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Citation of research in journals of interest to applied geographers

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Abstract

Citation statistics from 1997 to 2004 for 393 journals of interest to applied geographers were examined. Manuscripts in serials with economic, environmental, inter-disciplinary, global, and contemporary foci are cited most frequently—an advantageous trend for applied geographers. Physical geography articles tend to be cited more frequently than those in human geography, but undercounts of citations of books and other monographs may unfairly portray human geography citations. Geography's flagship journals perform in proportion to the size of the discipline, compared with flagship journals in sister disciplines. The top GIScience journals show somewhat more "immediate impact" features than other geographical journals.

Keywords: Citation statistics; Impact factor; Publication in geography

Introduction

Geographers tend to have a predilection toward self-evaluation, debate over the structure of their discipline, and assessment of their place in the natural and social sciences. Recent publications such as *Geography in America* (Gaile & Willmott, 2003) emphasize these issues and attempt to address them by reviewing recent research foci in the various subfields of geography. Other work has been conducted to identify the demographic and topical profiles of geographer-authors (Brunn, 1995, 1997). Such work is valuable, because it provides an opportunity to understand the breadth and depth of inquiry in our discipline (Brunn, 1992). The purpose of this research is to investigate the citation statistics of journals of interest to applied geographers and the question of how much increased exposure, as evidenced by citation, can be attained by publishing in non-geography journals.

Literature review

A major theme in geography's self-evaluation is the continual debate over quality assessment in research (e.g., Johnston, 1994). This discussion often includes evaluations of journals (e.g., De Loe, 2001; Jones, 2001;

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Whitehand, 1988). A corollary of the concern over quality assessment in research seems to involve the question of the relative merits of publishing in disciplinary vs. extra-disciplinary outlets (e.g., Butler, 1989; Symanski, 1996). Turner (1988) suggested that while publication in geographical journals enhances the reputation of geography and provides cohesiveness as a discipline, some publication in the top non-geography journals would provide increased visibility for the work of geographers. Bodman (1991) observed that while the work of the most visible human geographers has relatively modest influence outside of the discipline, but relatively strong influence within geography, that of the most visible physical geographers tends to be far less prevalent in geography, but relatively more concentrated outside of the core literature in geography. While Johnston (2003) found that physical geographers were more likely to publish in extra- and inter-disciplinary journals than human geographers, Ferguson (2003) advised that both human and physical geographers should seek to publish in extra-geography journals to enhance the visibility of our discipline. Levia and Underwood (2004) disagreed, noting that even though non-geography journals published far more hydrological research than geography journals, geographer-hydrologists should consider publishing some of their best work in geographical journals. Recently, Quiring (2007) observed an increasing trend over the past decade for geographer-climatologists to publish their work in non-geography journals, partly because of the higher citation rates, wider readership, and faster turnaround times of these journals.

One indicator of quality assessment and reputation is through the use of citation indices. According to the Institute for Scientific Information (ISI), such indices have been used as early as the 1920s by library scientists (Gross & Gross, 1927). The use of indices as a mainstream method of analyzing the impact of research articles has expanded in subsequent years (Garfield, 1972). Hamilton (1990) found that some 55% of the papers published between 1981 and 1985 in ISI's database remained uncited within five years after publication, and presumably an even lower percentage of manuscripts in less-visible journals were cited. Subsequent analysis suggested that 74.7% of manuscripts in the social sciences and 43.6% in geosciences were uncited within five years of publication (Hamilton, 1991). Similar numbers were reported by Costa and Sylvester (1993), who found that 22.4% of published manuscripts in 1984 in selected geoscience journals had never been cited, even as self-citations. The geography of cited research shows the dominance of a few small regions in the USA and western Europe (Batty, 2003).

The first widespread use of citation indices in geography for evaluation of research exposure of journals occurred during the 1980s. Gatrell and Smith (1984) analyzed intellectual and topical linkages between geographical journals by using citations of articles in various serials as an indicator. Whitehand (1984) concluded that many of the journals that appear at the top of subjective assessments of quality are also among the most widely cited. Interestingly, a non-geographer determined that geography is an anomaly in that the correlation between circulation and citation of journals seems weak (Peritz, 1995). In the most exhaustive analysis of citation statistics found in the geographical literature to date, Turner (1988) found that the highest citation impact factors among geography journals at that time were for *Economic Geography*, *Annals of the Association of American Geographers*, and *Geographical Analysis*, but that even these serials lagged behind the impact factors of some inter-disciplinary journals and serials in cognate fields of geography. Dorn (2002) found that journals that foster multi-disciplinary and inter-disciplinary work tend to publish the most widely cited articles in geomorphology. Many of these journals have an applied focus. Finally, Gutierrez and Lopez-Nieva (2001) traced citations to conclude that, in general, research in human geography serials has not been extensively disseminated internationally. These studies collectively suggest that citation indices may represent the exposure of research in various journals more objectively than simply circulation numbers and questionnaires such as those by Lee and Evans (1984, 1985) can provide.

Departmental evaluations based on citation indices were produced by Turner and Meyer (1985), who found that citation data may provide a more objective method of assessing research exposure than the peer-based rankings. Trimble (1987) responded that citations to geographers' work in publications by non-geographers should be considered highly indicative of successful departments of geography. At the individual level, Whitehand (1985) suggested that a small percentage of geographers have been responsible for a large majority of citations of geographical work in *Social Sciences Citation Index*. Bodman (1991) confirmed this tendency in geography, by concluding that about 5% of the geographers account for half of all geographers' citations in geography journals from 1984 to 1988. The so-called "halo effect" seems prevalent in other citation statistics,

as Bodman (1991) used ISI data to conclude that only 117 geographers had achieved at least 100 citations between 1984 and 1988, with the overwhelming majority in human geography and US and UK approximately equally well-represented. By contrast, Doran (1981) found no correlation between frequency of authorship among the most prolific scholars in three major geography journals and citation frequency. Whitehand (1988) seemed to disagree by suggesting that even if lesser-known authors of arcane research publish in highly cited journals, they are unlikely to draw many citations.

However, the use of citation indices is not without its difficulties, as several have noted. Turner and Meyer (1985) identified several problems in using the indices to assess productivity at the individual level. For example, slight discrepancies in the abbreviation process and errors in authors' first and middle names can lead to undercounts in the number of articles produced, articles by different individuals with the same first initials and surnames could mistakenly be attributed to only one scholar, and second authorship may not be counted effectively (Turner & Meyer, 1985). However, these problems can now be avoided in the new data display format used by ISI. Bodman (1991) noted that citation frequency does not provide a positive or negative context under which the cited material was perceived. In a Czech-language critique of the use of citation indices, Exner (1993) argued that the type of research influences the observed citation frequency more strongly than the quality. Similarly, Harman (1996) cautioned that citation frequency may index the popularity of the research topic better than the excellence of the scholarship referenced. Costa and Sylvester (1993) expanded on this idea by noting that wide discrepancies exist in citation frequency not only across disciplines, but also within sub-specializations of the same discipline, complicating the comparison of serials. Similarly, for comparison of visibility of journals across disciplines, Coelho et al. (2003) demonstrated that standardizing the indices is important in certain applications. Finally, we note that the use of citation statistics tends to undercount the number of citations that appear in books, monographs, technical papers, and encyclopedia entries, as these media do not appear directly in some ISI statistics. However, they do appear in ISI's "cited reference search" statistics. Nevertheless, such an undercount will undoubtedly be more detrimental to the measured impact in some fields than in others. This is especially problematic in some applied studies, as the "gray literature" can have important impacts in policy-oriented work and other types of applied research. Further review of the uses and abuses of citation statistics in general is provided by Yeung (2002).

