Monitoring international interest in transnational academic mobility to Australia

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This research examines the issue of transnational academic mobility of academic staff looking at potential moves to higher education institutions in Australia. By establishing a web-based portal, attracting interested parties from around the world with information about Australian universities and subsequent career opportunities, web analytics are used as a research mechanism for generating quantitative data that identify the regions of the world from where most interest is being generated. Passive observations are made, leading to commentary on the regions of particular interest, the effectiveness of web analytics as a research tool, and the strengths and limitations of such an experiment.

Introduction

Universities, like many modern organisations, are operating and competing for business on a global scale. 'Information technology; the knowledge economy; increased mobility for students, faculty, programs, and providers; and an integrated world economy propel this internationalisation (Altbach & Knight, 2007)' making it a topic of great focus and debate. The added dimension educational internationalisation brings poses new challenges for academic institutions, and opportunities for staff, where new factors and considerations must be deliberated (Knight, 2003).

Students see value in learning about other cultures as part of their university education and believe multicultural communication skills to be very important in a globalising world (Walker, Yecies & Freund, 2009); and as a result universities are working to increase the international exposure of their institutions to meet with this increasing interest from overseas (Yates, 2002). Similarly, academic staff regard living and working overseas, and gaining international experience, as an effective mechanism in developing their knowledge and skill sets. This notion of academics moving between territorial boundaries is called 'transnational' academic mobility (Kim, 2009).

Over the last 20 years, the level of transnational movement of academic staff, members of staff at universities who undertake teaching, research, a combination of both functions; has steadily continued to increase due to a number of factors. The rise of the global market and globalisation as a whole have obviously been a major influence, as well as the affordability and ease of international travel and improved communication methods, but additionally new recruitment policy strategies and the relaxation of trade

policies by many national governments have led to a greater intake of overseas academics. Changes in immigration policy in countries such as the UK, USA, Canada and Australia favour highly skilled workers and academics, especially those specialising in areas such as science and technology (Kuptsch & Pang, 2006; Tremblay, 2005).

Mobility in the academic profession is generally presented as something positive and associated with all kinds of benefits (Musselin, 2004). It has been suggested that researchers who show a high level of mobility have been exposed to different schools of thought and could therefore be more likely to pursue new and unexplored research topics (Robken, 2007). Similarly 'senior academics, whose qualifications enable them to move laterally, as their interests suited them, articulate experience-based knowledge on a wide range of topics (Hoffman, 2009).'

This doesn't only apply to senior academics. The European Charter for Researchers is a set of general principles and requirements which specifies the roles, responsibilities and entitlements of researchers and recognises the value of all forms of mobility as a means for enhancing the professional development of researchers. 'Employers and/or funders must recognise the value of geographical, intersectoral, inter- and trans-disciplinary and virtual mobility… as an important means of enhancing scientific knowledge and professional development at any stage of a researcher's career… they should fully value and acknowledge any mobility experience within their career progression/ appraisal system (ECFR, 2006).'

Academic mobility is, of course, not a new phenomenon, much research was done on this topic as far back as the 1950s and 1960s (Lazarsfeld & Thielens Jnr, 1958; Marshall, 1964); but advances in technology, and the internet in particular, have made the task of advertising and searching for academic positions overseas all that more accessible and achievable.

This paper focuses on the issue of the mobility of academic staff, specifically to Australia; and observes the geographic mix of academics interested in migrating to the Australian higher education sector.

Higher education in Australia

Australia is a country with rich traditions in immigration. Ever since Captain James Cook became the first European to encounter the eastern coastline of Australia in 1770, with the British Government deciding to establish a colony at Botany Bay seventeen years later (Baker, 2002), it has continued to attract a steady mix of migrants from around the world; never more so than today.

Australia's population reached an estimated 21.9 million in June 2009, with growth experienced for the period 2008-09 including 285,347 people from net overseas migration (DIAC, 2009). Census data shows that the 23.9 per cent proportion of Australia's population born overseas is greater than that of any other recognised migration country, with New Zealand ranking second with 22.9 per cent overseas born and Canada third with 19.8 per cent (NCS, 2006).

