A Benchmarking Study of Australian Planning Academics

Authors

Dr **Dorina Pojani**, The University of Queensland, Australia, d.pojani@uq.edu.au
Mr **Jaime Olvera-Garcia**, The University of Queensland, Australia, j.olveragarcia@uq.edu.au
Prof **Neil Sipe**, The University of Queensland, Australia, n.sipe@uq.edu.au
Assoc Prof **Jason Byrne**, Griffith University, Australia, jason.byrne@griffith.edu.au

Abstract

This paper examines benchmarks and metrics for planning academics in Australia. In the contemporary era, obsessed with measurement and rankings, questions related to publication, citation, and grant counts are more relevant than ever. Not only do the answers serve an academic purpose, but they may have significant implications related to matters of promotion or prestige within the profession. These findings may be of help to university administrators on matters of review of planning academics, and serve as a point of comparison between Australian planning academia and the rest of the world.

Keywords

Planning academia; benchmarking; metrics; Google Scholar; Australia.

Acknowledgement

This research was funded through a grant by the University of Queensland.

Introduction

In this paper, we examine benchmarks and metrics for planning academics in Australia. The study furthers work by (Byrne 2017). A similar exercise has already been undertaken in North America (see Sanchez 2016a and 2016b). Research questions include:

What constitutes a successful planning academic in Australia (or an average one for that matter)? How much does this person "produce" – "product" in this context meaning peer-reviewed publications, citations, and competitive research grants? Do people become more productive as they progress in their career? Do men produce more than women? Do people employed in certain universities (e.g., members of the prestigious Group of Eight or Go8)[1] generate a higher output? Are academics within certain planning subspecialties (e.g., environmental psychology or housing) more productive?

Furthermore, in what journals do planning academics publish? Are those journals highly regarded, as evidenced, for example, by their impact factor? What is considered a "high impact factor" for planning-related journals? Once published, how many citations do planning academics attract? As people progress through career stages, citation counts do increase, but by how much do they in the planning field? How often are "highly-cited" planners actually cited? Is there a citation "ceiling" in planning?

In the contemporary era, obsessed with measurement and rankings, these questions are more relevant than ever. Not only do the answers serve an academic purpose, but they may have significant implications related to matters of promotion or prestige within the profession. Without benchmarks, faculty decisions on whom to promote are made in a vacuum, if not arbitrarily, notwithstanding their considerable impact on income, morale and quality of life for planning academics.

While all academic disciplines should be concerned with benchmarks, the issue is particularly salient for Australian planning programs because they tend to be small and are often part of large interdisciplinary schools, which might include architecture, geography, political science, engineering or environmental science. Some of these disciplines apply different metrics to the "measurement" of their academics. Thus planners can find themselves at a disadvantage, because faculty administrators do not recognise differences between disciplines.

Through a rigorous methodology, our research aims to dispel various uncertainties related to metrics in planning academia and provide answers to the questions raised at the beginning of the paper. However, the authors have not embarked on this enterprise uncritically (see below).

Background

The following sections provide the advantages and shortcomings of the use of metrics in planning academia – from both a practical and philosophical perspective.

The Advent and Advantages of Ranking and Metrics in Planning Academia

In planning academia, work "products" include books, book chapters and journal articles, but also professional reports, conference papers, studio/workshop projects, blogs entries and

other electronic media. Nearly all these products involve the retrieval and review of previously produced works. Relevant items are then cited in order to provide context (including examples of alternate ideas or conclusions), lend support and credibility to the statements made by the author(s), and acknowledge and give credit to other scholars. This process generates a network of citations that can be both quantitatively and qualitatively evaluated. With the advent of the Internet, citation data can easily be retrieved online from indexes such as Scopus, Web of Science, and Google Scholar.

Citation counts are reported on their own or used to compute other metrics, such as impact factors (IF) and h-indexes. The Clarivate Analytics[2] IF of an academic journal is a measure reflecting the annual average number of citations to recent articles published in that journal (e.g., in the last two years). Typically, it is used as a proxy for the relative importance of a journal within its field. Owing to its availability and utility, promotion committees, funding agencies, and scholars often use it as a shorthand assessment of the quality of individuals or institutions, rather than only journals. The h-index attempts to measure both the productivity and citation impact of the publications of a scholar. An h-index of 10, for example, indicates that an author has published 10 papers, each of which has been cited at least 10 times (Hirsch 2005). Journal impact factors were instituted as early as 1975 (initially as a way for librarians to make more informed decisions about subscriptions) whereas the h-index was first devised in 2005.

Publication and citation counts, impact factors, and h-indexes are thought to represent the impact and influence of academic output over time. These quantitative measures stress the importance of scholarship ("publish or perish"). As such, they are commonly used to assess individual performance, especially for academic tenure, promotion and grants. Metrics are also used to compare and rank academic programs and universities. In an increasingly competitive global education market, productivity is seen as a critical factor in the allocation of scarce resources. Owing to time constraints, the use of metrics is often necessary (Goldstein and Maier 2010; Arimoto 2011; Linton et al. 2011).

While metrics enable easy comparisons among individuals, programs and universities, they also have a number of practical shortcomings. The most common ones, which are also most relevant to planning, are summarized below.

Practical Shortcomings of Ranking and Metrics in Planning Academia

Overemphasis on Peer-Reviewed Publications

With planning being an applied professional discipline, planning academics are expected to contribute to professional practice and connect directly with local communities through service and outreach. This is becoming even more crucial now as cities house the majority of the world's population (Spain 1992; Wiewel et al. 1996; Krumholz 1986). The impact of planning research lays in its ability to transform practice, improve human life and guide settlements towards more sustainable outcomes. As such, it cannot be solely measured through standardized academic metrics (Sanchez 2014; Wachs 1994). At the same time, assessing the impact of public service may be even more difficult than measuring traditional scholarship. Planning processes tend to be slow and the impact of academic work might take

years to materialize. Moreover, in today's large and complex cities, positive change in the built environment is rarely due to the work of solitary visionaries. Most often it owes to the joint efforts of many planning academics and practitioners (Frank 2008; Checkoway 1997).

In the spirit of open-access publications and evolving citation processes, new metrics based on the social web have emerged, such as Webometrics™ and Altmetrics™. These have the potential to capture and assess a broader range of scholarly impact than traditional citation analysis and bibliometrics (Kousha and Thelwall 2007; Aguillo 2011; Priem et al. 2010). Webometrics assess "informal" impact, which is primarily associated with educational impact (for example, citations in course syllabi posted online), scholarly presentations (at conferences or seminars), and blog impact. This is significant and increasing in several disciplines (Kousha et al. 2010). Altmetrics include measures of usage, in addition to "formal" citations: downloads, views, shares, bookmarks, expert reviews, user comments, and forum discussions (Kousha et al. 2010; Priem et al. 2010). These alternative metrics are particularly important for planners since planning academics frequently produce a range of grey literature (e.g., reports), which attract a mix of readers from planning academia and practice but may or may not lead to future peer-reviewed articles (Sanchez 2014; Hurt and Yin 2006). However, in practice, to achieve high Webometrics™ and Altmetrics™ scores, academics may need to spend considerable time maintaining and updating their social media profiles, self-promoting and cultivating their online images, thus detracting from the time available for actual research and scholarship.

Misleading Indexes

Context is crucial for *simple citation metrics*. In planning and other branches of academia, non-scientific factors play a part in the decision to cite. Many citations are used simply to boost an article's introduction, having no real significance to the rest of the work. Articles that focus on fashionable topics can improve citation chances. Considerable citation bias exists in favour of review articles. Well-established scholars are cited disproportionately more often than lesser known scholars (the so-called practice of "gratuitous authorship"). Many authors tend to cite their own close colleagues more than others. Also, citations are sometimes made in a negative or critical context, for example to point out flaws in prior research (Bornmann and Hans-Dieter 2008; Hyland 2016).

The *h-index* of scientific research impact is also misleading. It has been found to work properly only for comparing researchers working in the same field as citation conventions differ widely among different fields. This is problematic for planning programs, which are embedded in multi-disciplinary schools. Also, planning itself is so diverse that h-indexes might vary substantially between a scholar specializing in urban transportation and another specializing in urban health issues. Moreover, the h-index fails to distinguish the relative contributions to the work in multiple-author articles, and co-authorship is very common in planning academia. Junior or early career researchers typically have lower h-indexes and could be disadvantaged. The h-index captures only part of a scholar's publication and citation data; it fails to represent highly and rarely cited or non-cited papers. Academics with very different citation frequencies can have the same h-index. For example, two academics with an h-index of 10 may each have 10 papers with 10 citations, but one may have an additional 90 papers with 9 citations each,

which are unaccounted by the index; or one may have exactly 10 papers with 10 citations each and the other exactly 10 papers with 100 citations each (Bornmann and Hans-Dieter 2009). As a result, new indexes have been designed, which presume to be fairer, but they are not as popular yet.

Finally, even the *impact factor (IF)* is misleading and may distort the communication of scientific progress due to selective attention to publications in high-ranking journals (Brembs et al. 2013). When impact factors are used to evaluate individual papers rather than journals, this devalues papers in subjects such as planning - a high IF in planning journals being low compared to STEM disciplines. As the h-index, the IF is affected by field-dependent factors and as such cannot be used to compare journals across disciplines, or even between planning sub-disciplines, for example environmental planning and urban design. A high IF can be the skewed result of self-citation, within-journal citations or many citations of just a few articles (e.g., review articles or articles led by senior researchers) rather than the average level of the majority, reducing its value as an objective measure of an individual article.