Research questions

Since 1997, the electronic availability of both the journals and the journal citation reports for both natural sciences (ISI Thomson Scientific, 1997–2004a) and social sciences (ISI Thomson Scientific, 1997–2004b) for an eight-year period of record has facilitated both the identification of articles for citation and more detailed analyses of citation patterns. This research seeks to fill the gap in our knowledge of recent trends in citation patterns in geography using this data source. Thus, the purpose of this research is to use citation index data as an indicator of the exposure of research in various journals of importance to applied geographers and as evidence of the relative exposure of geography journals vis-à-vis non-geography journals. Specifically, the citation indices afford the analysis of several research questions:

1. Which geography serials and non-geography journals of interest to applied geographers publish the most-cited research?
2. Does publishing in "non-geography" journals afford better opportunities for geographers to improve the visibility of their research than publishing in "geography" serials?
3. Within our discipline, how do the citation statistics compare among the subfields of human geography, physical geography, and the GISciences?
4. Are our geography flagship journals being cited as frequently as the flagship publications in sister disciplines, even though our discipline is smaller?
5. Do journals of interest to practitioners of geographic techniques display more of a tendency to publish "immediate impact" research than journals of interest to other applied geographers? If so, this may suggest that the rate of knowledge production and innovation in these areas may be greater in these rapidly changing subfields than in more traditional subfields.

6. Which journals have shown continual improvement in exposure and "immediacy of impact" qualities from the 1997–2004 period?

Data and methods

Citation indices for 181 serials in the social sciences database and 212 in the sciences database were tabulated for the period of available electronic record (1997–2004; Table 1). While we recognize that a list of a few dozen journals would have included all of those with a large percentage of articles written by applied geographers (Groop & Schaetzl, 1997), our purpose was to provide an analysis that is as complete and useful as possible to applied geographers. Therefore, we chose to be more inclusive in our selection of journals, even if geographer-authors currently contribute few of the articles in those outlets. While the decision of the serials to include is clearly subjective, the goal was to include all that are most frequently used by applied geographers. In addition, flagship journals for several sister disciplines were included. If a serial's title changed during the period of record, these were maintained as separate entries. For example, *Vegetatio* became *Plant Ecology* in 1998, but indices are reported for both journals separately for both titles, based on the available years of data. While some journals are clearly devoted to both natural and social scientific research, the journals were classified into either science or social science based on the ISI categorization system. However, this approach again invites caution in interpretation, because some serials publish both natural and social science research. Furthermore, the synthetic nature of geography is such that much work clearly falls at the interface between natural and social science. The complete lists of science and social science journals included are provided in Appendices A and B.

Several citation statistics are collected for the journals analyzed. First, the annual number of articles (NA) and citation frequency (CF) of each journal's manuscripts are compiled. Then, the impact factor (IF), which is calculated as the ratio of the mean CF of manuscripts published in a given year to NA published during the two-year period prior to the year in question, is computed for each serial. This index is useful for standardizing the statistics across journals with widely varying numbers of research articles. Another useful index is the immediacy index (II), which is defined as the mean frequency that manuscripts published in a given journal in a certain year (NA) are cited during that same year. The purpose of the II is to identify journals that tend to publish "immediate impact" research, because such manuscripts would presumably be cited very shortly after publication.

To address the first five research questions, the eight years of available data were weighted more heavily in recent years than in earlier years to provide a contemporary perspective of how each journal performs. We applied the following weighting procedure for each of the indices discussed above:

$$\text{Weighted index} = \frac{\sum_{i=1997}^{i=2004}[(i-1996)(\text{raw index}_i)]}{\sum_{i=1997}^{i=2004}[(i-1996)x_i]}, \tag{1}$$

Table 1
Number of serials included in ISI database

	Science citation index	Social science citation index
1997	4963	1672
1998	5467	1679
1999	5550	1699
2000	5684	1697
2001	5748	1682
2002	5876	1709
2003	5907	1714
2004	5968	1712

Source: Thomson Scientific, Journal citations reports: on CD-ROM, social sciences edition (1998–2003) and science edition (1998–2004); web-based, social sciences edition (1997) and science edition (1997, 2004).

where $x_i = 0$ if raw index$_i$ is missing and $x_i = 1$ if raw index$_i$ is available. No weighting scheme was necessary to address the sixth research question.

We include as applied geography journals all of those that appear in the "Geography" category within the JCR Database in 2004. Of course, many are more theoretical than applied in orientation, but because applied geographers are likely to publish, cite, and be cited in these journals, we include them and allow the reader to draw his/her own conclusion about whether his/her research may be appropriate for publication in such serials. Accordingly, "Human Geography Journals" and "Physical Geography Journals" are defined as those that appear in the "Geography" category within the JCR Social Sciences and Sciences Databases in 2004, respectively. For the GIScience journals, we selected 10 journals within the Geography category that are in the areas of cartography, remote sensing, or geographic information systems as representative of the GIScience subfield.

It should be cautioned that the selection criteria used by the JCR Database in defining the disciplines are not without pitfalls. For example, while many journals in geomorphology, biogeography, glaciology, and Quaternary research are included as applied geography journals, the list notably does not include any journal in climatology, one of the largest subfields in physical geography. Other inconsistencies also occur. For example, several journals in Quaternary research are included, but *The Holocene*, a journal with a very similar scope, is not included. While we realize that the boundary between "geography" and "non-geography" and even that between human geography and physical geography is becoming blurred, our adherence to the criteria used by the JCR Database at least gives us an objective basis for enumeration and comparison. Interpretation of the results should be made with these caveats in mind.

Results and discussion

Not surprisingly, *Nature* and *Science* dwarfed the other journals in the weighted mean scores for CF (Table 2), IF (Table 3), and II (Table 4). In general, science journals far outperformed social science journals on these same indices. *Annals of the Association of American Geographers* ranks 14, 10, and 19 among social science journals in CF, IF, and II, respectively, but would rank 98, 46, and 83, respectively, if it were compared against the science serials.

This result is to be expected for several reasons. First, the nature of inquiry in natural scientific research is to cite previous research, in accordance with the experimental nature of the "hard" sciences. These expectations may or may not be as important in social scientific research. Second, the turnaround time for most natural scientific articles is typically shorter, and the number of issues per volume is often greater than that for social science research articles, thereby increasing the CF, perhaps at least in part because social science journals tend to publish longer articles. Furthermore, there is a stronger focus on the refereed research article in the natural sciences than in the social sciences, where citation of books and other manuscripts that do not appear in the JCR database would occur. And finally, nearly all of the top natural scientific journals (by these criteria) are multi-disciplinary or inter-disciplinary in orientation, but few of the top serials in social science display this tendency (Tables 2–4). Top natural science journals such as *Nature*, *Science*, *Journal of Geophysical Research*, *Geophysical Research Letters*, *Environmental Science and Technology*, and *Earth and Planetary Science Letters* tend to draw their authorship and readership from multiple disciplines, whereas top social science journals can be more readily identified with specific disciplines such as economics, sociology, political science, and geography. By contrast, the NA statistics do show that most of the top journals in both science and social science are inter-disciplinary (Table 5). The multi-disciplinary and cross-disciplinary nature of these leading science serials suggest that some applied geographers may find a large audience for most of their best work. In general, results corroborate the findings of Turner (1988) who suggested that, with the exception of physical geography, disciplinary journals in geography fare well in CF compared with serials in sister disciplines, particularly when standardized for the number of practitioners of the discipline. Despite these inherent biases in comparing journals across the breath of geography, the quantification of these results provides some important information for applied geographers when determining the audience for their research publications.