There are 39 universities in Australia (AEN, 2010), most being government owned and largely funded by the Australian Federal Government's Department of Employment, Education and Training (Abbott & Doucouliagos, 2003), and 17 of which are listed in the top 500 of the Shanghai Jiao Tong University (SJTU) Academic Ranking of World Universities 2009 (SRC, 2009). All higher education providers in Australia must be listed on the Australian Qualifications Framework Register of Recognised Education Institutions and Authorised Accreditation Authorities in Australia - this register being developed under the instruction of the Commonwealth, State and Territory Education and Training Ministers (CSHE & CHEMP, 2008).

On average, Australian universities now receive 15 per cent of their annual revenue from international student fees (Sheil, 2010). Indeed, for the tax year 2007-2008 Australia's overall education services exports were estimated at $14.2 billion (ABS, 2008).

The number of full time, or full time equivalent, members of staff employed at Australian Universities has grown by 27 per cent over the last ten years – from 61192 in 1999 to 77491 in 2009. The number of senior lecturers (Level C) has grown to 9159 from 7673, and lecturers (Level B) from 10277 to 12753, over the same period (DEEWR, 2009). At the same time academic mobility out of Australia is also at record levels, although in numerical terms it is more than counterbalanced by the inflow of immigrant academics. In the field of sciences for instance, 'more than 2,000 of the science academics (almost one third) in Australia attained their highest qualification from a higher education institution outside Australia' (Edwards & Smith, 2009), with Hugo (2005) predicting; 'Australian universities over the next decade will be faced by their largest recruitment task for three decades. This task will be addressed in a context of the most competitive inter-

national labour market for the most skilled academics, scientists, technologists, and researchers that has ever existed. If Australian universities are to maintain their current levels of excellence, let alone enhance them, a range of innovative human resource strategies will need to be initiated.'

This level of activity and movement makes Australia a particularly interesting subject upon which to base this study - with such an inflow of immigrant skilled academics, attempting to identify the global regions that are generating the most interest is an important issue for investigation.

The internet as a research tool

Data collection via the Internet 'is one of the most revolutionary changes in the market research industry in the past 40 years (Taylor, 1999).' Its key advantage being its ability to facilitate access to subjects that would be difficult to reach via other mechanisms (Jones, 1999), regardless of geographic constraints, and in real time. Browser-based research is highly flexible and can take many different forms, 'not only can any paper-and-pencil study appear on a browser, but the medium can also provide unique, new opportunities for a researcher (Stanton & Rogelberg, 2001).'

Online electronic surveys (e-surveys) however, whilst comparable to classical methods in terms of the validity and reliability of data, still suffer from the same issues of bias that influence offline surveys. This is in addition to suffering from new mechanisms of bias such as programming technology that forces respondents to answer questions, the self-selection of participants, and the non-representative nature of the Internet population (Eysenbach & Wyatt, 2002; Stieger, Reips & Voracek, 2007).

The approach taken in this research avoids the first two problems completely as participants do not know they are participating in a study and are not being forced into answering any questions. The latter point, however, regarding the non-representative nature of the Internet population is valid and therefore discussed later in the Experimental Limitations section. Being based completely on passive analysis of web traffic, and anonymously identifying the host nations of those accessing the website, this study negates the influence of observer presence biases (Bordia, 1996).

In this instance, an Internet-based approach was seen as the most cost-effective, time-effective mechanism for collecting primary data from very large, diverse population samples (Hewson, Yule, Laurent Vogel, 2003).

Methodology

There are two primary themes for this research;

i. To anonymously observe and record quantitative data on international interest in transnational academic mobility to Australia,
ii. To evaluate the effectiveness of using Web analytics as a research tool.

One of the emerging trends of the 21st century is the use of the Internet as not just a tool for retrieving information, but also as a resource for self-help and guidance (Amir, Gati & Kleiman, 2008). Evidence exists to suggest that individuals are increasingly turning to the Internet for the task of career exploration; those activities that individuals engage in for the purpose of promoting career development, choice, or adjustment (Boyce & Rainie, 2003; Gore, Bobek & Robbins, 2006; Kommers & Rainie, 2002). It is estimated that approximately 4 millions users do exactly this everyday (Boyce & Rainie, 2003).

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The Internet now means that the effort, and cost, of searching online for career opportunities are completely independent of the proximity of the job seeker to the actual vacant position. Access to information about vacant positions is just as readily available whether you are located in the same city or on the other side of the world (Stevenson, 2003).

