University				3	1		2	9
Oakland University			5					7
Portland State University		2					2	6
DePaul University			2				2	5
University of North Carolina at Charlotte			4					5
American University						3		4
Idaho State University	4							4
Georgia Southern University					1			
East Carolina University		2						
Indiana University of Pennsylvania-Main Campus		2						
Louisiana Tech University			2					
<b>Classification Category 18 University</b>	<b>CAIS 2.20</b>	<b>DSS 1.16</b>	<b>I&amp;M 1.56</b>	<b>ISR 1.17</b>	<b>JAIS 1.44</b>	<b>JMIS 1.53</b>	<b>MISQ 1.10</b>	<b>Overall Average 2.81</b>
Bentley College	16				2		2	22
University of Nebraska at Omaha	8				2	3		13
CUNY Bernard M Baruch College		2	2	2		4		12
University of Colorado at Colorado Springs			6		2	2		12
Worcester Polytechnic Institute	5							7
Missouri State University	4							6
Arizona State University at the West Campus	3							6
University of Texas at San Antonio, The			2			2		6
California State University-Long Beach								5
Canisius College	3							5
Central Missouri State University			2					5

Chapman University			3					5
University of Michigan-Dearborn		2						5
University of Northern Iowa	4							5
Eastern Michigan University			3					4
Naval Postgraduate School								4
Southern University and A & M College					2			4
California Polytechnic State University-San Luis Obispo			2					3
California State Polytechnic University-Pomona	3							3
Florida Gulf Coast University								3
Kennesaw State University								3
Saint Cloud State University			2					3
Saint Josephs University								3
Salisbury University	3							3
Santa Clara University						2		3
University of Baltimore	3							3
University of Houston-Victoria			3					3
California State University-Sacramento		2						
Eastern Washington University			2					
University of Wisconsin-Whitewater			2					
<b>Classification Category 19 University</b>	<b>CAIS 2.00</b>	<b>DSS 1.00</b>	<b>I&amp;M 1.33</b>	<b>ISR 0.00</b>	<b>JAIS 1.00</b>	<b>JMIS 1.00</b>	<b>MISQ 1.00</b>	<b>Overall Average 2.11</b>
Creighton University	2		2					4
Washburn University	4							4
Bryant University		1					1	
University of Wisconsin-Eau Claire	2							
Saint Leo University						1		
Texas A & M International University							1	
University of Minnesota-Duluth					1			
<b>Classification Category 20 University</b>	<b>CAIS</b>	<b>DSS 000</b>	<b>I&amp;M 0.00</b>	<b>ISR 0.00</b>	<b>JAIS 0.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 1.00</b>

University of Richmond	1							1
<b>Classification Category 21 University</b>	<b>CAIS 1.00</b>	<b>DSS 1.00</b>	<b>I&amp;M 1.00</b>	<b>ISR 0.00</b>	<b>JAIS 1.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 1.00</b>
Berry College					1			1
Furman University	1							1
Lyon College		1						1
Siena College		1						1
Skidmore College		1						1
Smith College			1					1
<b>Classification Category 22 University</b>	<b>CAIS 2.00</b>	<b>DSS 1.00</b>	<b>I&amp;M 1.00</b>	<b>ISR 1.00</b>	<b>JAIS 1.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 1.14</b>
Pennsylvania State Univ-Penn St. Erie-Behrend College	2							2
Kent State University-Stark Campus		1						
McKendree College				1				
United States Air Force Academy			1					
University of Houston-Downtown		1						
Winston-Salem State University					1			
York College Pennsylvania		1						
<b>Classification Category 29 University</b>	<b>CAIS 0.00</b>	<b>DSS 0.00</b>	<b>I&amp;M 2.00</b>	<b>ISR 0.00</b>	<b>JAIS 0.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 2.00</b>
Babson College			2					2

**APPENDIX D: INSTITUTIONAL PARTIAL ARTICLE COUNT: INSTITUTIONS MEETING OR EXCEEDING THEIR CARNEGIE CLASSIFICATION AVERAGE (BY JOURNAL OR OVERALL)**

<b>Classification Category 5 University</b>	<b>CAIS 0.00</b>	<b>DSS 0.25</b>	<b>I&amp;M 0.00</b>	<b>ISR 0.00</b>	<b>JAIS 0.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 0.25</b>
College of Lake County		0.25						0.25
<b>Classification Category 15 University</b>	<b>CAIS 1.593</b>	<b>DSS 1.71</b>	<b>I&amp;M 0.787</b>	<b>ISR 1.312</b>	<b>JAIS 0.668</b>	<b>JMIS 1.483</b>	<b>MISQ 1.17</b>	<b>Overall Average 5.492</b>
University of Minnesota-Twin Cities	2.501			2.33	2	9.51	2.83	20.081
University of Arizona		7.96				4.54		16.2
Indiana University-Bloomington	4.925		0.83	2.08		2.15	3.99	15.465