Within human geography journals that have data for at least four years in the time series, *Environment and Planning A* has by far the strongest CF and publishes the most articles, as indicated by NA (Table 6). *Progress in Human Geography* has the greatest IF (excepting journals with less than four years of existence), and

Table 2
Top 50 journals in science and social science citation indices based on weighted means of citation frequency (journals with ⩾4 years of data only), 1997–2004

Science journal	Weighted mean of citation frequency	Missing obs	Social science journal	Weighted mean of citation frequency	Missing obs
Nature	328604	0	*Am Econ Rev*	11013	0
Science	296037	0	*Soc Sci Med*	10166	0
J Geophys Res	91873	0	*Am Sociol Rev*	6006	0
Environ Sci Technol	27633	1	*Am Polit Sci Rev*	3762	0
Ecology	26577	0	*J Health Soc Behav*	2861	0
Geophys Res Lett	23877	0	*J Econ Perspect*	2192	0
Earth Planet Sc Lett	16521	0	*J Econ Lit*	2124	0
Am Nat	14955	0	*World Dev*	1924	0
Limnol Oceanogr	14115	0	*Demography*	1659	0
Water Resour Res	13495	0	*Risk Anal*	1644	0
J Atmos Sci	13048	0	*Environ Plann A*	1601	0
Soil Sci Soc Am J	13035	0	*Am Anthropol*	1488	0
Geology	12284	0	*Urban Stud*	1331	0
Atmos Environ	11369	0	*Ann Assoc Am Geogr*	1267	0
Water Res	11147	0	*Soc Psychol Quart*	1191	0
Mon Weather Rev	9230	0	*Am Antiquity*	1175	1
J Climate	9079	0	*World Polit*	1041	0
Geophys J Int	7847	1	*J Urban Econ*	1009	0
Geol Soc Am Bull	7800	1	*Foreign Aff*	999	0
J Phys Oceanogr	7446	0	*Reg Stud*	930	0
Sci Total Environ	7351	0	*Land Econ*	883	0
Chem Geol	7226	1	*Soc Sci Quart*	870	0
Can J Bot	6979	1	*Environ Behav*	846	0
J Ecol	6706	0	*T I Brit Geogr*	830	0
J Environ Qual	6623	0	*Sociology*	813	0
Can J Forest Res	6581	1	*Environ Plann D*	794	0
Conserv Biol	6337	0	*Transport Res B-Meth*	786	0
Annu Rev Ecol Syst	6194	0	*J Retailing*	771	0
J Hydrol	5622	0	*Transport Sci*	766	0
Ecol Monogr	5277	1	*Prog Hum Geog*	758	0
Q J Roy Meteor Soc	5002	0	*Sociol Educ*	724	0
Ecol Appl	4911	1	*Energ Policy*	680	0
B Am Meteorol Soc	4751	0	*Int J Geogr Inf Sci*	662	0
IEEE T Geosci Remote	4744	0	*Int J Urban Regional*	643	0
Remote Sens Environ	4648	0	*Int Migr Rev*	622	0
Palaeogeogr Palaeocl	4582	0	*Landscape Urban Plan*	616	0
Environ Pollut	4536	0	*Econ Dev Cult Change*	607	0
J Appl Ecol	4530	0	*Prof Geogr*	595	2
Mar Geol	4515	1	*Ann Tourism Res*	586	0
Water Air Soil Poll	4491	0	*J Am Plann Assoc*	577	0
Int J Remote Sens	4462	0	*Econ Geogr*	566	0
Geophysics	4444	1	*Public Health*	555	0
J Appl Meteorol	4373	0	*Soc Stud Sci*	550	0
Bioscience	4257	0	*Polit Geogr*	519	0
Soil Sci	4227	0	*Sociol Methodol*	490	0
Am J Sci	4096	0	*J Environ Psychol*	477	0
Can J Earth Sci	3815	0	*Geogr Anal*	467	0
Rev Geophys	3812	1	*China Quart*	461	0
Fuzzy Set Syst	3610	0	*Transport Res A-Pol*	459	0
Quaternary Res	3531	0	*J Regional Sci*	458	0

Table 3
As in Table 2, but for impact factor

Science journal	Weighted mean of impact factor	Missing obs	Social science journal	Weighted mean of impact factor	Missing obs
Nature	29.82	0	*J Econ Lit*	5.57	0
Science	27.18	0	*Am Sociol Rev*	2.82	0
Rev Geophys	7.38	1	*J Econ Perspect*	2.79	0
Annu Rev Ecol Syst	6.73	0	*Prog Hum Geog*	2.69	0
Ecol Monogr	4.95	1	*World Polit*	2.50	0
Annu Rev Earth Pl Sc	4.40	0	*T I Brit Geogr*	2.48	0
Adv Ecol Res	4.23	2	*Am Polit Sci Rev*	2.46	0
Am Nat	4.15	0	*Foreign Aff*	2.11	0
Ecology	3.78	0	*J Health Soc Behav*	2.09	0
B Am Meteorol Soc	3.78	0	*Ann Assoc Am Geogr*	2.08	0
Global Change Biol	3.76	0	*Popul Bull*	2.07	0
Clim Dynam	3.61	0	*Environ Plann D*	1.98	0
Global Biogeochem Cy	3.45	0	*Econ Geogr*	1.97	0
J Climate	3.40	0	*Am Econ Rev*	1.88	0
Earth Sci Rev	3.39	0	*Harvard Environ Law*	1.88	0
Environ Sci Technol	3.32	1	*Soc Sci Med*	1.85	0
Bioscience	3.22	0	*Demography*	1.81	0
Limnol Oceanogr	3.11	0	*Antipode*	1.63	0
Earth Planet Sc Lett	3.08	0	*Polit Geogr*	1.61	0
Conserv Biol	3.04	0	*Environ Plann A*	1.41	0
Ecol Appl	3.03	1	*Geoforum*	1.40	0
Ecol Lett	3.02	2	*Eur Urban Reg Stud*	1.32	2
Ecosystems	2.86	2	*Am Antiquity*	1.31	1
Quaternary Sci Rev	2.83	0	*Health Place*	1.29	4
J Ecol	2.74	0	*Area*	1.26	0
J Appl Ecol	2.74	0	*Soc Psychol Quart*	1.20	0
Am J Sci	2.74	0	*Sociology*	1.20	0
J Geophys Res	2.69	0	*Risk Anal*	1.19	0
Geology	2.63	0	*J Rural Stud*	1.18	0
Tellus B	2.55	0	*Reg Stud*	1.18	0
J Atmos Chem	2.48	0	*Eur J Int Relat*	1.16	2
Chem Geol	2.40	1	*Int J Urban Regional*	1.14	0
Geophys Res Lett	2.39	0	*Sociol Methodol*	1.14	0
J Atmos Sci	2.37	0	*Foreign Policy*	1.11	0
Adv Geophys	2.35	1	*J Peace Res*	1.10	0
Remote Sens Environ	2.29	0	*Sociol Educ*	1.08	0
Atmos Environ	2.26	0	*Prof Geogr*	1.08	2
Geol Soc Am Bull	2.24	1	*Energy J*	1.06	0
Quaternary Res	2.19	0	*Theor Soc*	1.06	0
Q J Roy Meteor Soc	2.17	0	*World Dev*	1.05	0
Geostandard Newslett	2.15	1	*Urban Stud*	1.04	0
J Phys Oceanogr	2.13	0	*Soc Stud Sci*	1.04	0
J Hydrometeorol	2.12	4	*Dev Change*	1.00	0
Holocene	2.09	0	*Int J Geogr Inf Sci*	0.99	0
Agr Forest Meteorol	2.08	0	*J Am Plann Assoc*	0.97	0
Ecography	1.98	1	*Transport Res B-Meth*	0.95	0
Mon Weather Rev	1.92	0	*J Retailing*	0.95	0
Crit Rev Env Sci Tec	1.92	0	*Land Econ*	0.94	0
Climatic Change	1.90	0	*China J*	0.94	0
Global Ecol Biogeogr	1.89	0	*China Quart*	0.92	0

Environment and Planning D publishes the most immediate impact research, as indicated by II (Table 6). While no journal ranks in the top five in all four citation statistics categories, three (among serials with data for at least four years) rank in the top five in three of the four categories. Specifically, in addition to its top ranking in