Similar to social web profiles, self-citation is a form of self-promotion used to inflate citation counts and elevate the perceived importance of an author's publication. Some commentators maintain that self-citation is less a concern for individual authors as much as it is for journal impact factors. Journal impact factors are more susceptible to self-citation because relatively small numbers of citations can produce a significant change compared to that of an individual, especially for those with large numbers of citations (Stevens 1990; Harzing 2010). However, a number of commentators has noted that, many academics are now more concerned about publishing in high-IF journals than they are about their research. The practice of submitting articles to journals at the top of the IF ladder, circulating progressively through journals further down the rungs when they are rejected is a waste of time for both editors and reviewers (Campbell 2008; Simons 2008).

Much of the foregoing criticism centres on the fact that few measures are immune from being manipulated. However, even if "perfect" metrics existed, their use to rank planning academics and programs is subject to a broader philosophical and ideological critique.

Theoretical Critique of Ranking and Metrics in Planning Academia

Metrics are far from "neutral." While they have no intellectual, political or moral theory, they carry a strong ideological bias. As Neil Postman (1993) noted in *Technopoly*, embedded in numbers is "a predisposition to construct the world as one thing rather than another, to value one thing over another, to amplify one sense or skill or attitude more loudly than another." This is an ancient and persistent piece of wisdom, most simply expressed in the old adage that, to a man with a hammer, everything looks like a nail. This truism may be extended: "to a person with a computer, everything looks like data." The use of numbers to rank people - first university students[3] and now academics themselves - has changed what we mean by "knowledge" or "truth." It has altered those deeply embedded habits of thought which give to a culture a sense of what the world is like, what is the natural order of things, what is necessary, what is inevitable. It has overthrown the official status of subjective forms of evaluation in academia.

It is important to recognize that the practice of ranking academics based on numbers (of papers published, grants acquired, impact factors of journals, citation counts, etc.) is peculiar to the present time. The idea that a quantitative value should be assigned to human knowledge and scholarship is a drastic step toward constructing a mathematical concept of reality. Again according to Postman: "If a number can be given to the quality of a thought, then a number can be given to the qualities of mercy, love, hate, beauty, creativity, intelligence, even sanity itself." By blindly accepting the hegemony of numerical rankings in academia, scholars might become, in Henry David Thoreau's (1854) words, "tools of our tools." Standardized metrics allow for the destruction of every nuance, complexity, detail, and ambiguity of a situation. They provide only a limited range of formal, objective, and impersonal information.

Yet, many contemporary evaluation and promotion committees believe that without numbers they cannot acquire or express authentic knowledge about an academic's performance. This makes sense to many academics themselves because our minds have been conditioned by the technology of numbers for a while. Many within and outside academia believe that numbers can plainly reveal the true nature of some human condition or behaviour or belief because the score, statistic, or taxonomy has given it technical form. Surrounding the technology of metrics and numbers are academic institutions whose organization – and perhaps their *raison d'être* – reflects a worldview promoted by numbers. It is likely that, Western institutions and Western culture itself would enter into a crisis if numbers ceased to be employed as a ranking tool.

Recent events illustrate this. In 2011, the Australian Research Council (ARC) stopped rating the journals included in its main index for the Excellence in Research for Australia exercise. In the absence of the ARC index, discipline societies are producing their own indexes. The Australian Business Deans Council has just updated its where-to-publish list, using the discarded ARC ranking method; the Australian Political Studies Association and the Australian Historical Association are considering doing the same. Some commentators have argued that metrics are central to the current neo-liberal and managerial environment adopted by Australian universities (Connell 2015).

Admittedly, the questions at the start of this paper have immediate value to planning academia, but they are diversionary in the sense that they direct the reader's attention away from the serious social, intellectual and institutional crises that rankings foster. A larger philosophical question looms in the background, which this paper does not presume to tackle: what do metrics and rankings do to the idea of scholarship?

This study has been conducted with the foregoing practical and theoretical critiques in mind.

Methods

In line with the research questions set forth at the outset, the methodology used three sets of data on planning programs/academics in Australian universities.[4]

Programs and Staff

Data on the number of accredited planning programs offered by Australian universities were obtained through the Planning Institute of Australia (PIA). PIA is Australia's professional

association of planning practitioners and academics. It is responsible for accrediting planning programs, and as such, maintains an up-to-date list of those. The exact number of planning academics proved to be more difficult to pinpoint than expected because most planning programs are embedded in interdisciplinary schools and their courses are taught by academics with a variety of backgrounds (many of whom do not self-identify as planners). The collection of this portion of the data proceeded in the following manner. First, a list of all academics affiliated with planning programs was created based on the information from university websites. At this stage, in addition to "planners", the list included individuals that did not appear to have a strict planning background but taught into planning programs. For our analysis, both teaching and research staff were included. Part-time staff members were excluded because, in Australia, it is rare for academics to work part-time. Second, the coordinators and/or directors of all the accredited planning programs were contacted (via email or phone) to confirm the number of academics in their program, and the list was modified as necessary.[5]

Publications and Citations

The list of planning academics was employed as a starting point for collecting publications and citations. These data were collected for the past decade - 2006 through 2016. The list of publications produced by each academic was obtained from the staff profile from university webpages, as well as Google Scholar, and then cross-referenced to ensure accuracy. In the case of planning, Google Scholar is a valuable source of data because its coverage extends beyond traditional peer-reviewed publications. While much of it qualifies as grey literature, it arguably reflects greater reach and impact compared to closed, pay-wall-protected publication and citation data such as Clarivate Analytics. For professional disciplines like urban planning, the grey literature produced by faculty is often research-based and reflects scholarly processes (Sanchez 2016a).

Publications and citations were aggregated by: program; publication type; academic rank; and gender. Both totals and averages were computed; publication metrics were correlated with citation metrics. Publication types included: peer-reviewed journal articles; book chapters; edited books; authored books; and conference papers (both peer-reviewed and non-peer-reviewed as it was difficult to distinguish between the two). As part of this process, the top twenty journals in which planning academics publish along with their impact factors were also identified.

In Australia there are five academic ranks: (A) Associate Lecturer; (B) Lecturer; (C) Senior Lecturer; (D) Associate Professor; and (E) Professor. A handful of programs follow the US model and combine levels A through C into a single rank - Assistant Professor. For this study, data for Assistant Professors were merged with data for Lecturers. The metrics for staff members not on a traditional academic appointment (i.e., Research Fellows / Senior Research Fellows) were calculated as well.[6] Teaching Fellows were excluded as they are not expected to produce research.

The data on citations were obtained through Google Scholar, by visiting the profiles of each individual on the list of planning academics. However we found only two universities where

all planning academics had Google Scholar profiles - the University of Queensland and Western Sydney University. A surprising number of planning academics, 71 out of 196 (36 percent) did not have a Google Scholar profile. The distribution of those without a Google Scholar profile was about equal across ranks. For academics without a Google Scholar profile, publication/citation data were obtained through university website profiles. Only eight percent of planning academics without a Google Scholar profile did not have any outputs listed on their university profiles. In these cases, the academics were excluded from any further calculations.

Because of these gaps in the data, findings on citations are only approximate. While actual totals are likely to be higher than those reported in this study, averages (means or medians) might also be higher. It is well possible that, academics who are more productive and whose work is more highly cited are more likely to have public Google Scholar profiles. Also, younger academic are more likely to curate their web presence. These biases will affect the analysis we present below. For example, for two universities with high citation medians, citations counts could only be obtained for half of their planning academics.

Research Grants

Another important factor we examined were research grants - in this case those offered by the Australian Research Council (ARC) to planning academics. The ARC is the largest and most prestigious public research funding body in the country. Data on ARC research grant success is provided annually and is publicly available (ARC 2016). The ARC data were cross-referenced with the information from planning program websites, which often announce ARC grant success, and from a study by Troy (2013). Totals and averages were computed for programs, academic rank, and funding received.

Findings

The findings are reported following the same structure as set forth for the methodology above.

Programs and Staff

We identified 48 accredited planning degrees at 24 universities, and 196 planning academics (Table 1).[7] Planning programs are clustered along the southeast coast of the continent, where most large cities are located (Figure 1). Among the Go8 universities, only six offer planning programs: University of Western Australia, University of Adelaide, University of Queensland, University of Melbourne, University of New South Wales, and University of Sydney. Monash University and Australian National University do not currently offer planning courses.

Academics in planning and other disciplines are typically hired on the following ladder:

- Associate Lecturer (level A)
- Lecturer (level B)
- Senior Lecturer (level C)
- Associate Professor (level D)[8]
- Professor (level E)

A small number of academics have teaching-only or research-only positions.

Table 1. Planning programs and staff.

No.	*University*	*City & State*	*Total planning programs**	*Total planning staff*
1	University of New South Wales**	Sydney, NSW	2	21
2	Griffith University	Brisbane/Gold Coast, QLD	3	18
3	RMIT University	Melbourne, VIC	3	16
4	Macquarie University	Sydney, NSW	2	14
5	University of Western Australia	Perth, WA	2	12
6	Western Sydney University	Sydney, NSW	3	12
7	University New England	Armidale, NSW	2	10
8	Curtin University	Perth, WA	2	9
9	University of Melbourne	Melbourne, VIC	2	9
10	University of Queensland	Brisbane, QLD	2	9
11	Queensland University of Technology	Brisbane, QLD	1	9
12	University of Sydney	Sydney, NSW	3	8
13	Deakin University	Melbourne, VIC	2	6
14	James Cook University	Townsville, QLD	2	6
15	University of South Australia	Adelaide, SA	3	6
16	La Trobe University	Melbourne, VIC	2	5
17	University of Tasmania	Hobart, TAS	1	5
18	University of Technology Sydney	Sydney, NSW	1	5
19	Bond University	Gold Coast, QLD	2	4
20	University of Canberra	Canberra, ACT	2	3
21	University of Sunshine Coast	Sunshine Coast, QLD	2	3
22	University of Adelaide	Adelaide, SA	2	2
23	Edith Cowan University	Perth, WA	1	2
24	Southern Cross University	Lismore, QLD	1	2
	Total		*48*	*196*

*May include Bachelor, Master, and PhD programs.