This online career exploration therefore raises the possibility of using the Web to observe and monitor aspects of human behaviour (Goncalves & Ramasco, 2008). The Internet offers more data than ever before on the habits and preferences of customers, and Web analytics offer a mechanism for recording and documenting this information (Phippen, Sheppard & Furnell, 2004). Web analytics, the 'monitoring and reporting of web site usage so that enterprises can better understand the complex interactions between

web site visitor actions and web site offers' (Group, 2000), can be employed in monitoring visits to websites whilst discretely collecting data about those visitors.This has obvious business applications but can be used as a powerful tool for research.

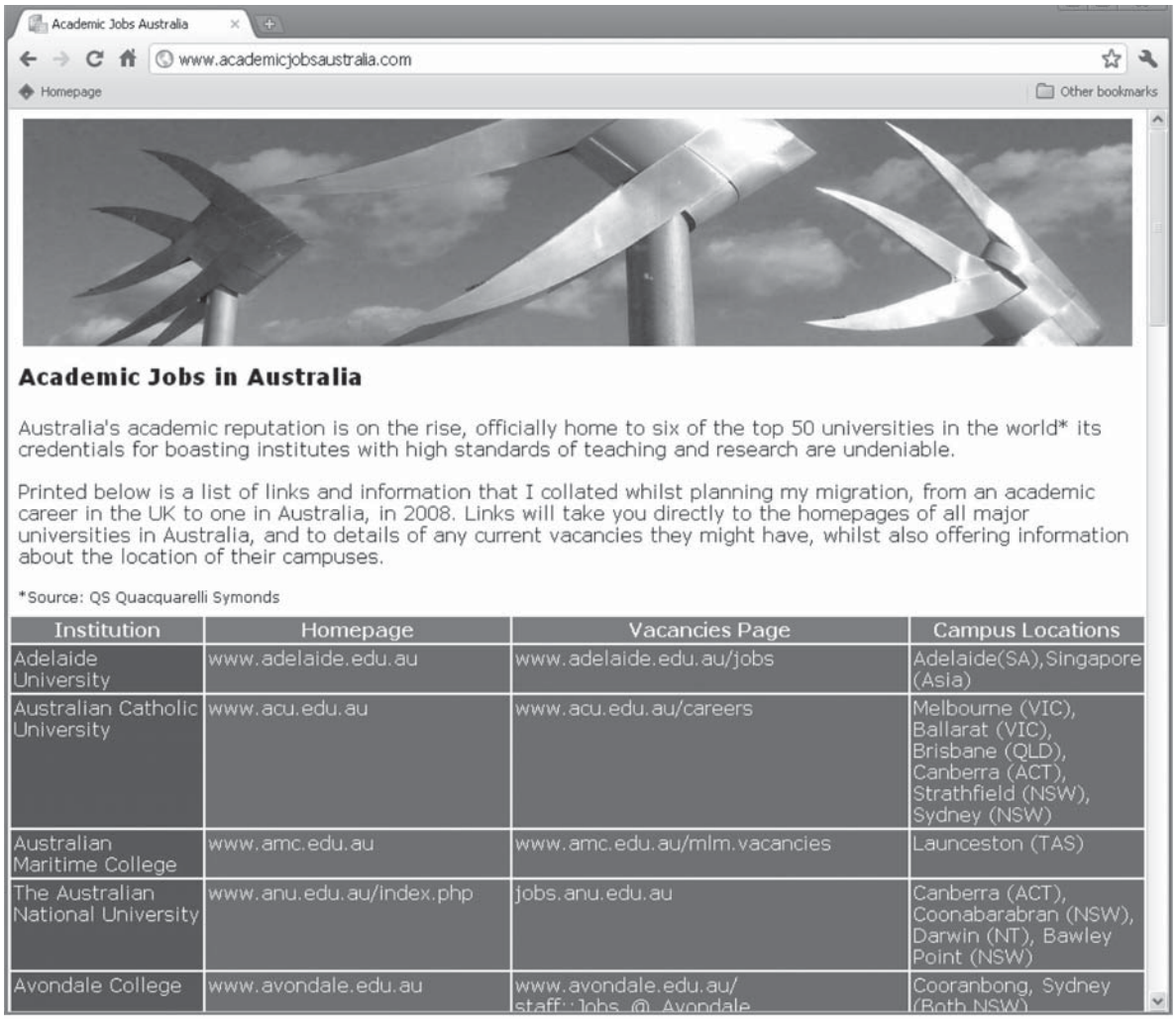
Therefore, in order to measure global interest in transnational academic mobility to Australia it was decided that the most effective mechanism would be to establish a web presence (web portal/website) and extract Web analytics data about its visitors over a twelve-month period.