Table 4
As in Table 2, but for immediacy index

Science journal	Weighted mean of immed index	Missing obs	Social science journal	Weighted mean of immed index	Missing obs
Nature	6.38	0	*Soc Stud Sci*	0.90	0
Science	5.91	0	*Foreign Aff*	0.77	0
Tellus B	1.07	0	*J Econ Lit*	0.64	0
Rev Geophys	1.03	1	*Foreign Policy*	0.61	2
Bioscience	0.96	0	*J Peace Res*	0.49	0
J Paleolimnol	0.95	1	*Harvard Environ Law*	0.45	0
Ecosystems	0.82	1	*Am Sociol Rev*	0.41	2
Hydrol Earth Syst Sc	0.79	3	*J Health Soc Behav*	0.41	3
Ecol Appl	0.78	1	*Land Use Policy*	0.40	0
Adv Ecol Res	0.75	4	*Am Polit Sci Rev*	0.38	0
Atmos Ocean	0.73	0	*Environ Plann B*	0.37	0
Annu Rev Earth Pl Sc	0.73	0	*Popul Bull*	0.36	0
Ecol Monogr	0.73	1	*Soc Sci Med*	0.35	0
Mar Geol	0.72	1	*Demography*	0.34	0
J Appl Ecol	0.72	0	*Environ Plann D*	0.33	0
B Am Meteorol Soc	0.70	0	*Environ Plann A*	0.32	0
Climatic Change	0.67	0	*Econ Geogr*	0.31	0
Quaternary Sci Rev	0.64	0	*Polit Geogr*	0.31	0
Am Nat	0.64	0	*Ann Assoc Am Geogr*	0.31	0
J Atmos Sci	0.63	0	*Eur Urban Reg Stud*	0.30	2
Geogr Ann A	0.60	2	*J Asian Stud*	0.29	0
J Biogeogr	0.60	0	*Geogr J*	0.28	0
Ecology	0.60	0	*J Econ Perspect*	0.28	0
Clim Dynam	0.58	0	*Am Econ Rev*	0.27	0
J Climate	0.57	0	*Theor Cult Soc*	0.27	0
Agr Forest Meteorol	0.56	0	*T I Brit Geogr*	0.27	0
Global Ecol Biogeogr	0.56	0	*Int Aff*	0.26	0
J Atmos Chem	0.54	0	*China J*	0.26	0
J Phys Oceanogr	0.53	0	*Nat Resour J*	0.26	2
Limnol Oceanogr	0.52	0	*Prog Hum Geog*	0.26	0
Global Change Biol	0.51	0	*Risk Anal*	0.24	0
Conserv Biol	0.51	0	*Environ Behav*	0.24	0
J Geophys Res	0.49	0	*J Rural Stud*	0.23	0
Global Planet Change	0.49	0	*Int Regional Sci Rev*	0.23	0
Environ Sci Technol	0.49	1	*World Polit*	0.22	0
Aust J Earth Sci	0.47	0	*Reg Stud*	0.22	0
Earth Planet Sc Lett	0.47	0	*Int Migr Rev*	0.21	0
Remote Sens Environ	0.47	0	*Soc Psychol Quart*	0.20	2
Atmos Environ	0.46	0	*J Retailing*	0.20	0
Sci Total Environ	0.46	0	*Geoforum*	0.20	0
Q J Roy Meteor Soc	0.46	0	*World Dev*	0.20	0
Mon Weather Rev	0.46	0	*Urban Geogr*	0.19	0
Ecol Lett	0.45	1	*Sociology*	0.19	0
Chem Geol	0.45	1	*Environ Plann C*	0.19	0
Global Biogeochem Cy	0.45	0	*J Am Plann Assoc*	0.19	0
Estuaries	0.45	1	*Prof Geogr*	0.19	3
Am J Sci	0.44	0	*Dev Change*	0.19	0
J Hydrometeorol	0.43	3	*Area*	0.19	0
J Ecol	0.42	0	*Sociol Educ*	0.18	2
J Aerosol Sci	0.41	0	*Energ Policy*	0.17	0

CF and NA, *Environment and Planning A* also ranks second in II. *Annals of the Association of American Geographers* ranks second in CF, third in IF, and fifth in II. *Environment and Planning D* is fourth in IF and fifth in CF, in addition to its top ranking in II. Three other journals appear in the top five (among serials with

Table 5
As in Table 2, but for number of articles

Science journal	Weighted mean of number of articles	Missing obs	Social science journal	Weighted mean of number of articles	Missing obs
J Geophys Res	2104	0	*Soc Sci Med*	340	0
Geophys Res Lett	1132	0	*Am Econ Rev*	164	0
Nature	952	0	*World Dev*	123	0
Science	929	0	*Urban Stud*	122	0
Environ Sci Technol	812	1	*Energ Policy*	119	0
Atmos Environ	539	0	*World Today*	113	0
Water Res	503	0	*Environ Plann A*	104	0
Earth Planet Sc Lett	373	0	*Risk Anal*	96	0
Sci Total Environ	362	0	*Landscape Urban Plan*	78	0
Int J Remote Sens	315	0	*Environ Resour Econ*	70	3
Water Resour Res	300	0	*Public Health*	70	0
Geology	292	0	*Soc Sci Quart*	67	0
Ecology	291	0	*Society*	66	0
J Climate	280	0	*Reg Stud*	66	0
Geophys J Int	273	1	*Foreign Aff*	65	0
Fuzzy Set Syst	266	0	*Third World Q*	62	0
IEEE T Geosci Remote	264	0	*Tourism Manage*	58	0
Water Air Soil Poll	252	0	*Ann Tourism Res*	57	0
Environ Pollut	252	0	*J Urban Econ*	53	0
J Hydrol	244	0	*Soc Natur Resour*	53	0
Ecol Model	226	0	*Europe-Asia Stud*	53	0
Can J Forest Res	224	1	*Am Anthropol*	52	1
J Environ Qual	224	0	*Int J Urban Regional*	52	0
J Atmos Sci	221	0	*Soc Sci J*	50	0
Commun Soil Sci Plan	220	0	*J Econ Perspect*	47	0
Soil Sci Soc Am J	218	0	*Soc Res*	46	1
Palaeogeogr Palaeocl	211	0	*Environ Plann B*	46	0
Limnol Oceanogr	206	0	*J Urban Hist*	44	0
Ann Geophys-Atm Hydr	202	1	*Transport Res B-Meth*	44	0
Chem Geol	198	1	*Am Polit Sci Rev*	44	0
Hydrol Proc	197	0	*Sociology*	44	0
Mon Weather Rev	195	0	*Am Sociol Rev*	43	2
J Phys Oceanogr	192	0	*Theor Cult Soc*	43	0
Mar Geol	174	1	*Antipode*	42	0
Environ Monit Assess	163	0	*Prof Geogr*	42	3
Remote Sens Environ	162	0	*Environ Plann C*	42	0
Conserv Biol	162	0	*Transport Res A-Pol*	41	0
J Atmos Sol-Terr Phys	152	0	*Land Econ*	41	0
Agr Ecosyst Environ	150	0	*Geoforum*	40	0
J Atmos Ocean Tech	149	0	*Polit Geogr*	40	0
Ecol Appl	149	1	*J Black Stud*	40	0
Q J Roy Meteor Soc	146	0	*Int Migr Rev*	40	0
Can J Bot	145	1	*Int J Geogr Inf Sci*	40	0
Environ Technol	143	0	*Demography*	40	0
J Air Waste Manage	140	0	*Middle Eastern Stud*	39	0
Geophysics	140	1	*Lat Am Res Rev*	38	0
J Environ Monitor	139	2	*Cities*	38	0
J Arid Environ	136	0	*Prog Hum Geog*	38	0
Am Nat	136	0	*Tijdschr Econ Soc Ge*	38	0
Quaternary Sci Rev	135	0	Am Antiquity	37	1

at least four years of data) in two categories. *Regional Studies* is third in both CF and NA. *Transactions of the Institute of British Geographers* falls second in IF and fourth in CF. And finally, *Economic Geography* ranks third in II and fifth in IF (Table 6). It seems that newer, trendier serials tend to remain excluded from the top

