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POPULATION GEOGRAPHY: A BIBLIOMETRIC ANALYSIS

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Abstract

Research journals play a significant role in teaching and research in higher education. These also promote scholarship that perceives multidimensional problems of the mankind in totality and present them with sagacity, truth and vision. The journals also lend a new perspective and dimensions, to illuminate hitherto unexplored areas of a subject and make it a profound research study. Moreover, journals provide a forum for the interdisciplinary study of contemporary issues which encourage closer interaction between various branches of knowledge. The present paper is an attempt to understand the publication patterns of a journal. The study presents the Bibliometric analysis of research papers published in the 'Population Geography' during 20 years period (1994-2013). There were a total of 132 research papers published during this period. Based on published research papers, present study examines the period-wise distribution, authorship pattern, thematic distribution, length of the articles, regional distribution of authors, institutional affiliation of the authors, references, citations, and use of maps and graphs as cartographic tools.

Introduction

Bibliometric is one of the research methods which are useful in the field of library and information science. The term 'bibliometric' was first introduced by Pritchard (1969) to denote the “application of mathematical methods to books and other communication”. The word 'bibliometric' itself is a combination of two words '*biblio*' and '*metrics*' which are derived from Latin and Greek words, meant for the application of mathematics to the study of bibliography. Bibliometric research uses various methods of citation analysis to establish relationship between authors and their work. When one author cites another author then a relationship is established that is called citation analysis. Bibliometrics is a study and measurement of

the publication patterns of all forms of written communication and their authorship. There are various aspects of the term bibliometric, but one common feature is the emphasis on quantitative aspect of the studies. Thus, bibliometric is an important field of information science as it represents a unique set of techniques and tools for the monitoring and analysis of information resources and the management of knowledge in social and organizational contexts (Swain et al., 2013). Nowadays, many scholars of library and information science are conducting research on bibliometrics in context of various research journals. It has been found that one fourth of all articles published in the journals of library and information science are of bibliometrics related studies (Maheshwarappa, 1997).

It is true that in contemporary phase of growing knowledge, the journals play a constructive role in teaching and research in higher education. Therefore, journals act as an important medium of dissemination of knowledge and ideas. It is a fact that discoveries and new ideas first appear in periodicals and many of these articles do not transform into any other form of publication. Journals being the primary source of information and dissemination are indispensable to research. Hence, the study of articles published in a journal has a pivotal role to play in communicating the advancement of knowledge in a subject (Asha, 2007).

The present study also deals with *Population Geography* journal. Before, focusing on the journal, it is also essential to clarify that population geography itself is a very popular branch of human geography which is concerned with demonstrating spatial and temporal variations in various characteristics of population on the earth. Thus, teaching and research in the field of population geography becomes essential to understand the various issues and challenges related to population especially in developing countries like India where population growth is fast and influencing socio-economic and ecological development adversely. To spread the ideas and research findings of geographers and other social scientists, the journal *Population Geography* is playing a vital role. It is a leading research journal in the field of population geography in India. Thus, the present study has been taken-up to highlight scholarly contents of this journal during 1994-2013 through bibliometric analysis.

About the Journal

Population Geography is a Journal published by the Association of Population Geographers of India with its headquartering at

the Department of Geography, Panjab University, Chandigarh. The publication of this journal is a major accomplishment of the Association. The first issue of *Population Geography* was brought out in 1979. From 1979 till date, the Association of Population Geographers of India is publishing this journal regularly. The journal has received overwhelming response from the geographers and scholars of other social sciences all over the world which speaks of the success of the venture. It is hoped that through this venture the Indian population geographers will be able to serve the cause of population geography more vigorously. The editorial objective of *Population Geography* is to encourage the research focused on the characteristics of population at local, regional, national and international levels. Another objective of the journal is to inspire emerging geographers, demographers and population specialists to contribute in population research. Besides, journal also gives attention to contributors on theoretical and methodological aspects of population studies.