Establishing a web portal

To examine these research themes a web portal, a site that provides users with online information and information-related services (Yang, Cai, Zhou & Zhou, 2005), was established as the survey instrument. The portal had to be designed in such a way as to generate significant interest amongst those parties looking for information on academic vacancies in Australia, by offering valuable information on the subject, and structured in a way that would make it easy for potential users to find.

The website *academicjobsaustralia.com* (Fig. 1) was developed for the purpose of this research in November 2008, and was designed to act as a gateway containing links to typical content that users, looking at the possibility of a career in academia in Australia, would be interested in. Such content included; a listing of and links to all major universities in the country, direct links to each university's careers/jobs pages, and links to information about the geographical location of their numerous campuses.

As this researcher had recently been through the process of looking for, and securing, an academic position in Australia himself, he was able to draw upon



Institution	Homepage	Vacancies Page	Campus Locations
Adelaide University	www.adelaide.edu.au	www.adelaide.edu.au/jobs	Adelaide(SA), Singapore (Asia)
Australian Catholic University	www.acu.edu.au	www.acu.edu.au/careers	Melbourne (VIC), Ballarat (VIC), Brisbane (QLD), Canberra (ACT), Strathfield (NSW), Sydney (NSW)
Australian Maritime College	www.amc.edu.au	www.amc.edu.au/mlm.vacancies	Launceston (TAS)
The Australian National University	www.anu.edu.au/index.php	jobs.anu.edu.au	Canberra (ACT), Coonabarabran (NSW), Darwin (NT), Bawley Point (NSW)
Avondale College	www.avondale.edu.au	www.avondale.edu.au/staff::Jobs_@_Avondale	Cooranbong, Sydney (Both NSW)

Fig. 1: academicjobsaustralia.com website

twelve months of his own experiences as to what kind of information users would most likely be interested in finding out, thus maximising the appeal of the site. All the design, development, platform testing, and piloting of the new website was done in-house, and off line, with research students assisting in testing the robustness and accuracy of the site's operation.

Listing academicjobsaustralia.com

The Google search engine was chosen as the main distribution outlet for this study as it is the most used search engine on the web, with an 85 per cent global market share (source: *netmarketshare*, Aug 2010), which indexes billions of web pages, and is accessible to users all over the world via the use of keywords and operators.

Within the first three months of the site's launch, due to increasing traffic and interest, the site was also automatically listed on the Yahoo! search engine, reaching a further 6 per cent of the global web search engine traffic. The same can now also be said for the world's third biggest search engine Bing (with 3.35 per cent share of the global market).

At the time of writing, when searching the term 'academic jobs Australia' the site is listed on the first page of results on the *Google.com* search engine, in second position, also features in second position on Bing.com, and is in the number one non-sponsored link position on *Yahoo.com*. Thanks to this global coverage the site was attracting over 2000 hits per month within six months of its launch.

As this researcher has a background in web design there we no external costs associated in developing the website, or marketing it to appear on the first page of results listing on the Google search engine, but there were hosting costs of approximately AUD$100 per year.

So as not to bias the study a decision was made not to market or promote the site in any way, other than search engine listings, guaranteeing all visitors found the site because they were searching for information about academic careers in Australia on the Internet. To their knowledge they were not participating in any kind of survey or research.

Keywords

To maximise the effectiveness and appeal of the website, reaching as wide an audience as possible whilst covering the main categories of academic interest that interested parties would likely search for, a number of meta keywords were established. Meta keywords are contained within the structure of a webpage and provide the search engine with a brief and concise list of the most important themes on that webpage. The main themes for this site were therefore considered to include:

> Australia, Academic, Academia, University, Universities, Job, Vacancy, Vacancies, Position, Career, Lecturer, Research, researcher, associate, fellow, Sydney, Melbourne, Brisbane, Adelaide, Cairns, Canberra, Perth, Victoria, VIC, New South Wales, NSW, Queensland, QLD, Western Australia, WA, Tasmania.

In addition to this a description of the site was also created, appearing in short form on the search engine results page, as simply: 'Academic Vacancies in Australia. A list of useful links and information for anyone thinking about undertaking an academic career in Australia.'