Table 6
Weighted means of citation indices for human geography journals: 1997–2004, ranked by citation frequency

	Weighted mean CF	Missing obs CF	Weighted mean IF	Missing obs IF	Weighted mean II	Missing obs II	Weighted mean NA	Missing obs NA
Environ Plann A	1601	0	1.41	0	0.32	0	104	0
Ann Assoc Am Geogr	1267	0	2.08	0	0.31	0	37	0
Reg Stud	930	0	1.18	0	0.22	0	66	0
T I Brit Geogr	830	0	2.48	0	0.27	0	26	0
Environ Plann D	794	0	1.98	0	0.33	0	32	0
Prog Hum Geog	758	0	2.69	0	0.26	0	38	0
Int J Geogr Inf Sci	662	0	0.99	0	0.10	0	40	0
Landscape Urban Plan	616	0	0.72	0	0.13	0	78	0
Prof Geogr	595	2	1.08	2	0.19	3	42	3
Econ Geogr	566	0	1.97	0	0.31	0	19	0
Polit Geogr	519	0	1.61	0	0.31	0	40	0
Geogr Anal	467	0	0.89	0	0.16	0	20	0
Area	429	0	1.26	0	0.19	0	37	0
Urban Geogr	417	0	0.87	0	0.19	0	27	0
Geogr Rev	402	0	0.30	0	0.07	2	21	2
Geogr J	402	0	0.73	0	0.28	0	22	0
Geoforum	398	0	1.40	0	0.20	0	40	0
Antipode	395	0	1.63	0	0.16	0	42	0
Can Geogr-Geogr Can	281	0	0.56	0	0.07	0	24	0
Pap Reg Sci	252	0	0.41	0	0.11	0	26	0
J Econ Geogr	207	7	3.14	7	0.63	7	27	7
Aust Geogr	193	0	0.90	0	0.12	0	19	0
J Geogr Higher Educ	188	0	0.78	0	0.12	0	27	0
J Hist Geogr	186	0	0.69	0	0.10	0	27	0
Tijdschr Econ Soc Ge	178	0	0.53	0	0.10	0	38	0
Geography	177	0	0.30	0	0.15	0	30	0
Appl Geogr	157	0	0.57	0	0.15	0	19	0
Scot Geogr J	140	0	0.41	0	0.05	0	9	0
Post-Sov Geogr Econ	128	0	0.86	0	0.17	2	12	0
Mitt Osterr Geogr G	86	0	0.28	0	0.00	6	13	6
Singapore J Trop Geo	65	0	0.60	0	0.13	0	17	0
Cartogr J	57	0	0.16	0	0.04	0	15	0
Eurasian Geogr Econ	42	5	0.85	6	0.55	5	30	5
Geogr Z	41	0	0.27	0	0.02	2	4	2
Cult Geogr	18	5	0.64	6	0.03	5	21	5
Average	412.7	0.5	1.063	0.6	0.187	0.9	31	0.9

five in each list, even with the weighting system designed to emphasize statistics from more recent years. A notable exception is *Journal of Economic Geography*, which has catapulted to the top IF and II in its first few years of existence (Table 6).

Among physical geography journals, *Palaeogeography Palaeoclimatology Palaeoecology* is the leader in both CF and NA, while *Quaternary Science Reviews* has the highest IF and II (Table 7). Research on paleoenvironments seems to provide a wealth of prestige for geography, particularly outside the discipline, as

Table 7
As in Table 6, but for physical geography journals

	Weighted mean CF	Missing obs CF	Weighted mean IF	Missing obs IF	Weighted mean II	Missing obs II	Weighted mean NA	Missing obs NA
Palaeogeogr Palaeocl	4582	0	1.63	0	0.40	0	211	0
Quaternary Res	3531	0	2.19	0	0.26	0	76	0
Quaternary Sci Rev	2977	0	2.83	0	0.64	0	135	0
J Biogeogr	2505	0	1.81	0	0.60	0	110	0
J Glaciol	2420	0	1.58	0	0.21	1	33	1
Photogramm Eng Rem S	2144	0	1.07	0	0.26	0	78	0
Landscape Ecol	1448	0	1.56	0	0.22	0	46	0
Geomorphology	1404	0	1.37	0	0.19	0	123	0
Arct Antarct Alp Res	1263	2	1.10	2	0.12	2	46	2
J Coastal Res	1143	0	0.74	0	0.10	0	102	0
Global Planet Change	986	0	1.73	0	0.49	0	73	0
Arctic Alpine Res	954	6	1.00	6	0.23	6	47	6
Quatern Int	833	1	1.09	1	0.26	1	97	1
Antarct Sci	828	0	1.12	0	0.27	0	46	0
Z Geomorphol	811	0	0.72	0	0.12	0	27	0
Arctic	730	0	0.69	0	0.27	0	39	0
Int J Geogr Inf Sci	679	1	1.00	1	0.09	1	39	1
Landscape Urban Plan	652	2	0.76	2	0.14	2	78	2
Prog Phys Geog	565	0	1.08	0	0.11	0	28	0
Geogr Ann A	555	1	0.70	1	0.60	2	27	2
Global Ecol Biogeogr	522	0	1.89	0	0.56	0	44	0
Polar Res	413	0	0.83	0	0.16	0	22	0
Permafrost Periglac	390	0	0.98	0	0.40	0	222	0
Geogr Phys Quatern	385	3	0.50	3	0.27	4	9	4
Phys Geogr	314	0	0.45	0	0.05	1	14	0
Mt Res Dev	280	0	0.33	0	0.05	0	52	0
Geodin Acta	261	0	1.01	0	0.06	0	20	0
ISPRS J Photogramm	251	0	0.72	0	0.10	0	24	0
Geoinformatica	111	6	0.72	6	0.06	6	14	6
Photogramm Rec	108	3	0.51	3	0.14	4	12	4
Earth Obs Remot Sen+	58	2	0.12	2	0.00	4	17	2
Average	1100.1	0.9	1.091	0.9	0.240	1.1	61.6	1.0

Quaternary Science Reviews falls in the top five of all four categories (second in NA and third in CF, in addition to its top rankings in IF and II), in addition to the leading journals listed above. *Journal of Biogeography* also finishes among the top five physical geography journals in all four categories (third in II and fourth in CF, IF, and NA). *Quaternary Research* (second in both CF and IF), *Global Ecology and Biogeography Letters* (third in IF and fourth in II), and *Global and Planetary Change* (fifth in both IF and II) are the only other serials to rank in the top five in at least two categories.

Although hydrology and (especially) climatology journals tend to be more likely to be listed as non-geography serials in the ISI database, these results do suggest that paleogeographic and environmental work

tends to contribute greatly to geography's reputation. Nevertheless, it seems that physical geographers may have strong justification for publishing in non-geography journals such as *Journal of Climate*, *Ecology*, and *Limnology and Oceanography* because of the strong citation statistics in some specialized journals.

Citation statistics for several geography journals in the GISciences are shown in Table 8. *Remote Sensing of Environment* ranks the highest in the categories of CF, IF, and II, while *International Journal of Remote Sensing* has the highest NA. Other than the very high II for *Remote Sensing of Environment* (0.47), citation statistics for GIScience journals tend to be comparable to top- and middle-ranking geography journals in physical and human geography.

Comparison of the mean values shown at the bottom of Tables 6–8 reveals that, not surprisingly, GIScience and physical geography journals are cited more frequently than human geography journals. However, IF values are more similar across the subfields, with the top human geography journals showing slightly higher IF scores than the leading physical geography and GIScience serials. Physical geography serials also tend to have slightly higher II than the other subfields.