University of Georgia	5.267	1.82	1.66				3.15	13.717
University of Pittsburgh-Main Campus	4.937			2.75		2.33	1.65	13.667
Georgia Institute of Technology-Main Campus	2.5	4.8		2.24		3.23		12.97
University of Southern California	3.025			3.48		3.23	1.49	12.885
University of Texas at Austin, The		2.77		1.49	1	1.91	4.65	12.875
University of South Florida	1.72	2.57	2	1.58		1.83	1.75	11.78
Washington State University	5.136		1		2.49			11.696
University of Maryland-College Park		2.21		3.84		1.33	1.91	11.15
University of Connecticut	1.99	4.15					1.83	10.95
Carnegie Mellon University				4.4		2.73		9.46
Arizona State University at the Tempe Campus	1.75	4.15	1					9.31
Cornell University-Endowed Colleges	3.33	4.91						9.07
University of Kentucky		3.82	2.25			1.5		9.07
University of California-Irvine	1.725			2.5	1.16	2.83		8.875
University of Michigan-Ann Arbor		3.56		1.83				8.765
SUNY at Buffalo	2.98	3.2						8.75
University of Pennsylvania		2.49				4.48		7.495
University of Florida		6.07						7.23
Boston University	3.49							7.15
University of Notre Dame				2.32		1.65		6.97
Pennsylvania State University-Main Campus				1.58		2.16		6.84
University of Virginia-Main Campus						1.49	1.58	6.675
Virginia Polytechnic Institute and State Univ		2.32	1.33					6.64
Case Western Reserve University	2.28			1.33	0.75		1.5	6.36
University of South Carolina-Columbia			1.98					6.05
Florida State University							1.66	5.785
Massachusetts Institute of Technology		1.74						

Michigan State University						1.66	1.33	
New York University				2.84			1.5	
North Carolina State University at Raleigh	1.66							
University of North Carolina at Chapel Hill			1					
University of Illinois at Chicago			2.5					
Emory University			1.5					
University of Nebraska at Lincoln	2.7							
University of Hawaii at Manoa							2	
Texas A & M University						2.35		
University of Illinois at Urbana-Champaign		2.99						
Louisiana State Univ & Ag & Mech & Hebert Laws Ctr	2.435							
University of Rochester						4.23		
Ohio State University- Main Campus		3						
University of Wisconsin-Madison		2	1					
Colorado State University			1		1			
University of Cincinnati-Main Campus			1.5					
Purdue University- Main Campus		2.4						
Rutgers University- New Brunswick			0.83					
University of California-Berkeley		2.5						
University of Iowa		1.83						
Tulane University of Louisiana				1.32				
University of Utah			0.83					
Duke University					1			
<b>Classification Category 16 University</b>	<b>CAIS 1.71</b>	<b>DSS 1.02</b>	<b>I&amp;M 1.04</b>	<b>ISR 0.90</b>	<b>JAIS 0.75</b>	<b>JMIS 0.97</b>	<b>MISQ 1.14</b>	<b>Overall Average 3.758</b>
Georgia State University	11.28 2	2.49	3.99	3.32	2.25	4.06	1.99	29.382
University of Central Florida	1.832	4.14	2.27			1.33		11.552
University of Houston- University Park	5.7				1.5		2.24	10.52
Drexel University	2.33	2.16		1	1	2.83		9.98

San Diego State University	2.53		2.49		2	2		9.52
University of Oklahoma Norman Campus		1.91		1.66	1		4.21	8.805
University of Wisconsin-Milwaukee	2.576		1.32			1.99		8.456
Texas Tech University	2.25	1.66				1		7.66
Temple University	4.912							6.742
Clemson University			1.41			2.07	1.33	6.72
University of Texas at Dallas, The				3.97		0.99		6.45
Auburn University Main Campus			1.33					6.156
Syracuse University	2.082				1	1.5		6.082
University of Arkansas Main Campus			1.16			1.65		6.081
Claremont Graduate University	5.246							5.906
Southern Illinois University Carbondale			2.9					5.81
University of Texas at Arlington, The			1.33		1.33			5.72
Oklahoma State University-Main Campus	2.2					1.751		5.611
University of Nevada-Las Vegas			2.16	1.66		1.69		5.51
Boston College				1	1		1.83	5.47
University of North Carolina at Greensboro	2.33		2.33					5.16
Baylor University						1.66		5.15
George Mason University		2.15		1		1.5		5.15
New Jersey Institute of Technology		1.66				1.76		5
Brigham Young University		1.5	1.49					4.9
Lehigh University	2.16	1.66						4.82
University of Maryland-Baltimore County		2.3						4.44
University of Memphis	1.82		1.16					3.98
Northeastern University						1.5		3.91
University of Denver	3.33		2.33					3.83
Virginia Commonwealth University								3.83
Miami University-Oxford			1.5					
University of Toledo			2.24					