Objective of the Study

Bibliometric analysis of *Population Geography* published by the Association of Population Geographers of India is the major objective of the present study.

Data Base and Methodology

The present study of bibliometric analysis is based on the publications appeared in *Population Geography* since last two decades. To understand the temporal variations in the bibliometric characteristics of the Journal and to highlight the publication trends the whole study period is divided into four phases of 1994-1998, 1999-2003, 2004-2008 and 2009-2013. Data required for the study have been generated from 20 volumes of the journal

pertaining to 20 years (1994-2013). There were 132 research papers scattered on 1723 pages contributed by 173 authors. The title and authors-wise list of all the research papers has been prepared. Likewise, other relevant information has also been collected from various issues of the journal. The entire data have been processed by simple technique of percentages and the results have been interpreted with the help of tables.

Results and Discussion

Period-wise Distribution of Research Papers

Period-wise distribution of the research papers published in the journal during the study period has been presented in Table 1. It is observed that maximum number of research papers i.e. 39 (29.55 per cent) were published during 1999-2003. While, minimum (28) research papers comprising 21.21 per cent of the total were published during 2009-2013. The

journal published on an average 33 research papers in every five years.

Authorship Patterns

An authorship pattern refers to the number of author involved in contributing a research paper. To understand the authorship patterns the research papers are grouped according to the number of authors i.e. the number of papers written by single author, two authors and three or more authors. The analysis reveals that during the study period 94 (71.21 per cent) research papers of the total 132 were written by single authors while 35 (26.51 per cent) were contributed by two authors. The rest of the 3 (2.28 per cent) were contributed by three or more authors. As a whole, the study reveals that large majority of the authors prefer to publish their research paper individually rather than jointly (Table 2).

The temporal investigation of

Table 1
Population Geography: Distribution of Research Papers (1994-2013)

Period	Number of Papers	Percentage of Research Papers
1994-1998	34	25.76
1999-2003	39	29.55
2004-2008	31	23.48
2009-2013	28	21.21
Total	132	100.00

Source: Compiled by authors

Table 2
Population Geography: Authorship Patterns of Research Papers (1994-2013)

Period	Number of Authors			Total
	Single	Two*	Three**	
1994-1998	29	05	--	39
1999-2003	29	09	01	50
2004-2008	13	16	02	51
2009-2013	23	05	--	33
Total	94 (71.21)	35 (26.51)	03 (2.28)	173 (100.0)

Source: Compiled by authors (Figures in parenthesis are in percentages)

*Counted double and added in total.

** Counted triple and added in total.

authorship pattern highlights that single authored research papers were confined mainly during the periods of 1994-1998 and 1999-2003, respectively. The numbers (29) of research papers in these two periods is equal. The research papers written by two authors were highest (16) during the period 2004-2008 (Table 2). While, there were only three research papers contributed by three and more authors one during 1999-2003 and two during 2004-2008 periods, respectively (Table 2).

Thematic Composition of Research Papers

The 1723 pages of the journal have rolled 132 research papers during the study period. The research papers have been classified into eleven broad themes of population geography (Table 3). The analysis reflects, not only a variety of the themes but also diversity in perspective and differentiation in spatial scale (Krishan, 2003). Theme-wise classification of research papers revealed that maximum numbers of research papers (16 each) were published on the themes such as urbanization, regional demography and population development followed by a total of 25 papers published on combined sub-themes of population growth, vital rates, demographic transition and population projections during the study period. On the other hand, least preferred themes were distribution, density, and households and working force and structure with 4 papers each during the study period (Table 3). It may be due to ever occurring changes in administrative units in case of distribution; density and household and frequent changes in the definition of a 'worker' by the Indian census in case of working force and structure (Gosal and Gill, 1999).