Because *Annals of the Association of American Geographers* is listed as a social science serial, it is only compared against five other flagship journals in the social sciences including economics, sociology, political science, and anthropology (Table 9). *The Annals* ranks fourth in IF and II, fifth in NA, and last in CF. Considering that geography is the smallest of the disciplines represented by these flagship journals, *The Annals* seems to be having a disproportionately large impact in some ways. This result is perhaps not surprising, because its role as a flagship journal undoubtedly dictates that integrative, synthetic articles be published within it, and as an integrative, synthetic discipline, geography has no shortage of such research.

A total of 56 journals in the Science database and 15 in the Social Science Database show increasing citation frequency in each year from 1997 through 2004. Table 10 shows clearly that journals covering ecological and environmental themes, and journals emphasizing the global scale of analysis seem to be cited increasingly frequently over the eight-year period. Many of these journals are of special importance to applied geographers. One journal, *Ecological Letters*, has scores that increased in each year with available data in as many as three categories (CF, IF, and NA). *Journal of Hydrometeorology*, which debuted in 2000, has shown annual increases in both CF and NA over the four years of its existence. In the social sciences, journals with an economic and/or environmental focus appear to show the most consistent increases over the 1997–2004 period (Table 11). Only one journal, *Social Science and Medicine*, displays an annual increase in a category other than CF. For that journal, IF also increased over time.

Table 8
As in Table 6, but for selected GIScience journals

	Weighted mean CF	Missing obs CF	Weighted mean IF	Missing obs IF	Weighted mean II	Missing obs II	Weighted mean NA	Missing obs NA
Remote Sens Environ	4648	0	2.29	0	0.47	0	162	0
Int J Remote Sens	4462	0	0.99	0	0.16	0	315	0
Photogramm Eng Rem S	2144	0	1.07	0	0.26	0	78	0
Geotechniques	1854	1	0.72	1	0.13	1	62	1
Int J Geogr Inf Sci	679	1	1.00	1	0.09	1	39	1
J Geodesy	270	0	0.76	0	0.12	0	55	0
ISPRS J Photogramm	251	0	0.72	0	0.10	0	24	0
Geoinformatica	111	6	0.72	6	0.06	6	14	6
Photogramm Rec	108	3	0.51	3	0.14	4	12	4
Cartogr J	57	0	0.16	0	0.04	1	15	1
Average	1458.4	1.1	0.894	1.1	0.157	1.3	77.6	1.3

Table 9
As in Table 6, but for selected geography vs. non-geography flagship journals

	Weighted mean CF	Missing obs CF	Weighted mean IF	Missing obs IF	Weighted mean II	Missing obs II	Weighted mean NA	Missing obs NA
Am Econ Rev	11013	0	1.88	0	0.27	0	164	0
Am Sociol Rev	6006	0	2.82	0	0.41	2	43	2
Am Polit Sci Rev	3762	0	2.46	0	0.38	0	44	0
J Econ Lit	2124	0	5.57	0	0.64	0	18	0
Am Anthropol	1488	0	0.85	0	0.12	1	52	1
Ann Assoc Am Geogr	1267	0	2.08	0	0.31	0	37	0
Average	4276.7	0.0	2.610	0	0.355	0.5	59.7	0.5

Table 10
Journals in science citation index with increasing citation frequency in each year from 1997 through 2004, with number of years of available data shown in parentheses (minimum of five years of available data)

Adv Ecol Res (6)
Afr J Ecol (8)
Agr Ecosyst Environ (8)
Am Nat (8)
Annu Rev Earth Pl Sc (8)
Annu Rev Ecol Syst (8)
Appl Soil Ecol (8)
Atmos Environ (8)
B Am Meteorol Soc (8)
Bioscience (8)
Chem Geol (7)
Climatic Change (8)
Conserv Biol (8)
Earth Planet Sc Lett (8)
Earth Surf Proc Land (8)
Earth-Sci Rev (8)
Ecol Appl (7)
Ecol Lett (8)
Ecol Model (8)
Ecol Monogr (7)
Ecol Res (8)
Ecology (8)
Ecoscience (8)
Ecosystems (7)
Environ Conserv (8)
Environ Geol (8)
Environ Pollut (8)
Environ Sci Pollut R (8)
Environ Sci Technol (7)
Geoderma (8)
Geology (8)
Geomorphology (8)
Geophys J Int (7)
Geophys Res Lett (8)
Global Change Biol (8)
Global Ecol Biogeogr (8)
Global Environ Chang (8)
Global Planet Change (8)
Holocene (8)
Hydrol Proc (8)
IEEE T Geosci Remote (8)
Int J Climatol (8)
ISPRS J Photogramm (8)
J Aerosol Sci (8)
J Am Water Res As (6)
J Appl Ecol (8)
J Atmos Ocean Tech (8)
J Biogeogr (8)
J Climate (8)
J Ecol (8)
J Environ Monitor (6)
J Geodyn (8)
J Hydrol (8)
J Hydrometeorol (5)
J Paleolimnol (7)
J Sediment Res (8)
J Trop Ecol (8)
Mar Geol (7)
Nature (8)
Palaeogeogr Palaeocl (8)
Plant Ecol (8)
Popul Ecol (5)
Quatern Int (7)
Rev Palaeobot Palyno (7)
Sci Total Environ (8)
Science (8)
Water Int (6)
Wetlands (8)

Table 11
As in Table 10, but for journals in social science citation index

Am Econ Rev (8)
China J (8)
Ecumene (5)
Environ Hist (8)
Geoforum (8)
J Asian Afr Stud (5)
J Econ Lit (8)
J Econ Perspect (8)
J Environ Psychol (8)
Reg Stud (8)
Risk Anal (8)
Soc Sci Med (8)[a]
Urban Stud (8)

[a]Impact factor also increased for each of the seven years of available data.

Conclusions

This research has analyzed the citation statistics for nearly 400 journals of interest to applied geographers. Although the limitations of using citation statistics as indicators of reputation are noted, results indicated that,

in general, serials with economic, environmental, inter-disciplinary, global, and contemporary foci seem to be reflected most favorably—a result that appears to be advantageous to applied geographers. Physical geography journals tend to show higher citation frequencies than those in human geography, as expected, but the undercount of cited journal articles in books and other monographs, and other differences in the nature of academic natural and social scientific research, may account for at least part of this difference. However, the impact factors and immediacy indices are similar between physical and human geography journals. Citation statistics suggest that Geography's flagship journals appear to perform at least in proportion to the size of the discipline, if not a bit ahead of the curve. There is some suggestion that the top GIScience journals may show somewhat more "immediate impact" features (as measured by II) than other journals in geography. However, the majority shows comparable statistics to the other geography disciplinary and multi-disciplinary serials.

We concur with Turner's (1988) observation that an appropriate balance should be attained between publishing in disciplinary and non-disciplinary journals. Prestige of the work of applied geographers will be enhanced by publication of the best work in the top category of non-geography outlets. But such increased prestige could come at the expense of disciplinary cohesion, if pushed too far (Turner, 1988).

Future research should continue to analyze these trends, as citation statistics become available for a wider interval of years. As noted by Whitehand (1988), impact factors (and other citation statistics) may vary greatly from year to year, particularly for journals with relatively few published articles. Improved awareness of the citation statistics of our outlets for dissemination of our scholarship can only help us to improve the visibility of our applied geographic research.