University of North Texas			2.32					
University of Alabama, The		1.5						
University of Akron Main Campus		1.5						
Florida Atlantic University-Boca Raton	1.83							
University of Mississippi Main Campus		1.66						
University of Missouri-St. Louis				1				
North Carolina A & T State University	2							
Northern Illinois University			1.33					
University of New Orleans			1.16					
<b>Classification Category 17 University</b>	<b>CAIS</b>	<b>DSS</b>	<b>I&amp;M</b>	<b>ISR</b>	<b>JAIS</b>	<b>JMIS</b>	<b>MISQ</b>	<b>Overall Average</b>
	1.91	0.66	0.93	1.50	0.66	0.80	0.54	1.952
University of San Francisco	14.2	1						15.2
Southern Methodist University				1.5	1		0.83	4.855
University of North Carolina at Charlotte			3.66			1		4.66
DePaul University			2			1.33		4.33
Idaho State University	4							4
Portland State University		0.83				1		3.33
Oakland University			2.08					2.78
University of Massachusetts-Lowell		1						
Morgan State University		1				0.5		
University of Massachusetts-Boston			1					
American University						1.25		
University of the Pacific			1					
Cleveland State University			1					
Seton Hall University			1					
Indiana University of Pennsylvania-Main Campus		0.83						
East Carolina University		0.66						
<b>Classification Category 18 University</b>	<b>CAIS</b>	<b>DSS</b>	<b>I&amp;M</b>	<b>ISR</b>	<b>JAIS</b>	<b>JMIS</b>	<b>MISQ</b>	<b>Overall Average</b>
	1.33	0.55	0.77	0.46	0.59	0.64	0.45	1.46



Bentley College	10.25				1.5		0.83	13.162
CUNY Bernard M Baruch College		0.83	1.33	1.17		1.99	0.5	6.82
University of Nebraska at Omaha	4.316				0.7	1.16		6.176
University of Colorado at Colorado Springs			1.69		0.99	1.5		4.76
California State University-Long Beach		1	1	0.5			0.5	4
California State Polytechnic University-Pomona	3							3
Naval Postgraduate School						1		3
University of Northern Iowa	2.83							2.99
Canisius College	2.24							2.77
Central Missouri State University		1	0.83					2.66
University of Texas at San Antonio, The			1			0.75		2.66
Kennesaw State University	2							2.25
Worcester Polytechnic Institute	1.466							2.216
University of Baltimore	2.14							2.14
California State University-Los Angeles	2							2
Pennsylvania State University-Penn St. Harrisburg		1	1					2
University of Michigan-Dearborn		0.58						1.99
Saint Cloud State University			1.33					1.83
University of Houston-Victoria			1.66					1.66
Florida Gulf Coast University								1.65
Arizona State University at the West Campus							0.5	1.612
Chapman University			0.99					1.57
Saint Josephs University								1.5
California State University-Sacramento		1.25						
California Polytechnic State University-San Luis Obispo			0.83					
Eastern Michigan University			0.83					

California State University-Bakersfield			1					
Pennsylvania State University-Penn St. Great Valley			1					
University of Massachusetts-Dartmouth			1					
University of Wisconsin-La Crosse			1					
Gonzaga University		0.66						
Auburn University-Montgomery	3.246							
Boise State University							0.5	
<b>Classification Category 19 University</b>	<b>CAIS 1.36</b>	<b>DSS 0.50</b>	<b>I&amp;M 0.77</b>	<b>ISR 0.00</b>	<b>JAIS 0.33</b>	<b>JMIS 0.50</b>	<b>MISQ 0.37</b>	<b>Overall Average 1.248</b>
Washburn University	4							4
Creighton University			1.33					2.16
University of Wisconsin-Eau Claire								
Rutgers University-Camden								
Bryant University		0.5						
University of Tampa, The								
Saint Leo University						0.5		
Texas A & M International University							0.5	
University of Minnesota-Duluth					0.33			
<b>Classification Category 20 University</b>	<b>CAIS 1.00</b>	<b>DSS 0.00</b>	<b>I&amp;M 0.00</b>	<b>ISR 0.00</b>	<b>JAIS 0.00</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 1</b>
University of Richmond	1							1
<b>Classification Category 21 University</b>	<b>CAIS 0.50</b>	<b>DSS 0.41</b>	<b>I&amp;M 0.33</b>	<b>ISR 0.00</b>	<b>JAIS 0.33</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 0.401</b>
Furman University	0.5							0.5
Siena College		0.5						0.5
Skidmore College		0.5						0.5
Berry College					0.33			
Smith College			0.33					
Lyon College								
<b>Classification Category 22 University</b>	<b>CAIS 2.00</b>	<b>DSS 0.33</b>	<b>I&amp;M 0.75</b>	<b>ISR 0.33</b>	<b>JAIS 0.33</b>	<b>JMIS 0.00</b>	<b>MISQ 0.00</b>	<b>Overall Average 0.628</b>
Pennsylvania State Univ-Penn St. Erie-Behrend College	2							2

United States Air Force Academy			0.75					0.75
Kent State University-Stark Campus		0.33						
McKendree College				0.33				
University of Houston-Downtown		0.33						
Winston-Salem State University					0.33			
York College PA		0.33						
<b>Classification Category 29 University</b>	<b>CAIS</b>	<b>DSS</b>	<b>I&amp;M</b>	<b>ISR</b>	<b>JAIS</b>	<b>JMIS</b>	<b>MISQ</b>	<b>Overall Average</b>
	<b>0.00</b>	<b>0.00</b>	<b>1.33</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.33</b>
Babson College			1.33					1.33

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