Temporal investigation of thematic composition of research papers reflected that during 1994-1998 'ethnic composition' and 'population development' has received

adequate attention of the geographers. In this regards, five research papers were contributed on each theme during this phase of five years. On the other hand, most uncommon themes were, 'distribution, density and household' as these themes jointly attracted only one paper during 5 years (1994-1998). Similarly, during 1999-2003, there were 39 research papers published on different themes. However, 'urbanization' and 'regional demography' by attracting 7 papers each emerged to be the most popular themes during this period. While the theme like 'working force and structure' was the most ignored and has received less attention of geographers. Only one research paper was published on this theme during 1999-2003 (Table 3).

Out of the total 31 papers published during 2004-2008, 'literacy and education' and 'regional demography' were found to be the most favoured sub-themes of population geography by attracting 5 papers each. On the other hand, themes like 'working force and structure' jointly could not attract even one paper during this period of 5 years hence emerged to be most neglected field of research during this period. Similarly, 'urbanization' and 'population development' were the most popular themes during 2009-2013 as 5 and 4 papers, respectively were published on these themes. Again 'distribution, density and household' and 'theory and methodology' appeared to be most neglected as not a single paper was published on these themes during 2009-2013 (Table 3). On the whole 'urbanization', 'population development' and 'regional demography' remained popular fields of research while, 'distribution, density and households' and 'working force and structure' emerged to be most neglected areas of research during the last 20 years in population geography.

Table 3
Population Geography: Thematic Composition of Research Papers (1994-2013)

Year	Distribution, Density and Household	Population Growth, Vital Rates, Demographic Transition and Population Projection	Migration	Urbanization	Sex Ratio, Age Structure and Marital Status	Literacy and Education	Working Force and Structure	Ethnic Composition	Regional Demography	Population Development	Theory and Methodology	Total
1994-98	1	7	3	2	3	2	2	5	3	5	1	34
1999-03	2	3	2	7	4	3	1	3	7	5	2	39
2004-08	1	8	3	2	1	5	-	2	5	2	2	31
2009-13	-	7	3	5	3	3	1	1	1	4	-	28
Total	4	25	11	16	11	13	4	11	16	16	5	132
All Themes (%)	3.03	18.95	8.33	12.12	8.33	9.85	3.03	8.33	12.12	12.12	3.79	100.0

Source: Compiled by authors

Length of Research Papers

Although the upper limit of the words/pages of a research paper is prescribed by the editor of the journal yet it is very rarely imposed and therefore, papers vary in length from time to time and volume to volume of the journal. Length of the research papers by number of pages reveals that there were 13 (9.85 per cent) research papers having the page length ranging between 1-6 pages; 63 (47.73 per cent) were of 7-13 pages in length followed by 46 (34.85 per cent) having the length between 14-20 pages. While very small proportion i.e. 10 (7.57 per cent) research papers were having the length of 20 pages and more than that (Table 4).

Further, a close look on the temporal analysis indicates that the length of the research paper varied from period to period. In the

category of 1-6 page length, highest numbers of research papers were confined to 1994-1998 and 1999-2003 periods, respectively. The next category of 7-13 pages, the highest numbers of research papers were found during 1999-2003. The research papers having the length of 14-20 pages varied in number between 10 and 12 throughout the study period. While, research papers having the length of more than 20 pages, the highest numbers (5) were published during 2009-2013 period (Table 4). The analysis highlights that most of the authors (48 per cent) kept their paper within 7-13 pages followed by 35 per cent of papers limited within 14 to 20 pages.

Regional Distribution of the Authors

The journal welcomes original research papers in the area of population geography

Table 4
Population Geography: Length of Research Paper (1994-2013)

Period	Number of Pages				Total
	1-6	7-13	14-20	> 20	
1994-1998	5	15	12	2	34
1999-2003	5	22	10	2	39
2004-2008	1	17	12	1	31
2009-2013	2	09	12	5	28
Total	13 (9.85)	63 (47.73)	46 (34.85)	10 (7.57)	132 (100.00)

Source: Compiled by authors (Figures in parenthesis are in percentages)

Table 5
Population Geography: Regional Distribution of Authors (1994-2013)