Appendix A. Science journals included in the analysis

Adv Ecol Res	*Commun Soil Sci Plan*	*Global Biogeochem Cy*	*Meteorol Appl*
Adv Environ Res	*Comput Geosci*	*Global Change Biol*	*Meteorol Atmos Phys*
Adv Geophys	*Conserv Biol*	*Global Ecol Biogeogr*	*Meteorol Z*
Adv Water Resour	*Conserv Ecol*	*Global Environ Chang*	*Metrologia*
Aerosol Sci Tech	*Crit Rev Env Sci Tec*	*Global Planet Change*	*Mon Weather Rev*
Afr J Ecol	*Dynam Atmos Oceans*	*Holocene*	*Mt Res Dev*
Agr Ecosyst Environ	*Earth Obs Remot Sen*	*Hydrol Earth Syst Sc*	*Nat Hazards*
Agr Forest Meteorol	*Earth Planet Sc Lett*	*Hydrol Proc*	*Nature*
Agr Water Manage	*Earth Surf Proc Land*	*Hydrolog Sci J*	*Neth J Geosci*
Agroforest Syst	*Earth-Sci Rev*	*IEEE T Geosci Remote*	*Ocean Coast Manage*
Am J Sci	*Ecography*	*Int J Biometeorol*	*Ozone-Sci Eng*
Am Midl Nat	*Ecol Appl*	*Int J Climatol*	*Palaeogeogr Palaeocl*
Am Nat	*Ecol Lett*	*Int J Environ Pollut*	*Permafrost Periglac*
Am Sci	*Ecol Model*	*Int J Geogr Inf Sci*	*Photogramm Eng Rem S*
Ann Arid Zone	*Ecol Monogr*	*Int J Remote Sens*	*Photogramm Rec*
Ann Geofis	*Ecol Res*	*Int J Water Resour D*	*Phys Geogr*
Ann Geophys-Atm Hydr	*Ecology*	*ISPRS J Photogramm*	*Plant Ecol*
Ann Glaciol	*Econ Bot*	*J Aerosol Sci*	*Polar Res*
Annu Rev Earth Pl Sc	*Ecoscience*	*J Air Waste Manage*	*Popul Ecol*
Annu Rev Ecol Syst	*Ecosystems*	*J Am Water Res As*	*Prog Phys Geog*
Antarct Sci	*Environ Conserv*	*J Appl Ecol*	*Q J Roy Meteor Soc*
Appl Ocean Res	*Environ Eng Geosci*	*J Appl Meteorol*	*Quatern Int*
Appl Soil Ecol	*Environ Geol*	*J Arid Environ*	*Quaternary Res*
Appl Veg Sci	*Environ Int*	*J Atmos Chem*	*Quaternary Sci Rev*
Arct Antarct Alp Res	*Environ Manage*	*J Atmos Ocean Tech*	*Regul River*
Arctic	*Environ Monit Assess*	*J Atmos Sci*	*Remote Sens Environ*
Arctic Alpine Res	*Environ Pollut*	*J Atmos Sol-Terr Phy*	*Rev Geophys*
Arid Land Res Manag	*Environ Prog*	*J Biogeogr*	*Rev Palaeobot Palyno*
Atmos Chem Phys	*Environ Res*	*J Climate*	*River Res Appl*

Atmos Environ	*Environ Sci Pollut R*	*J Coastal Res*	*Sci Total Environ*
Atmos Ocean	*Environ Sci Technol*	*J Ecol*	*Science*
Atmos Res	*Environ Technol*	*J Environ Manage*	*Sedimentology*
Atmosfera	*Environment*	*J Environ Monitor*	*Soil Sci*
Aust J Earth Sci	*Estuaries*	*J Environ Qual*	*Soil Sci Soc Am J*
Aust J Soil Res	*Fuzzy Set Syst*	*J Geodesy*	*Southeast Nat*
Aust Meteorol Mag	*Geoarchaeology*	*J Geodyn*	*Southwest Nat*
B Am Meteorol Soc	*Geoderma*	*J Geophys Res*	*Tellus A*
Basic Appl Ecol	*Geodin Acta*	*J Glaciol*	*Tellus B*
Bioscience	*Geogr Ann A*	*J Great Lakes Res*	*Theor Appl Climatol*
Biotropica	*Geogr Phys Quatern*	*J Hydrol*	*Trop Agr*
Boreas	*Geoinformatica*	*J Hydrometeorol*	*Trop Geogr Med*
Bound-Lay Meteorol	*Geol Soc Am Bull*	*J Meteorol Soc Jpn*	*Veg Hist Archaeobot*
Can Geotech J	*Geology*	*J Paleolimnol*	*Vegetatio*
Can J Bot	*Geo-Mar Lett*	*J Phys Oceanogr*	*Water Air Soil Poll*
Can J Earth Sci	*Geomorphology*	*J Quaternary Sci*	*Water Environ Res*
Can J Forest Res	*Geophys J Int*	*J Sediment Res*	*Water Int*
Can J Soil Sci	*Geophys Prospect*	*J Trop Ecol*	*Water Res*
Catena	*Geophys Res Lett*	*J Veg Sci*	*Water Resour Bull*
Chem Geol	*Geophysics*	*J Water Res Pl-ASCE*	*Water Resour Manag*
Clim Dynam	*Geosci Can*	*Landscape Ecol*	*Water Resour Res*
Climate Res	*Geostandard Newslett*	*Landscape Urban Plan*	*Weather Forecast*
Climatic Change	*Geotechnique*	*Limnol Oceanogr*	*Wetlands*
Coast Manage	*Geotimes*	*Mar Geol*	*Z Geomorphol*

Appendix B. Social science journals included in the analysis

Afr Affairs	*Environ Plann D*	*J Geogr*	*Sci Soc*
Afr Dev Rev	*Environ Resour Econ*	*J Geogr Higher Educ*	*Sci Soc Sante*
Afr Today	*Environ Urban*	*J Health Soc Behav*	*Scot Geogr Mag*
Africa	*Environ Value*	*J Hist Geogr*	*Singapore J Trop Geo*
Altern-Soc Transform	*Eur J Int Relat*	*J Jpn Stud*	*Soc Dynamics*
Am Anthropol	*Eur J Popul*	*J Mod Afr Stud*	*Soc Natur Resour*
Am Antiquity	*Eur Plan Stud*	*J Peace Res*	*Soc Psychol Quart*
Am Econ Rev	*Eur Urban Reg Stud*	*J Regional Sci*	*Soc Res*
Am Polit Sci Rev	*Europe-Asia Stud*	*J Retailing*	*Soc Sci Comput Rev*
Am Sociol Rev	*Eurasian Geogr Econ*	*J Rural Stud*	*Soc Sci Hist*
Ann Assoc Am Geogr	*Eure*	*J Urban Aff*	*Soc Sci Inform*
Ann Regional Sci	*Feminist Rev*	*J Urban Econ*	*Sco Sci J*
Ann Sci	*Feminist Stud*	*J Urban Hist*	*Soc Sci Med*
Ann Tourism Res	*Foreign Aff*	*J Urban Plan D-ASCE*	*Soc Sci Quart*
Antipode	*Foreign Policy*	*J Urban Technol*	*Soc Sci Res*
Appl Geogr	*Geoforum*	*Land Econ*	*Soc Stud Sci*
Area	*Geogr Anal*	*Land Use Policy*	*Society*
Aust Geogr	*Geogr J*	*Landscape Urban Plan*	*Sociol Educ*
Black Scholar	*Geogr Rev*	*Lat Am Perspect*	*Sociol Methodol*
Can Geogr-Geogr Can	*Geogr Z*	*Lat Am Polit Soc*	*Sociol Theor*
Cartogr J	*Geography*	*Lat Am Res Rev*	*Sociology*
China J	*Glob Gov*	*Middle East J*	*T I Brit Geogr*
China Quart	*GLQ–J Lesbian Gay St*	*Middle East Policy*	*Teach Sociol*