Experimental limitations

The Internet population has long been regarded as being non-representative, with certain members of the global population, or in specific countries, not having equal access to the Internet as others. Women, people of limited financial resources, members of some racial and ethnic minorities, people at low education levels, and older age groups may all fall into this category (Zhang, 1999). These factors could also limit the accuracy of the results from this study, though to what extent is obviously unknown.

The results were limited in detail to simply the country that the IP address of the subject is located in, therefore the actual nationality of that user cannot be determined. Other details such as gender, age, and type of career interest are also unknown. The study was also limited to Internet users of mainstream search engines. However, it can be assumed that, in the global workspace, the use of the Internet would be one of the primary mechanisms in locating information regarding HE vacancies; and the mainstream search engines have a large share of the web-searching market, so perhaps this is not too significant a limitation.

Hits	A request for a file from the web server
Page Views	A request for a file whose type is defined as a page in log analysis.
Visits	A series of page requests from the same uniquely identified client
Kbyte	Data transfers

Table 1: Web Analytics Definitions (Source: WAA 2010)

A fairly large percentage of users, in the region of 25 per cent over the course of the whole study, are described as 'Unresolved' so cannot be used in the study. Similarly it is impossible to ascertain the geographical location of the many '.com' and '.net' users accessing the site. Therefore this study is based upon only approximately 50 per cent of the overall sample and cannot give an accurate representation of what the access rates are for a proportion of the users in the US.

Results

Generated data was recorded automatically, formatted from logs into standard result tables, using the web statistics software Webalizer.

The type of data captured included:

- The geographic location (country) of the user
- The search string (words) they used to find the site
- The name of the search engine used to find the site
- Hits, files, page views, visits, and Kbytes (See Table 1).

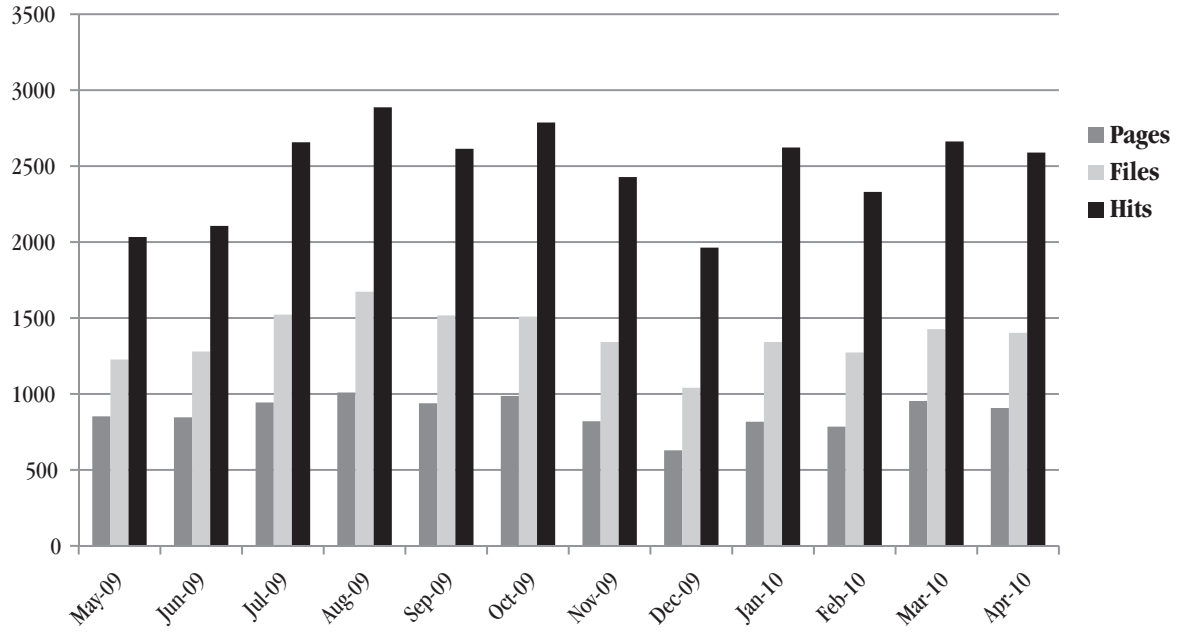


Table 2: Summary by Month (May 2009 – April 2010)