Period	Number of Authors		Total
	Indian	Foreigners	
1994-1998	31	08	39
1999-2003	36	14	50
2004-2008	42	09	51
2009-2013	31	02	33
Total	140 (80.92)	33 (19.08)	173 (100.00)

Source: Compiled by authors (Figures in parenthesis are in percentages)

from Indian and overseas geographers in particular and other social scientists in general. The information regarding regional distribution of the authors was derived from the official addresses of the authors published along with their research papers in the journal. There were 132 research papers contributed by 173 authors (single and joint authorship) during the study. Regional distribution of the authors reveals that larger proportion 140 (80.92 per cent) were Indian authors and 33 (19.08 per cent) were foreign authors mostly from Malaysia (Table 5). Among the Indian contributors the majority was from the Chandigarh city alone. Period-wise distribution of foreign and Indian authors reveals that the maximum representation of the foreign authors was during 1999-2003 period when out of the 50 papers, 14 (28 per cent) were contributed by the foreign authors.

Institution-wise Distribution of Authors

The authors of the research papers are found to be associated with different types of academic, research and professional institutions. Table 6 highlights the data on institution-wise contributors of the research papers. The examination of data on this aspect of the authors reveals that the highest contributions of research papers i.e. 135 (78.04 per cent) were from the authors of various

universities followed by research institutes 26 (15.03 per cent), while the lowest proportion of 12 (6.93 per cent) research papers were contributed by the scholars from the colleges.

The contribution of the university scholars varied between 30 to 39 research papers during different periods of the study. Further, it is also observed that contribution of university authors was highest during 2004-2008 with 39 research papers. Likewise, the contribution of the authors from research institutes varied from 1 during 2009-2013 period to 10 during 1999-2003 period. As compared to the authors from universities and research institutes, the contribution of the scholars from the colleges was very less as they had contributed only 12 research papers during the two decades of the study. The highest contribution of the authors from the colleges was found during 2004-2008 with 5 research papers (Table 6). Thus, the study indicates that the journal received maximum contribution from the universities followed by research institutes during the period under study. It may be due to accountability of the faculty members of the universities and research institutes towards research.

Distribution of References

The references play a significant role in any research writing. Therefore, references are

Table 6
Population Geography: Institutional Affiliation of Authors (1994-2013)

Period	Institutions			Total
	Universities	Research Institutes	Colleges	
1994-1998	30	08	01	39
1999-2003	36	10	04	50
2004-2008	39	07	05	51
2009-2013	30	01	02	33
Total	135 (78.04)	26 (15.03)	12 (6.93)	173 (100.00)

Source: Compiled by authors (Figures in parenthesis are in percentages)

an important and integral part of any research publication. References provide the background information to the reader about the topic being discussed in the concerned research paper. At the same time these assure the reader that the author(s) are familiar with the history of the topic being investigated. This apart, the authors quote various related studies to strengthen their arguments. Therefore, authors take references from different sources which include books, journals, reports, seminar/conference proceedings, newspapers, occasional papers, working papers, monographs, mimeographs etc.

Table 7 illustrates the number of papers with number of references cited in each period. The analysis of data also indicates that distribution of references varies from paper to paper and from volume to volume. Thus, there was no consistency in this regard. Out of the total 132 research papers contributed, 20 were found without references. Out of the remaining 112 research papers, 22 (16.66 per cent) have references 1 to 6. Similarly, 41 research papers (31.06 per cent) quoted 7-13 references. Another 22 (16.66 per cent) research papers were having references 14-20 and the remaining 27 (20.45 per cent) papers have more than 20 references (Table 7). Thus, if the quality of a paper is judged from the number of references quoted, it can be said that one-fourth

(24 per cent) of the total papers published were of good quality by having more than 20 references. Temporal analysis of this aspect of the study also reveals that authors are gradually recognizing the importance of review of literature, as during 1994-98 only 12 per cent of the total papers were with references more than 20, their number increased to 31 per cent in 2004-08 and 2009-13 periods, respectively.