Cities	*Growth Change*	*Middle Eastern Stud*	*Technol Cult*
Clim Policy	*Harvard Environ Law*	*Mitt Osterr Geogr G*	*Theor Cult Soc*
Contemp Sociol	*Health Place*	*Mod Asian Stud*	*Theor Soc*
Continuity Change	*Hum Ecol*	*Mod China*	*Third World Plan Rev*
Cult Geogr	*Int Aff*	*Nat Resour J*	*Third World Q*
Cult Stud	*Int J Geogr Inf Sci*	*Oceania*	*Tijdschr Econ Soc Ge*
Demography	*Int J Middle E Stud*	*Pac Aff*	*Tourism Manage*
Desarrollo Econ	*Int J Urban Regional*	*Pac Rev*	*Transport J*
Dev Change	*Int Migr*	*Pap Reg Sci*	*Transport Q*
Disasters	*Int Migr Rev*	*Polit Geogr*	*Thransport Res A-Pol*
Econ Dev Cult Change	*Int Regional Sci Rev*	*Popul Bull*	*Transport Res B-Meth*
Econ Geogr	*J Am Plann Assoc*	*Popul Environ*	*Transport Rec D-Tr E*
Ecosyst Health	*J Asian Afr Stud*	*Population*	*Transport Res E-Log*
Ecumene	*J Asian Stud*	*Post-Sov Geogr Econ*	*Transport Rev*
Energ Policy	*J Baltic Stud*	*Prof Geogr*	*Transport Sci*
Energy J	*J Black Stud*	*Prog Hum Geog*	*Transportation*
Environ Behav	*J Contemp Asia*	*Prog Plann*	*Urban Aff Rev*
Environ Ethics	*J Dev Stud*	*Public Health*	*Urban Geogr*
Environ Hist	*J Econ Geogr*	*Qual Quant*	*Urban Stud*
Environ Plann A	*J Econ Lit*	*Reg Stud*	*World Dev*
Environ Plann B	*J Econ Perspect*	*Rev Int Stud*	*World Polit*
Environ Plann C	*J Environ Psychol*	*Risk Anal*	*World Today*
	J Forecasting		

References

Batty, M. (2003). The geography of scientific citation. *Environment and Planning A*, *35*(5), 761–765.

Bodman, A. R. (1991). Weavers of influence: The structure of contemporary geographic research. *Transactions of the Institute of British Geographers*, *16*(1), 21–37.

Brunn, S. D. (1992). Are we missing our "forest" and our "trees"? It's time for a census. *Annals of the Association of American Geographers*, *82*(1), 1–2.

Brunn, S. D. (1995). Geography's research performance based on *Annals* manuscripts, 1987–1993. *The Professional Geographer*, *47*(2), 204–215.

Brunn, S. D. (Ed.). (1997). Support for, and impacts of, publishing in the annals of the AAG: The authors and an editor speak. *The Professional Geographer*, *49*(3), 364–371.

Butler, D. R. (1989). Conducting research and writing an article in physical geography. In M. S. Kenzer (Ed.), *On becoming a the professional geographer* (pp. 88–99). Columbus, OH: Merrill Publishing Company.

Coelho, P. M. Z., Antunes, C. M. F., Costa, H. M. A., Kroon, E. G., Lima, M. C. S., & Linardi, P. M. (2003). The use and misuse if the "impact factor" as a parameter for evaluation of scientific publication quality: A proposal to rationalize its application. *Brazilian Journal of Medical and Biological Research*, *36*(12), 1605–1612.

Costa, J. E., & Sylvester, A. G. (1993). The crisis in scientific publication. *GSA Today*, *3*(1), 13–15.

De Loe, R. (2001). Where do we publish? Journals chosen by Canadian geographers, 1999–2001. *Canadian Geographer*, *47*(3), 351–354.

Doran, M. F. (1981). Research productivity of American geographers. *The Professional Geographer*, *33*(2), 261–262.

Dorn, R. I. (2002). Analysis of geomorphology citations in the last quarter of the 20th century. *Earth Surface Processes and Landforms*, *27*(6), 667–672.

Exner, O. (1993). Scientometrics, impact factor, citation analysis—an extremely critical view. *Chemicke Listy*, *87*(12), 719–728.

Ferguson, R. (2003). Publication practices in physical and human geography: A comment on Nigel Thrift's 'The future of geography'. *Geoforum*, *34*(1), 9–11.

Gaile, G. L., & Willmott, C. J. (Eds.). (2003). *Geography in America at the dawn of the 21st century*. Oxford: Oxford University Press.

Garfield, E. (1972). Citation analysis as a tool in journal evaluation. *Science*, *178*, 471–479.

Gatrell, A. C., & Smith, A. (1984). Networks of relations among a set of geographical journals. *The Professional Geographer*, *36*(3), 300–307.

Groop, R. E., & Schaetzl, R. J. (1997). Productivity profiles of PhD-granting geography departments in the United States: 1980–1994. *The Professional Geographer*, *49*(4), 451–464.

Gross, P. L. K., & Gross, E. M. (1927). College libraries and chemical education. *Science*, *66*, 385–389.

Gutierrez, J., & Lopez-Nieva, P. (2001). Are international journals of human geography really international? *Progress in Human Geography*, *25*(1), 53–69.

Hamilton, D. P. (1990). Publishing by—and for?—The numbers. *Science*, *250*(4986), 1331–1332.

Hamilton, D. P. (1991). Research papers: Who's uncited now? *Science*, *251*(4989), 25.

Harman, J. R. (1996). Thoughts after Brunn: Quality and quantity in geography research. *The Professional Geographer*, *48*(1), 100–102.

Institute for Scientific Information—Thomson Scientific (1997–2004a). *Journal citation reports*. Science edition (web-based for 1997 and 2004; on CD-ROM for 1998-2003), Philadelphia, PA.

Institute for Scientific Information—Thomson Scientific (1997–2004b). *Journal citation reports*. Social sciences edition (web-based for 1997; on CD-ROM for 1998-2004), Philadelphia, PA.

Johnston, R. J. (1994). The "quality industry" in British higher education and the AAG's publications. *The Professional Geographer*, *46*(4), 491–497.

Johnston, R. J. (2003). Geography: A different sort of discipline? *Transactions of the Institute of British Geographers*, *28*(1), 133–141.

Jones, M. C. (2001). Guide to English-language journals for geography education. *Journal of Geography*, *100*(1), 14–23.

Lee, D., & Evans, A. (1984). American geographers' rankings of American geography journals. *The Professional Geographer*, *36*(3), 292–300.

Lee, D., & Evans, A. (1985). Geographers' rankings of foreign geography and non-geography journals. *The Professional Geographer*, *37*(4), 396–402.

Levia, D. F., & Underwood, S. J. (2004). Hydrological research and the status of physical geography journals: Increasing the impact of physical geography in the academy. *The Professional Geographer*, *56*(3), 345–349.

Peritz, B. C. (1995). On the association between journal circulation and impact factor. *Journal of Information Science*, *21*(1), 63–67.

Quiring, S. M. (2007). Trends in publication outlets of geographer-climatologists. *The Professional Geographer*, *59*(3), 357–364.

Symanski, R. (1996). This matter of quality. *The Professional Geographer*, *48*(1), 89–90.

Trimble, S. W. (1987). The use of citation indices in comparing geography programs: An exploratory study; some comments. *The Professional Geographer*, *39*(2), 202–203.

Turner, B. L. (1988). Whether to publish in geography journals. *The Professional Geographer*, *40*(1), 5–18.

Turner, B. L., II, & Meyer, W. B. (1985). The use of citation indices in comparing geography programs: An exploratory study. *The Professional Geographer*, *37*(3), 271–278.

Whitehand, J. W. R. (1984). The impact of geographical journals: A look at the ISI data. *Area*, *16*(2), 185–187.

Whitehand, J. W. R. (1985). Contributors to the recent development and influence of human geography: What citation analysis suggests. *Transactions of the Institute of British Geographers*, *10*(2), 222–234.

Whitehand, J. W. R. (1988). Where to publish. *The Professional Geographer*, *40*(4), 461–462.

Yeung, H. W. (2002). Deciphering citations. *Environment and Planning A*, *34*(12), 2093–2102.