	Daily Avg				Monthly Totals					
Month	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Apr 2010	86	46	30	26	647	55558	795	908	1402	2590
Mar 2010	85	46	30	27	629	56821	847	954	1427	2663
Feb 2010	83	45	28	25	591	50364	706	785	1273	2330
Jan 2010	84	43	26	24	628	53687	763	817	1342	2623
Dec 2009	63	33	20	19	524	41357	591	629	1041	1964
Nov 2009	80	44	27	25	621	53421	753	821	1342	2428
Oct 2009	89	48	31	28	686	59798	895	987	1510	2787
Sep 2009	87	50	31	26	626	59201	793	939	1518	2614
Aug 2009	93	53	32	27	678	64894	857	1010	1673	2887
Jul 2009	85	49	30	24	584	59633	765	944	1523	2657
Jun 2009	70	42	28	20	482	48852	626	846	1280	2107
May 2009	65	39	27	19	465	47095	614	853	1227	2034
Totals						650681	9005	10493	16558	29684

Fig. 2: Results from May 2009 to April 2010

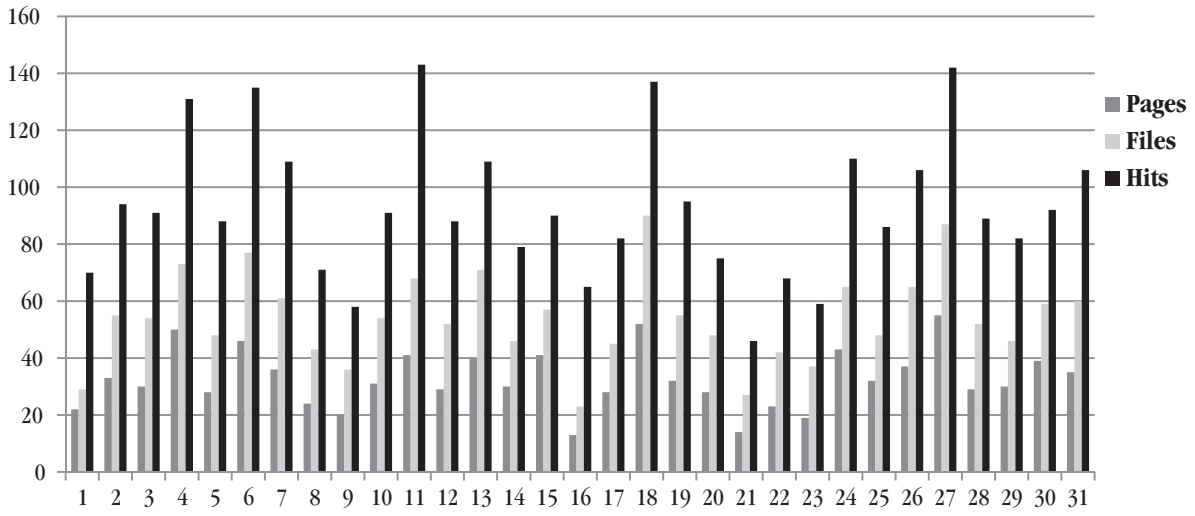


Fig. 3: Daily usage data for August 2009

The resulting data could be manipulated to produce reports on a yearly, monthly, daily, or hourly basis. For example, when examining the full 12-month duration of the study, Table 2 and Figure 2 display monthly summaries of data for the period May 2009–April 2010, allowing month-to-month comparisons to be made. Figure 3 depicts how it was possible to then focus specifically on one of those months (August 2009) to display details regarding user access per day within that month.

The interface clearly showing a daily average of 93 hits, 53 files and 27 unique visits; leading to a monthly total of 2887 hits, 1673 files and 857 visits.

On analysing the day-to-day usage figures for August 2009 (Figure 3) the highest hit/page view rates for the month (occurring on the 11th, 27th, 18th, 6th and 4th) all fell on a Tuesday or Thursday, with most of the monthly lows falling on a Sunday.