**In reporting data for the University of New South Wales (UNSW), we combine planning program staff and City Futures Research Centre (CFRC) staff. This is subject to a number of caveats. While CFRC is a significant resource for planning at UNSW and many CFRC staff members contribute to planning research rankings, some do not. While the UNSW group of urban researchers is probably the largest in the state, if only the planning program was included in the calculations, numbers would be lower than at Griffith University or RMIT. Overall, the UNSW planning team (teaching and research) is relatively modestly-sized.

As expected, there are very few Associate Lecturers in planning, as these appointments are typically made at pre-PhD level (Figure 2). Also, fewer than 10 percent of planning academics have research-only positions. Research-focused appointments are clustered in a few universities, which have planning research centres.[9]

Figure 1. Map of Australian universities that offer planning programs.

No strong pattern can be discerned in the distribution of the remainder academic ranks (Lecturer through Professor). While there are more junior academics (Lecturers and Senior Lecturers) than senior academics (Associate Professors and Professors), the differences are not striking. This is likely due to the fact that promotions in Australia are based on individual merit, relatively independent of the distribution patterns among ranks within departments. The situation differs vastly in some European countries, such as the Netherlands, in which rigid pyramidal hierarchies are maintained: typically, a single Professor leads a research group, which includes a few Associate Professors, several Assistant Professors, and many post-doctoral fellows and PhD students. This approach constitutes a significant barrier to the career progress of junior planning academics.

In regards to gender equity, on the other hand, the data reveal significant problems (Figure 3). Overall, men outstrip women among planning faculty members: 109 vs. 87 or 56 percent vs. 44 percent. Women are overrepresented in junior positions (lecturer ranks) but underrepresented in senior positions (professorial ranks). While women represent the majority in research-only positions, these are however few, as noted, and not always tenured. This means that, while planning programs have made an effort to hire younger women, they have fared poorly in terms of retaining and/or promoting those women. In turn, this may have affected women's productivity (see later).

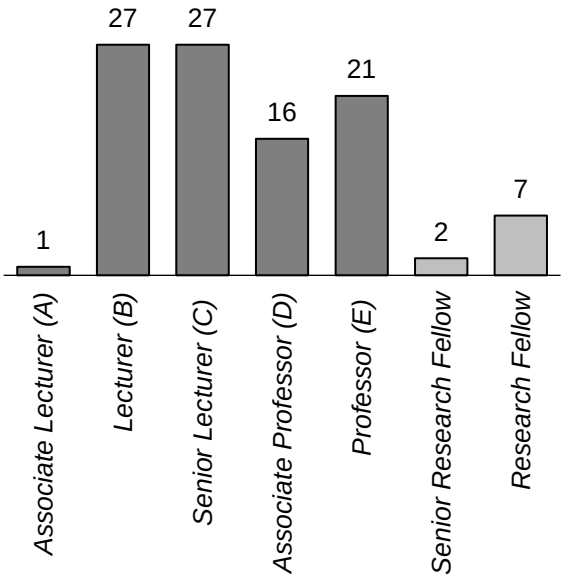


Figure 2. Percentage of planning staff by academic rank.

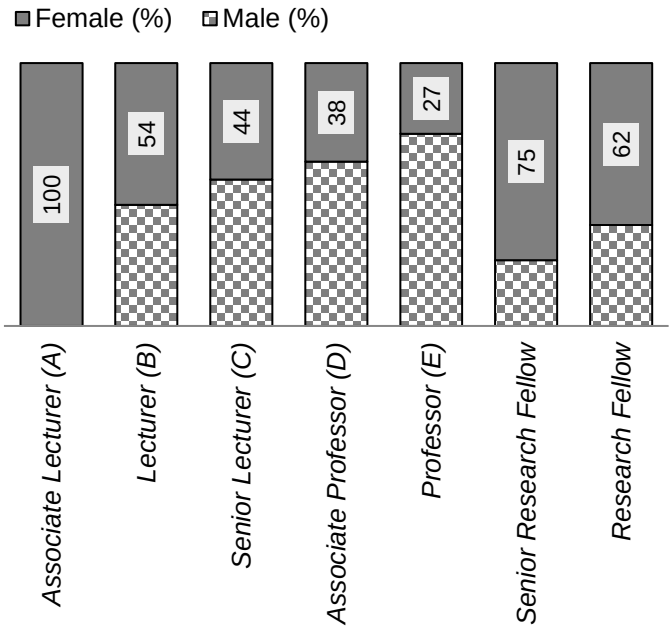


Figure 3. Gender split by academic rank.

Publications and Citations

Between 2006 and 2016, planning academics produced a total of 5,787 publications, made up of journal articles, conferences papers, books, and book chapters. Overall, the mean number of publications is 29.5 per person and 2.7 per person per year (Table 2). The mean number of publications per person in Go8 universities is 36 - 22 percent higher than the overall mean for all universities.

Some ranges are the following:

- The total number of publications per planning program varies from 707 to 8 at the University of New South Wales and Edith Cowan University respectively.
- The maximum and minimum number of publications per person varies from 216 to 4 at Queensland University of Technology and Edith Cowan University respectively.
- The median number of publications per academic varies from 50 to 4 at the University of Melbourne and Edith Cowan University respectively.
- The mean number of publications per academic per year varies from 5 to 0.4 at Queensland University of Technology and Edith Cowan University respectively.

Obviously, universities employing more planning academics have an advantage in total output even where individuals are not as productive as in other places. For example, the University of New South Wales, which has the most planning academics (21), also had the most total publications (707). However, the median per academic is much smaller here than at the University of Melbourne (26 vs. 50), which has produced fewer publications in total (434) due to its smaller faculty size (only 9 members). The University of Adelaide has one of the highest medians (46.5), despite ranking low in terms of total number of publications (93), reflecting the productivity of a small number of planning academics (only 2).

Because not all planning academics produce at the same rate, means can be misleading. In some cases, a few individuals produce a disproportionally large number of publications. This is especially true among the top ten most productive schools. The most outstanding example is at Queensland University of Technology where one academic has contributed more than 200 publications during the study timeline. Other universities where an individual academic has contributed 80 or more publications during the same period include: the University of New South Wales, Griffith University, the University of Melbourne, and Western Sydney University. Those academics specialize in transport, health, remote sensing, and gender studies. If these productive academics were omitted from the calculations, the annual and total means would be significantly lower. Two universities, the University of New South Wales and the University of Melbourne, rank in the top five on all publication metrics - totals, means, and medians.

Among the top ten universities in Table 2, four belong to the Go8. These are: University of New South Wales; University of Melbourne; University of Queensland; and University of Western Australia. This finding suggests that in the case of planning, it is important to look at the performance of individual programs rather than assume that a "brand name" university will automatically include a top planning program as determined by productivity). From a student's perspective, the scholarly reputation of academics is not the only criterion to

consider when deciding where to study planning. In fact, teaching quality, curriculum offerings, and average class size might be more important to prospective students than the academic output of their instructors. This study did not examine whether these factors correlate with the quantity and quality of publications produced by planning academics.[10]

Table 2. Publications (2006-2016).

Rank	*University*	*No. of faculty members*	*Total no. of publications*	*Range of publications per person*	*Median no. of publications / person*	*Mean no. of publications / person*	*Mean no. of publications / person / year*
1	University of New South Wales	21	707	114-2	26.0	33.7	3
2	Griffith University	18	593	87-2	33.0	28.2	3
3	Queensland University of Technology	9	450	228-12	29.5	21.4	5
4	University of Melbourne	9	434	90-15	50.0	20.7	4
5	Macquarie University	14	432	70-3	36.0	20.6	3
6	Western Sydney University	12	387	92-12	22.5	18.4	3
7	University of Queensland	9	322	71-11	37.0	15.3	3
8	RMIT	16	312	36-1	20.0	14.9	2
9	University of Western Australia	12	304	56-8	20.5	14.5	2
10	University of South Australia	6	228	64-5	38.5	10.9	3
11	University of New England	10	216	73-2	13.0	10.3	2
12	University of Sydney	8	213	76-6	31.0	10.1	2
13	University of Technology, Sydney	5	196	90-18	29.0	9.3	4
14	University of Tasmania	5	178	75-3	28.0	8.5	3
15	Curtin University	9	173	56-2	16.0	8.2	2
16	James Cook University	6	129	38-6	18.0	6.1	2
17	University of Sunshine Coast	3	109	64-19	26.0	5.2	3
18	Deakin University	6	107	67-3	9.5	5.1	2
19	University of Adelaide	2	93	51-42	46.5	4.4	4
20	La Trobe University	5	77	30-3	15.0	3.7	1
21	Bond University	4	64	36-2	13.0	3.0	1
22	University of Canberra	3	42	18-10	14.0	2.0	1
23	Southern Cross University*	2	13	N/A	13.0	0.6	0.6
24	Edith Cowan University	2	8	6-2	4.0	0.4	0.4
	Total	*196*	*5787*	*228-1*	*24.5*	*29.5*	*2.7*

Note:

Consistently among the top five – based on total number of publications, median and mean number of publications per person, and mean number of publications/person/year

Go8

*Data for only one academic was available (shown in "Total no. of publications.")

On average, the number of publications increases as academics progress through the ranks (Figure 4). However, the progression is not linear and academic output tends to plateau once individuals reach the top rank of Professor. While Senior Lecturers are twice as productive as Lecturers, the output differs only by 11 percent between Associate Professors and Professors. If one looks at the mean number of publications, it is actually higher for Associate Professors than Professors, while the median is slightly lower. This discrepancy is most likely explained by the presence of a few highly productive Associate Professors who have not been promoted to Professor.