Source-wise Distribution of References

In the total of 132 research papers, the authors have quoted 1773 references. Of these references 863 (48.68 per cent) were from books, 704 (39.70 per cent) from journals, 84 (4.74 per cent) from reports, 51 (2.88 per cent) from websites, 27 (1.53 per cent) from working papers 17 (0.95 per cent) from newspapers, and 16 (0.90 per cent) from other sources. Besides, only 11 (0.62 per cent) references were from the theses which were lowest among all the sources of references used in the journal (Table 8). Temporal analysis about source of reference reveals that books were prime source of reference in 1999-2003 followed by journals, reports, websites, working papers and theses. Leaving aside books, all other were the major source of references during the period 2009-2013. Thus, the study indicates that the trend of references is gradually shifting from books to journals and other sources like reports,

Table 7
Population Geography: Distribution of References (1994-2013)

Period	Number of Papers Having References*				Total Research Papers
	1-6	7-13	14-20	> 20	
1994-1998	7	8	6	3	24
1999-2003	8	10	8	7	33
2004-2008	2	14	4	9	29
2009-2013	5	9	4	8	26
Total	22	41	22	27	112

Source: Compiled by authors

*Out of total 132 research papers, 112 were with references and remaining 20 were without references.

websites, and working papers (Table 8).

Use of Maps and Graphs

Maps and graphs are the major tools used by the researchers to illustrate the results and findings of their studies. The research papers published during the study period are supported by 232 maps and 115 graphs (Table 9). Among the maps and graphs it has been found that maps are more popular than graphs as one paper on an average contained 1.78 maps against 0.88 graphs during the study period.

Besides, temporal analysis reveals that there are variations in use of maps and graphs by the authors. Their application has increased with time. It is reflected from the fact that there were 1.88 maps and 0.73 graphs per paper in the first period of study (1994-1998) while, their

number per paper increased to 2.96 and 0.96 respectively in the last period (2009-2013). However, it has been noticed that share of maps has been increased by introduction of special map series carried out by Dr. Gopal Krishan single handedly.

Conclusion

The present study has tried to understand the publication trends in demographic and population studies through a bibliographic analysis of 'Population Geography' journal. It is evident from this study that on an average six research papers were published per year in this journal. The theme-wise classification indicates that the main thrust area of research remained in the field of urbanization, regional demography, population

Table 8
Population Geographer: Source-wise Distribution of References (1994-2013)

Period	Books	Journals	Websites	Thesis	Reports	News Papers	Working Papers	Other sources	Total
1994-98	158	98	01	02	22	02	13	03	299
1999-03	288	153	07	01	19	03	02	02	475
2004-08	275	223	19	02	11	07	04	03	544
2009-13	142	230	24	06	32	05	08	08	455
Total	863 (48.68)	704 (39.70)	51 (2.88)	11 (0.62)	84 (4.74)	17 (0.95)	27 (1.53)	16 (0.90)	1773 (100.00)

Source: Compiled by authors (Figures in parenthesis are in percentages)

Table 9
Population Geography: Use of Maps and Graphs in Research Papers (1994-2013)

Period	Maps	Graphs	Total
1994-1998	64	25	89
1999-2003	65	35	100
2004-2008	29	31	60
2009-2013	74	24	98
Total	232 (66.85)	115 (33.15)	347 (100.00)

Source: Compiled by authors (Figures in parenthesis are in percentages)

development, literacy and education, migration and ethnic composition. In case of authorship pattern, it is found that majority of the research papers were contributed by single authors. Nearly half of the research papers consists seven to thirteen pages in length. The regional distribution of the research papers reveals that majority of the research papers were contributed by Indian scholars while only about one-fifth research papers were contributed by overseas scholars. In the context of institutional affiliations of authors, it is found that large proportion of the research papers were contributed by authors from various universities. In case of citation of references it was found that authors have used various sources of references to write their research papers but books and journals were most preferred sources of references. Further, it was found that invariably all the research papers were supported by maps and graphs. Since, maps are important tools of geographers for the interpretation of any phenomena in spatial context their application is increasing with time.

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