Monthly Data

Focussing again at the month of August 2009, the following pie chart (Figure 4) illustrates that 10 per cent of users accessing the site over this month were from the United Kingdom, 9 per cent were from Australia, 4 per cent were from US educational institutions (.edu) and New Zealand, whilst Canadian, German and Dutch

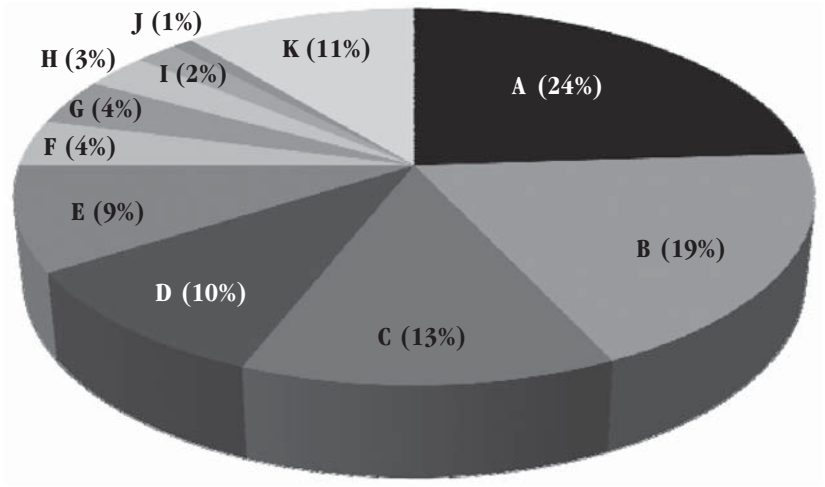


Fig. 4: Usage by Country for August 2009

visitors accounted for 3 per cent, 2 per cent and 1 per cent of the hits respectively.

Figure 5 illustrates this information in greater detail, whilst extending the list to include the top 30 user nations.

When utilising the system to generate results for hits on the website over the full 12-month period, from May 2009 to April 2010, the highest overall level of interest was determined as being from users within Australia (12.67 per cent). This was followed by UK

#	*Hits*	*Files*	*Country*
1	701	372	Unresolved
2	550	341	Commercial (.com)
3	381	241	Network (.net)
4	284	172	United Kingdom
5	269	157	Australia
6	114	60	US Education (.edu)
7	107	59	New Zealand
8	99	52	Canada
9	45	30	Germany
10	34	19	Netherlands
11	28	14	Colombia
12	22	12	Japan
13	18	13	Switzerland
14	18	12	Ireland
15	16	8	South Africa
16	15	5	Singapore
17	12	9	Organisations (.org)
18	11	6	Belgium
19	10	6	Greece
20	10	7	Hungary
21	10	6	India
22	9	6	Italy
23	9	4	Norway
24	8	4	Spain
25	7	4	Brazil
26	6	4	Address & routing parameter area(.arpa)
27	6	4	Denmark
28	6	3	Seychelles
29	6	4	Sweden
30	6	5	Vietnam

Fig. 5: Top 30 users' locations for August 2009

Country	*(%)*
Australia	12.67
UK	8.42
US.edu	3.17
New Zealand	3.08
Canada	2.25
Germany	1.58
France	1.08
Ireland	0.58
Japan	0.50
Turkey	0.42
Singapore	0.33
Netherlands	0.25
Italy	0.17

Table 3: % of hits (via country) for May 2009 – April 2010

(8.42 per cent), US.edu (3.17 per cent), New Zealand (3.08 per cent), Canada (2.25 per cent), Germany (1.58 per cent) and France (1.08 per cent). Countries as far reaching as Colombia, Oman, Seychelles, South Africa, Luxembourg, Namibia, Finland and Vietnam were all represented. Overall there were hits received from a total of 46 different countries, representing just under a quarter of the world.

August 2009 was the month with the most interest generated for the site (averaging 93 hits/day), followed by October 2009 and July 2009; with December 2009 (63 average hits/day), May 2009 and June 2009 having the least.

Most countries had a reasonably consistent presence throughout the twelve month study, apart from one particular anomaly in Jan 2010 (see Fig.6), which saw the share of hits from Singapore rise from an average of about 0.2 per cent up to 4 per cent for that month only. No theory has emerged yet to explain that occurrence.

Conclusions

This research set out to anonymously observe and record quantitative data on international interest in transnational academic mobility to Australia, to produce data that would encourage further debate and, possibly, influence educational policy making. It succeeded in collecting a set of wide ranging global data which highlighted those nations where the highest