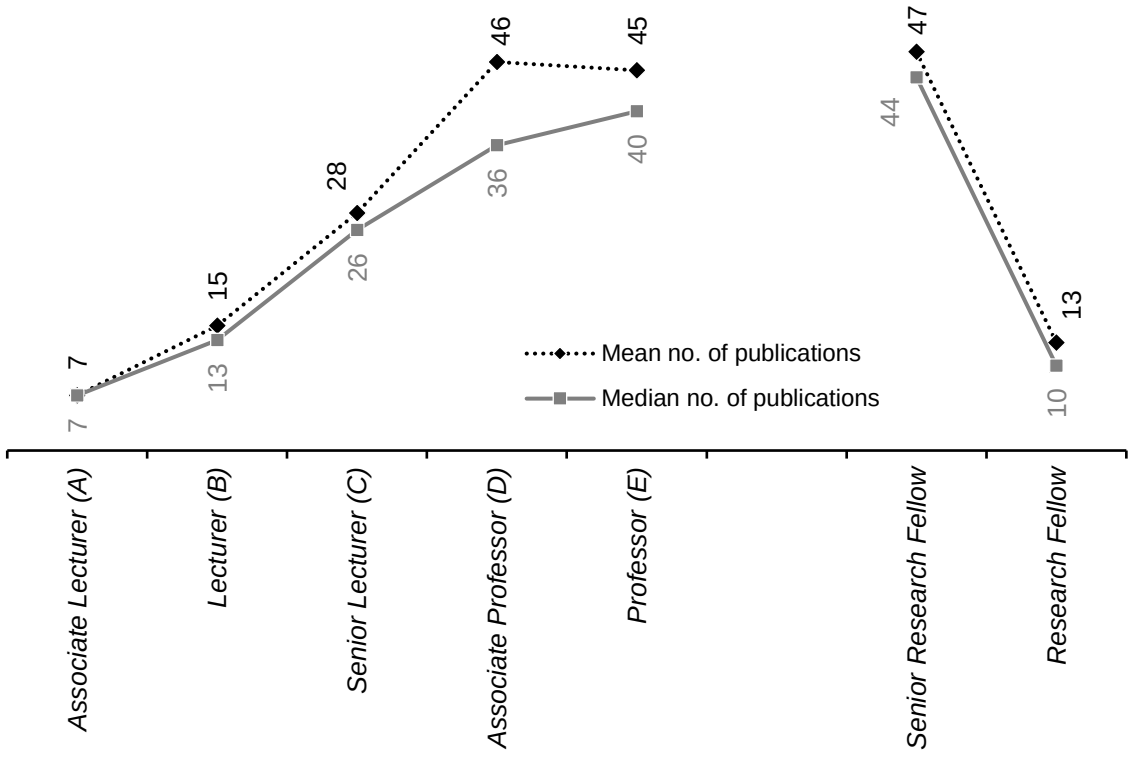


Figure 4. Publications by rank.

The difference in output between Research Fellows and Senior Research Fellows is striking. While Research Fellows publish at a slightly lower level than that of Lecturers, Senior Research Fellows publish more than Professors. This is explained by the misleading terminology applied to research-only positions. Research Fellows are often postdocs who are yet to start on the academic ladder, whereas Senior Research Fellows are often longer-term, experienced staff members.

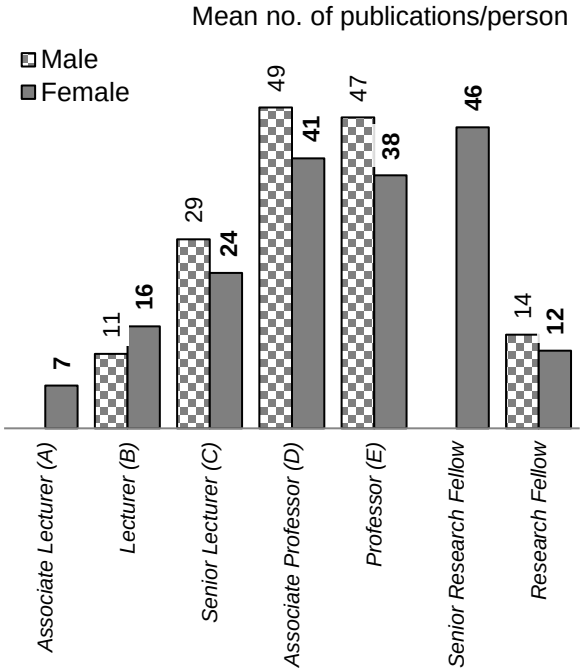
The differences in output between men and women are significant, as shown in Table 3. Overall, men produce about one third as much as women. Part of this gender difference is due to the fact that women occupy lower academic positions. When men and women within the same rank are compared, a more complex picture emerges (see Figure 5). Looking at both means and medians, women publish more than men at the Lecturer level - at which they also

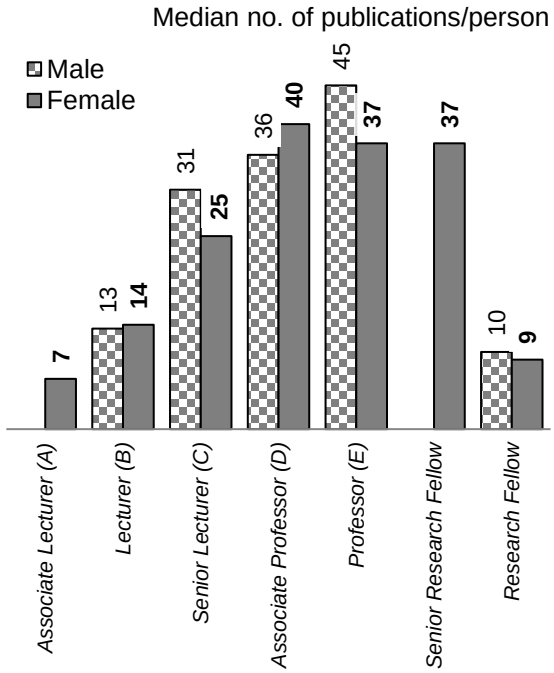
outnumber men. If only medians are taken into account, women publish more than men at the Associate Professor level too. But men publish more than women at every other rank, and based on all other metrics. If only means are considered, the "publication gender gap" in the ranks of Senior Lecturer, Associate Professor and Professor varies between 19 percent and 23 percent in favour of men. The productivity of women falls slightly at Professor level compared to Associate Professor level. Publication means and medians within the same gender are rather similar, except in the case of Senior Research Fellows where a much higher mean than median for women suggest the presence of a few highly productive outliers in this category - which is female-dominated.

Table 3. Publications and citations by gender.

Totals	*Mean no. of **publications** per person*	*Median no. of **publications** per person*	*Mean no. of **citations** per person*	*Median no. of **citations** per person*
Male	33	30	488	438
Female	25	20	228	160
Gender gap	32%	33%	53%	64%

Note: Citation metrics are only provisional as not all planning academics have a profile in Google Scholar. Specifically, there are 42 men (21%) and 29 women (15%) without a profile.





Rank	*Gender gap based on mean*	*Gender gap based on median*
Associate Lecturer (A)	n/a	n/a
Lecturer (B)	27%	4%
Senior Lecturer (C)	-22%	-24%
Associate Professor (D)	-19%	10%
Professor (E)	-23%	-20%
Senior Research Fellow	n/a	n/a
Research Fellow	-20%	-11%

Note: There are no men in the Associate Lecturer (A) category, and there is only one man in the Senior Research Fellow category.

Figure 5. Publications by gender by rank.

These patterns indicate that significant systemic barriers exist, which hinder women's productivity working as planning academics. Further study, possibly applying a qualitative methodology, is warranted in order to reveal the exact nature and location of those barriers. However, a large body of research, which has considered gendered patterns in the Australian academy overall (not only planning), provides pointers.[11] Various commentators have suggested that academia is a hostile work environment for women. The shift in the 1990s from collegial to managerial decision-making has entrenched the gendered character of university power relations and contributed to the predominance of women in the lower ranks. Women just beginning or resuming their careers (e.g., after maternity leave) are particularly vulnerable. As a consequence, not enough women remain in higher education (i.e., the "leaking pipeline" phenomenon). Lacking critical mass, senior female academics are unable to impact on management culture, while at the same time-early career female academics end up underprovided with networks, mentoring, and encouragement. Even women who reach senior levels in universities encounter the power of the male hegemony that is prepared to accommodate some women, but not to have its dominance challenged (see Asmar 1999; White 2001). More recent research suggests that gender gaps have become less pronounced in Australian academia overall (Bentley 2011) but the present data show that this is not the case in planning.

The most popular outlets where Australian planning academics publish are shown in Table 4, along with their impact factors. Even though the list contains some of the top journals in the field, impact factors are relatively low when compared with other disciplines. They range from 0.69 to 2.56, and many journals on the list, although highly regarded, do not have an impact factor. The full list of journals indicates substantial diversity in the field. In addition to classic outlets such as *Cities* and *Environment and Planning*, planning-related research has been published in journals as far apart as *Journal of Epidemiology and Community Health* (health-focused), *Ocean and Coastal Management* (environment-focused), *Applied Mechanics and Materials* (engineering-focused), *Tourism Review International* (tourism-focused), *Progress in Human Geography* (geography-focused), and *Gender, Place and Culture* (gender-focused).

Table 4. Most popular journals* and their impact factors.

Journal name	*Impact Factor (IF)*
Applied Geography	2.56
Journal of Rural Studies	2.20
Journal of Transport Geography	2.09
Cities	2.05
Habitat International	2.02
Urban Studies	1.93
Transport Policy	1.52
Environment and Planning A	1.46
Planning Theory	1.40
Geographical Research	1.35
Australian Geographer	1.19
Urban Policy and Research	0.89
Australasian Journal of Environmental Management	0.69
Australian Planner	No IF
Built Environment	No IF
Local Environment	No IF
Planning Perspectives	No IF
Planning Practice & Research	No IF
Planning Theory and Practice	No IF
Town Planning Review	No IF

*Defined as those journals in which Australian planning academics have published three or more papers. Source: Clarivate Analytics database.

The work products of Australian planning academics[12] have been cited 73,030 times between 2006 and 2016 as shown in Table 5. However, without comparable international benchmarks, we do not know whether this statistic is significant. Some key citation statistics are provided below:

- The mean number of citations per person is 316 (368 in Go8 universities, i.e., 17 percent higher than the general mean).
- The median number of citations per person is 198.
- The mean number of citations per person per year is 29 (32 in Go8 universities, i.e., 10 percent higher than the overall annual mean).

The large difference between the mean and the median suggests the presence of a few academics, whose work has attracted a significantly larger number of citations than the rest. As with the number of publications discussed above, in some cases a single faculty member has contributed a disproportionate amount of citations. Some of the other key citation statistics are provided below:

- Total citations vary from 7,543 to 11 at the University of Queensland and Deakin University, respectively.
- Total citations per person varies from 4,715 to 5 at the University of New England and Deakin University, respectively.
- Mean citations per person varies from 838 to 2 at University of Queensland and Deakin

University, respectively.

- Median citations per person varies from 1,066 to 6 at Curtin University and Deakin University, respectively.
- Mean citations per person per year varies from 76 to 0 at the University of Queensland and Deakin University, respectively.

Table 5. Citations (2006-2016).

Rank	*University*	*No. of faculty members*	*Total no. of citations*	*Range of citations per person*	*Median no. of citations per person*	*Mean no. of citations per person*	*Mean no. of citations per person per year*
1	Curtin University	9	2423	1289-68	1066	269	28
2	University of New England	10	7100	4753-38	1038	710	65
3	James Cook University	6	3554	2221-77	628	592	54
4	Queensland University of Technology	9	5739	2972-68	591	638	58
5	University of Melbourne	9	1880	911-59	455	209	19
6	University of Queensland	9	7543	3827-30	361	838	76
7	Macquarie University	14	7256	2219-39	329	518	51
8	University of South Australia	6	1441	607-208	313	240	22
9	University of New South Wales	21	4391	1499-12	293	209	19
10	University of Sydney	8	1908	1508-174	226	239	22
11	University of Canberra	3	444	254-190	222	148	13
12	RMIT	16	3434	1378-17	211	215	20
13	University of Tasmania	5	2953	2506-76	186	591	54
14	University of Western Australia	12	6579	2784-79	182	548	50
15	University of Technology, Sydney	5	1116	940-0	176	223	20
16	Griffith University	18	6841	2090-24	169	380	35
17	University of Adelaide**	2	327	N/A	164	164	15
18	Bond University	4	326	258-68	163	82	7
19	Western Sydney University	12	7089	3164-61	157	591	54
20	La Trobe University	5	501	225-44	116	100	9
21	Southern Cross University**	2	54	N/A	27	27	2
22	University of Sunshine Coast**	3	120	N/A	N/A	40	4
23	Edith Cowan University*	2	N/A	N/A	N/A	N/A	N/A
24	Deakin University	6	11	42802	6	2	0
	Total	***196***	***73,030***	***4753-0***	***198***	***316***	***29***

Consistently among the top five - Based on total number of citations, median and mean number of citations per person, and mean number of citations/person/year

Go8

* None of the planning academics in this university have Google Scholar profiles.

** Only one faculty member in this university has a Google Scholar profile therefore the column data only for that person. .

Only the University of New England consistently ranks in the top five based on all citation metrics, although it does not consistently rank in the top five based on publication metrics. As with publication counts, only three Go8 universities (out of six with planning programs) are among the top ten in terms of total citations: University of Queensland, University of Western Australia, and University of New South Wales. Again, a cautionary note is warranted that a university's "brand name" does not automatically guarantee a highly performing planning program (in terms of citations to the research produced by faculty members).

Citation counts increase as academics progress along their career, nearly doubling from one academic level to the next (see Figure 6) – unlike publications, which tend to plateau. This might be explained by the fact that, as planning academics become more established and form a broader network, their papers, although less plentiful, are cited more frequently. Another explanation might be that, as academics become more experienced, they learn to subordinate their curiosity about particular research issues and chase more "fashionable" topics which are more likely to attract citations.

The same gender gaps seen in publications persist in citation metrics, but here the gaps are much wider (see Table 3 and Figure 7). It appears that the work of female planning academics is not considered as authoritative and worthy of citation as that of male academics. Again, patriarchal structures that constantly undervalue women are a likely culprit.

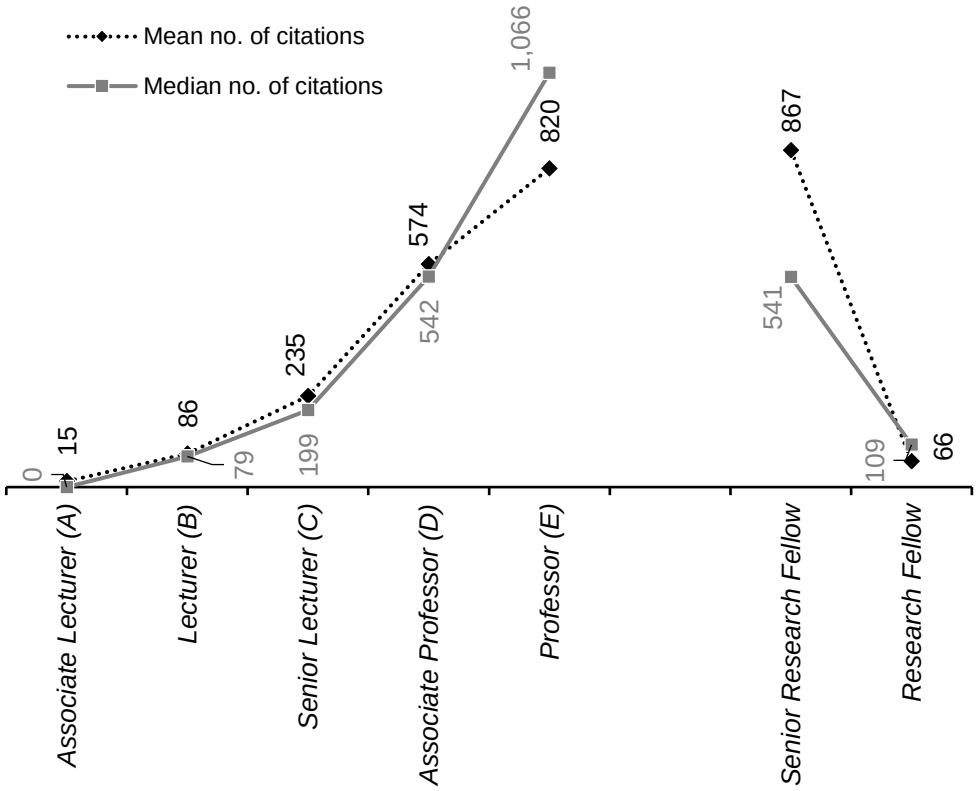
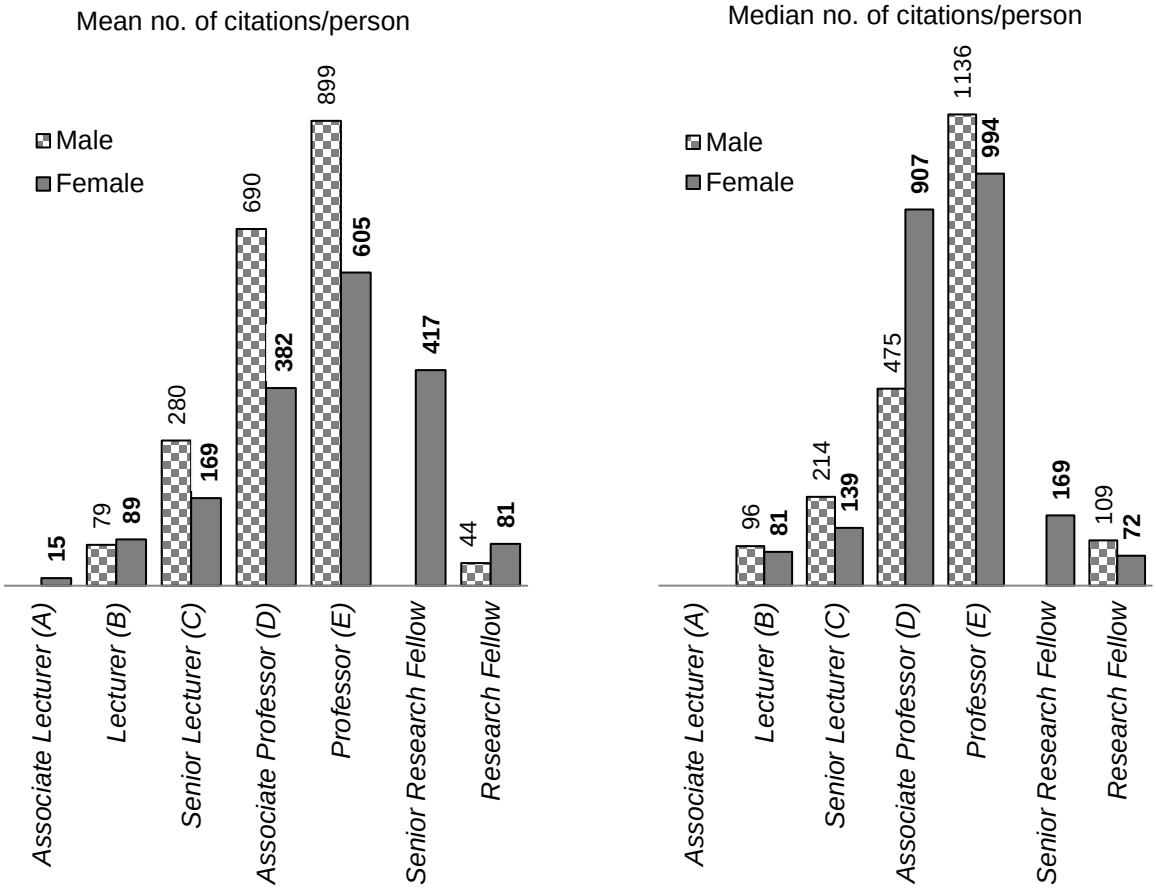


Figure 6. Citations by rank.