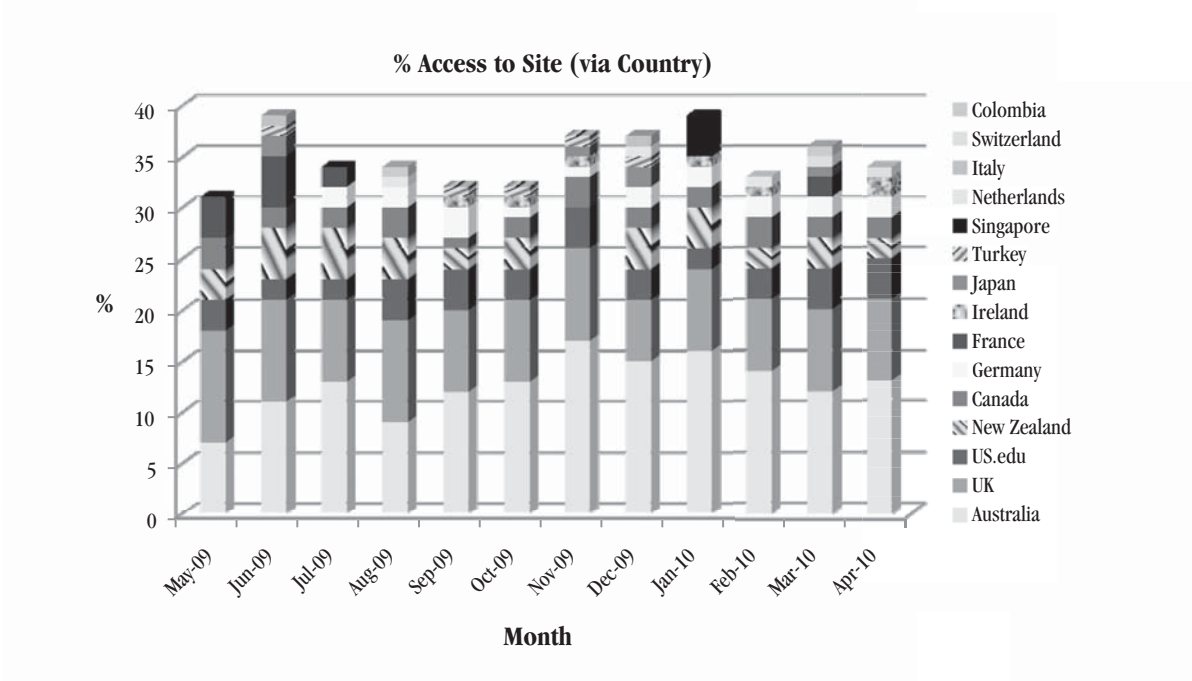


Fig. 7: An unexplained rise in interest from Singapore (Jan. 2010)

level of web activity, searching for information on academic careers in Australia, was originating; namely the UK, USA, New Zealand, and Canada. It is perhaps not surprising that the inhabitants of these countries should occupy the top four places in the survey; given the many similarities in terms of language, lifestyle and multicultural nature. The data then suggests that the next highest levels of interest were from the countries Germany, France, Ireland, Japan, and Turkey.

The effectiveness of using Web analytics as a research tool was also tested, with the number of hits collected in the study amounting to a total of 29,684 over a twelve month period – far more data points than could be expected from most conventional surveys, underlining a positive aspect of using Web analytics as a research tool. The process was fairly inexpensive, including just the hosting costs of AUD$100 per year, with very little measureable labour costs other than the time taken to analyse the data – this was done at the end of each month and took approximately 2-3 hours to complete each time. No travel costs were needed, as would be the case with interviews, and no phone calls, e-mails, stationery or postage were required in setting the process up.

Overall, whilst not without its limitations, the approach was very effective in aggregating a large sample of unbiased data on a specified topic in a short period of time. By its definition the Internet is very much an international tool, and therefore ideal for studying global networks, and the fact that users are unaware that they are actually participating in a study also eliminates any possible influence or bias that might occur from an interviewer being present or from being aware of being in a survey scenario. The results obtained were detailed enough to indicate specific global areas of interest worthy of consideration, or further investigation, when forming educational policies or in the development of targeted marketing campaigns for future academic recruitment etc.

To build on these findings it is hoped that a mechanism can now be developed to overcome the experimental limitations outlined and provide a richer depiction of the scenario. The next step towards achieving this might be to include an invitation to a more conventional online questionnaire, on the website, that would facilitate the collection of more detailed quantitative and qualitative data as to the gender, age group, location, job title, nationality etc. of the visitors to the website. By creating this mixed-method approach, continuing to utilise the existing data capture mechanism along side the conventional survey, it is hoped that the early findings can be tested, and validated, and that further interesting patterns will continue to emerge.

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