Rank	*Gender gap based on mean*	*Gender gap based on median*
Associate Lecturer (A)		
Lecturer (B)	13%	-15%
Senior Lecturer (C)	-40%	-35%
Associate Professor (D)	-45%	91%
Professor (E)	-33%	-13%
Senior Research Fellow		
Research Fellow	85%	-34%

Notes: There are no men in the Associate Lecturer (A) category, and only one female academic in this category has a Google Scholar profile. There is only one man in the Senior Research Fellow category.

Figure 7. Citations by gender by rank.

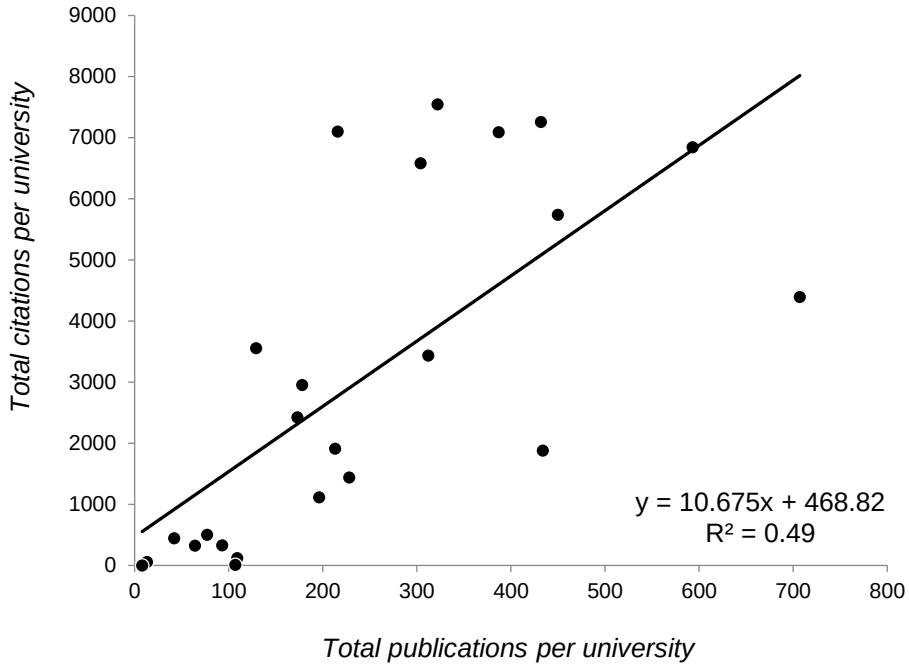


Figure 8. Relationship between total number of citations and total number of publications per university (planning faculties only).

However, even when male planning academics are included in the analysis, the relationship between publications and citations remains relatively weak. A simple linear regression, which examines total citations and total publications per university, confirms this as shown in Figure 8. This finding leads one to wonder which of these two metrics is the most appropriate for evaluating planning academics.

To place the Australian situation in perspective, the median citation metrics are compared with those of planning academics in the United States (Sanchez 2016a and 2016b). Table 6 shows the top ten universities in the respective countries in terms of median citations.

Two findings are evident. First, planning departments producing the most highly citied publications are not necessarily in top universities (based on the Times of Higher Education index). Second, in Australia, the average level of citations per person is much lower than in the US. In addition to the quality of the work produced, this outcome might be explained by the fact that US has a population that is 14 times larger than Australia and thus has a much larger "domestic market" of planning issues and planning academics who cite each other's work. Australia's geographical isolation precludes high levels of international planning research. Our comparisons contrast with those produced by ARC in its latest Excellence in Research (ERA) report (see Table 7).

Table 6. Comparison with the United States.

*Rank**	*US University***	*Australian University****	*Median no. of citations per planning academic*	
			US	*Australia*
1	Columbia University	Curtin University	2,390	1,066
2	University of Minnesota	University of New England	2,252	1,038
3	University of California, Los Angeles	James Cook University	1,994	628
4	Harvard University	Queensland Uni. of Technology	1,577	591
5	New York University	University of Melbourne	1,551	455
6	Wayne State University	University of Queensland	1,340	361
7	University of Southern California	Macquarie University	1,244	329
8	University of Toronto	University of South Australia	1,097	313
9	Arizona State University	University of New South Wales	1,064	293
10	University of Maryland	University of Sydney	1,056	226

*Note on ranking

University among the top 100 based on the Times of Higher Education (THE) index (https://www.timeshighereducation.com/world-university-rankings)

**US data are based on Sanchez (2016a; 2016b).

***As noted, the medians reported for Australia in this study are not fully accurate because not all planning academics have Google Scholar profiles.

Table 7. Program ranking against international benchmarks.

Institution	**2010**	**2012**	**2015**
Curtin University of Technology			
Deakin University			
Griffith University			
La Trobe University			
Macquarie University			
Monash University			
Queensland University of Technology			
RMIT University			
Swinburne University of Technology			
University of Melbourne			
University of New South Wales			
University of Queensland			
University of South Australia			
University of Sydney			
University of Tasmania			
University of Technology, Sydney			
University of Western Australia			
University of Western Sydney			

Legend

	well above world standard
	above world standard
	at world standard
	below world standard
	well below world standard
	no data
University among the top 100 (THE index)	

Source: Australian Research Council, Excellence in Research for Australia (ERA) outcomes: www.arc.gov.au/era-outcomes#FoR/1205

Research Grants

Table 8 shows the number of grants and amount of funding awarded by the ARC to various planning programs. Average metrics and trends are reported below. However, it is important to note that, in the case of planning, averages can be misleading as a majority of Australian planning academics (61 percent) have not attracted any grants during the study timeframe.

Table 8. Number of ARC grants awarded to planning faculties (2006-2016).

Rank	*University*	*No. of ARC grants**	*Total funding ($)**	*Frequency of grant awards per staff member*	*Average annual amount of funding per staff member ($)*
1	University of New South Wales	31	6,418,332	7	27,785
2	Griffith University	25	5,891,697	8	29,756
3	Western Sydney University	16	3,598,330	8	27,260
4	University of Queensland	14	3,369,079	7	34,031
5	University of Melbourne	14	4,775,583	7	48,238
6	RMIT	10	2,703,141	18	15,359
7	University of Western Australia	9	2,210,049	15	16,743
8	University of Adelaide	7	1,674,546	3	76,116
9	Queensland University of Technology	7	1,992,013	14	20,121
10	University of New England	6	1,339,290	18	12,175
11	La Trobe University	5	935,108	11	17,002
12	Macquarie University	5	693,965	31	4,506
13	Curtin University	4	1,566,000	25	15,818
14	University of South Australia	4	402,294	17	6,095
15	University of Sydney	3	642,000	29	7,295
16	Deakin University	2	296,346	33	4,490
17	James Cook University	2	627,300	33	9,505
18	University of Technology Sydney	2	717,000	28	13,036
19	Bond University	1	300,000	44	6,818
20	University of Canberra	1	805,000	33	24,394
21	Edith Cowan University	0	0	-	0
22	Southern Cross University	0	0	-	0
23	University of Sunshine Coast	0	0	-	0
24	University of Tasmania	0	0	-	0

*Some of these figures overlap (i.e., the total amount of funding might be overrepresented) because research teams which bid on ARC grants often include academics from two or more domestic universities. Data source: ARC website.

Go8

Go8 universities, which have the largest number of planning academics, have received a majority of ARC funding (see Figure 9). A linear regression confirms that, generally, departments with more staff win more grants (see Figure 10). As proposals are typically submitted by teams rather than individuals, larger planning programs have more opportunities to form teams and submit proposals than smaller programs.

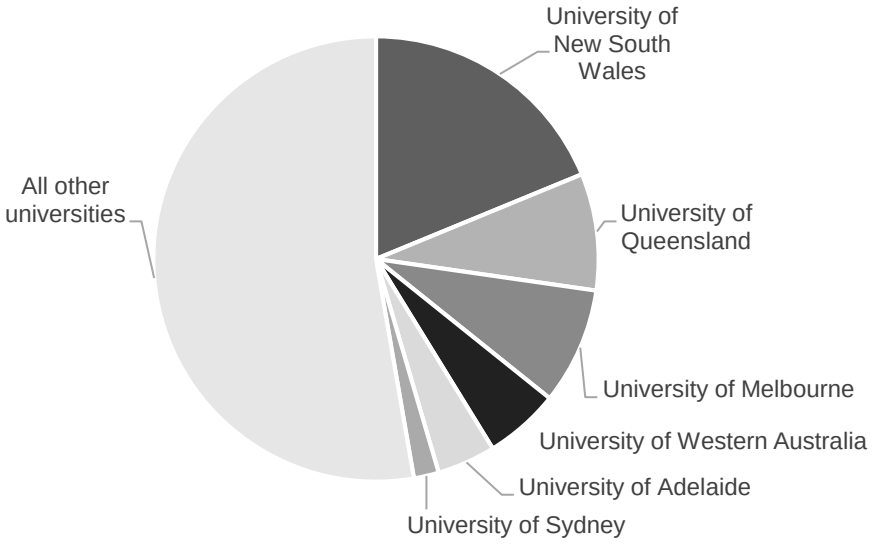


Figure 9. Percentage of ARC grants awarded to Go8 planning faculties (2006-2016). Data source: ARC website.

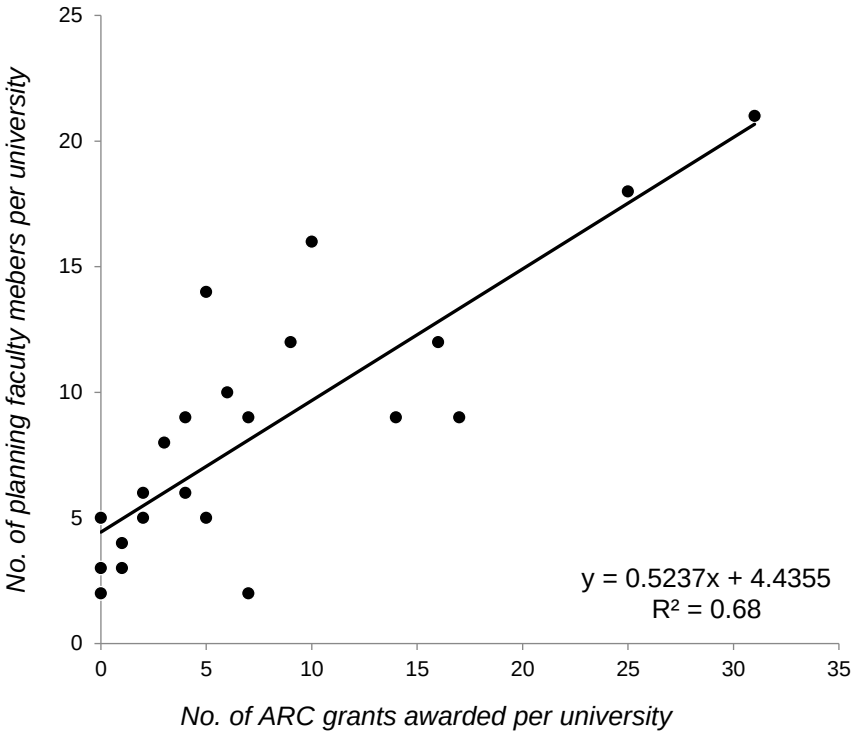


Figure 10. Relationship between the number of ARC grants awarded and the number of faculty members per university.

On average, planning academics attract less than $17,000 of external funding per year. This ranges from less than $4,500 at Deakin University to more than $76,000 at the University of Adelaide. The University of Adelaide is followed by the University of Melbourne, in which planning academics generate just over $48,000 annually. Academic planners in Go8 universities generate about $35,000 annually – nearly double the national average – whereas planners at Edith Cowan University, Southern Cross University, University of Sunshine Coast and University of Tasmania have not received any funding during the study timeframe.[13]

ARC funding streams are not constant with the rate of grant acquisition for a planning academic varying from once every three years at the University of Adelaide to once every 44 years at Bond University. In Go8 members, planning staff have a chance of winning an ARC bid once every eleven years on average.[14]

A weak relationship exists between the number of grants awarded to various planning programs and variables such staff publications and citations - both department averages and individual counts (see Figures 11 through 14). Planning academics who publish more and whose work is most often cited do not necessarily receive the most grants. A planner's publication record accounts for about 20 percent of the likelihood of winning a bid, whereas the citation record accounts for only about 13 percent.[15]

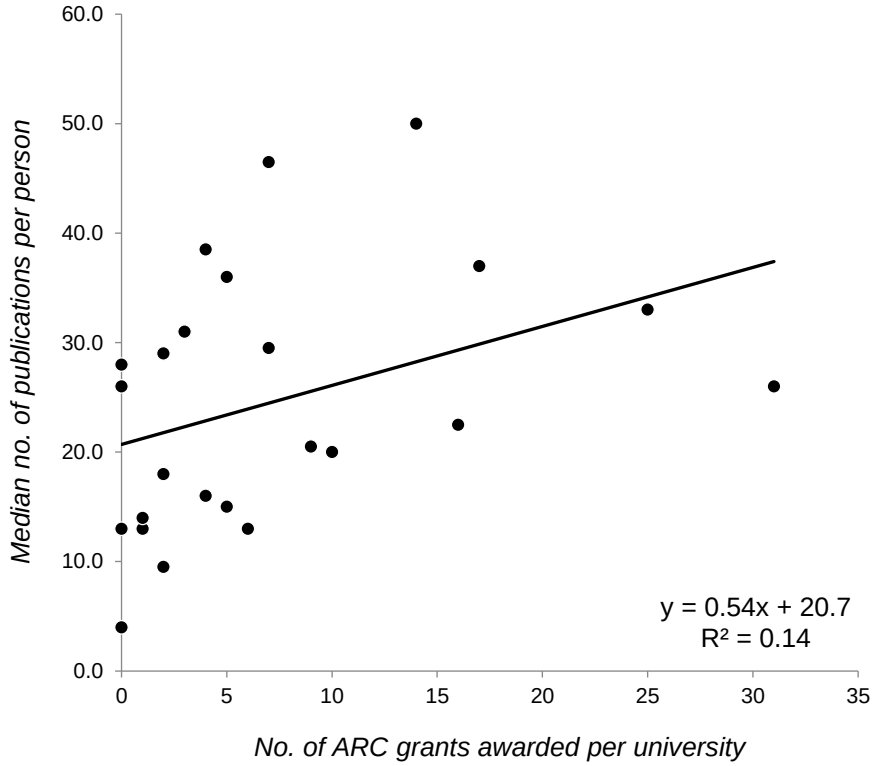


Figure 11. Relationship between the number of ARC grants awarded per university and the median number of publications per person.

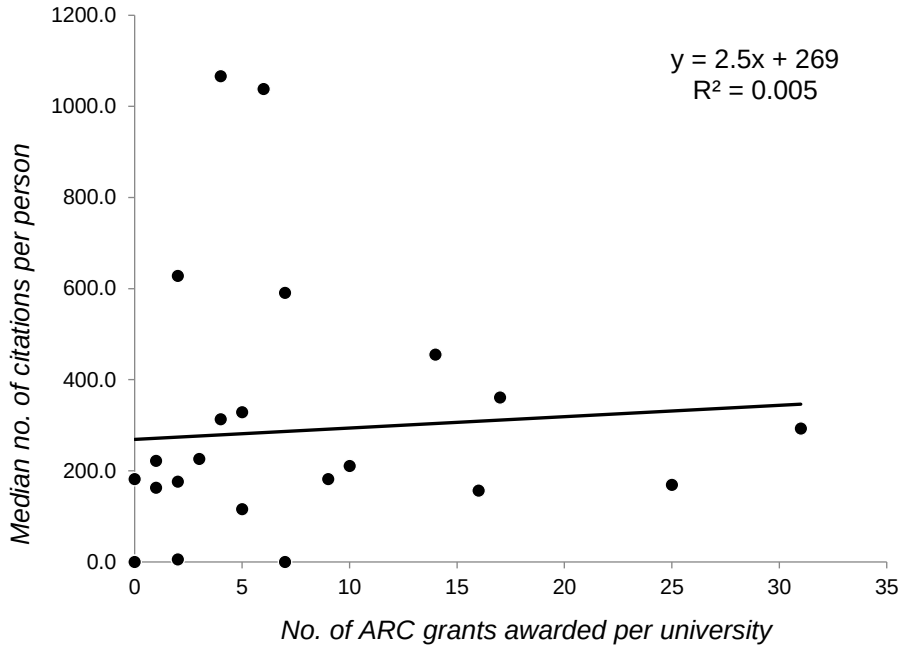


Figure 12. Relationship between the number of ARC grants awarded per university and the median number of citations per person.

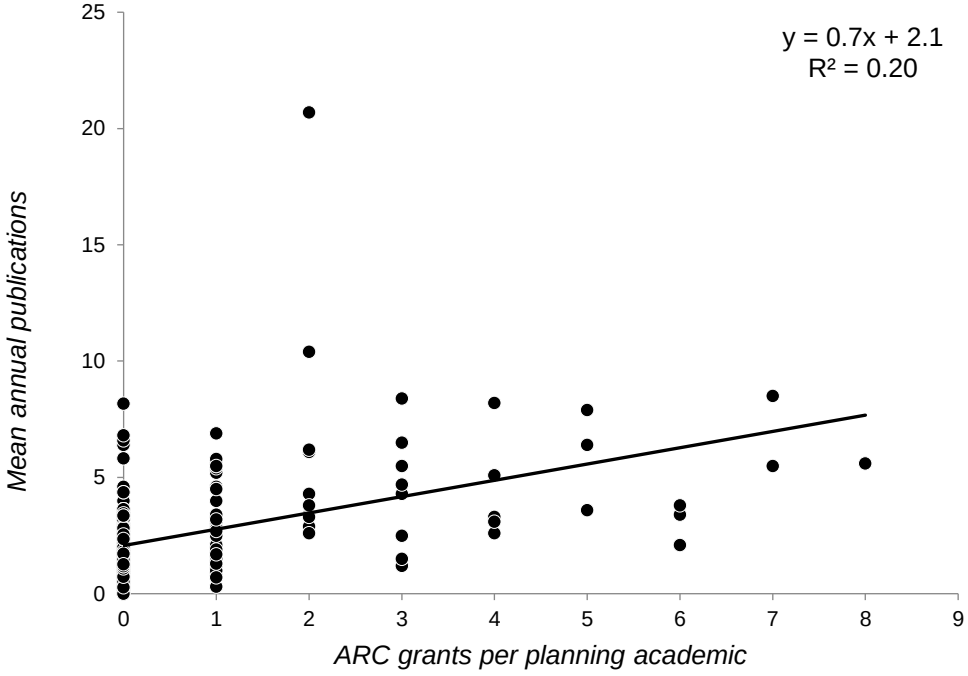


Figure 13. Relationship between the number of ARC grants awarded per planning academic and the mean annual number of publications per planning academic.

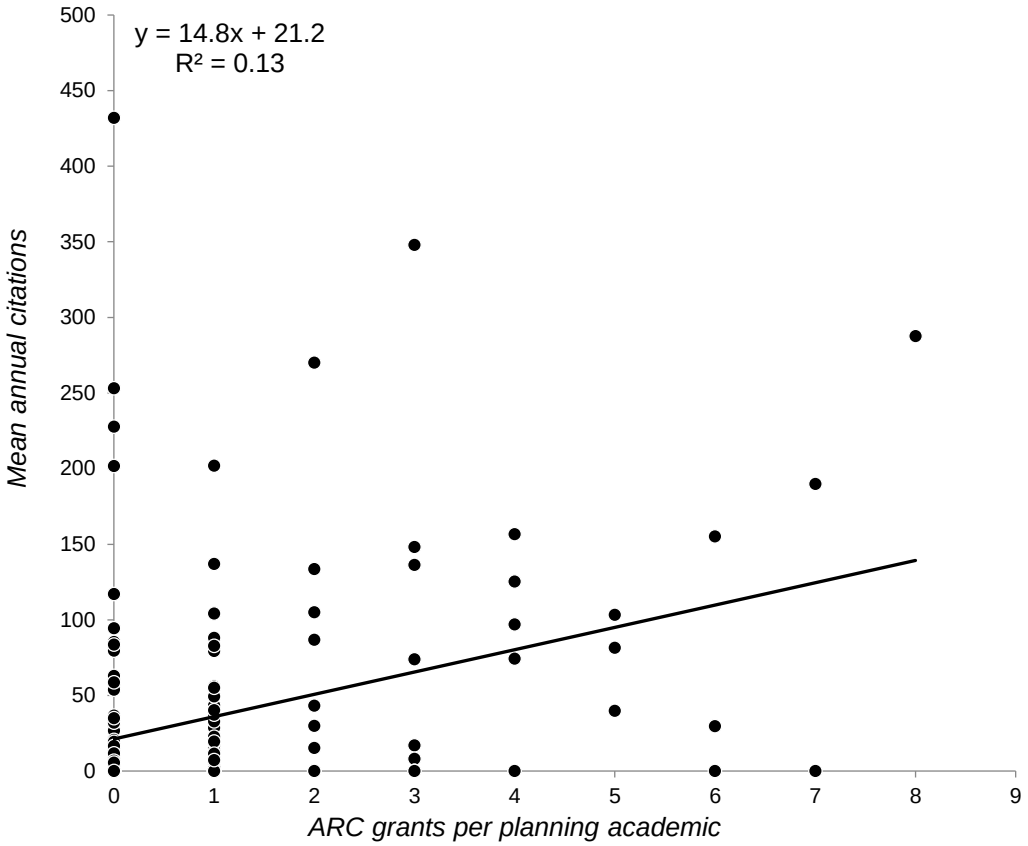


Figure 14. Relationship between number of ARC grants awarded per planning academic and mean annual number of citations per planning academic.

The likelihood of being awarded an ARC grant increases considerably for senior level planning academic (see Figure 15-16). Professors hold more than twice as many grants as Associate Professors and Associate Professors hold about twice as many grants as Senior Lecturers. More senior planning academics are more successful with grant proposals because they have (a) more experience with grant writing and (b) larger networks of both academic colleagues (with whom to form bidding teams) and industry colleagues (who might help locate matching funds). However, these data also imply that ARC grants "snowball" (holding one grant substantially affects the chances of winning another) and tend to cluster around certain individuals. Grant acquisition rates are more closely correlated with publication and citation rates in earlier career stages (see Figure 15). Despite plateauing publication rates and slower growth of citations, senior level academics (with a traditional academic position) tend to acquire more ARC grants. In the case of Senior Research Fellows – a category dominated by women, grant acquisition levels are low, although productivity (publications and citations) is as high as that of Professors.

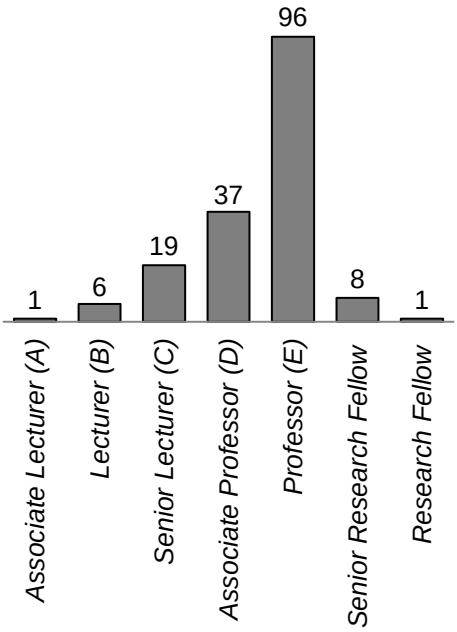


Figure 15. Number of ARC grants by rank.

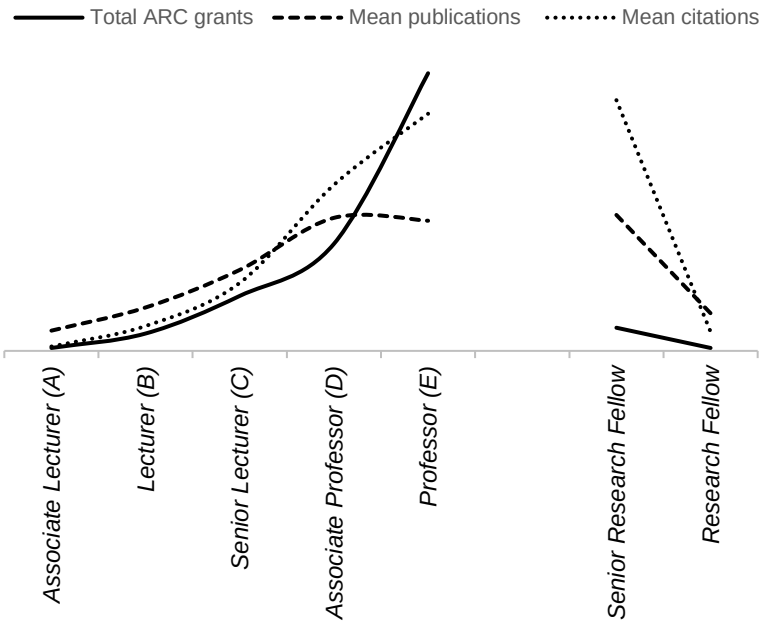


Figure 16. Metric trends by rank.

As with the rest of the metrics reviewed in this study, gender differences in grant acquisition are staggering (see Figure 17). While men hold 121 ARC grants, women hold only 47 – a 61 percent gap. On average, a female planning academic has a chance of acquiring an ARC grant once every 20 years - vs. 10 years for a man. While women are slightly ahead of men at the Lecturer level and the difference is small at the Senior Lecturer level, the "grant acquisition gender gap" broadens considerably at the Associate Professor and Professor levels. Male Professors hold 6.4 times as many ARC grants as female Professors. There are 2.7 times more male Professors than female Professors; therefore, the difference in grant acquisition cannot be entirely attributed to the lower number of women in professorial ranks. Similarly, male Associate Professors hold 2.1 times as many ARC grants as their female counterparts although they are only 1.6 times more numerous. Clearly, senior men are favoured during the grant awarding process. The fact that women hold fewer ARC research grants partially explains the lower publication and citation rates among female planning academics.

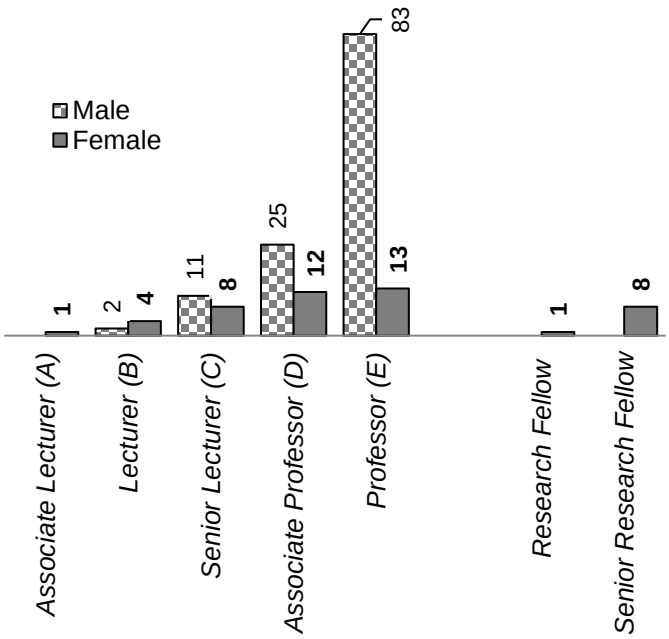


Figure 17. Number of ARC grants by gender by rank.

Prior research has suggested that, in general, peer review committees for grant applications are dominated by men and therefore women, especially younger ones, may face harsher evaluation (Asmar 1999; White 2001). Currently, in the ARC College of Experts, which evaluates grant applications, 70 of the 176 members are female (40 percent). The gender gap is wider among Professors in the College of Experts: only 36 percent are female.

The lion's share of external funding to planning programs is provided by the ARC. However, smaller grants are received from a variety of other sources (Table 9). Funding amounts are unavailable, but tend to be much lower than what is provided by the ARC.

Table 9. Grants awarded to planning faculties from other sources (2006-2016).

University	*Grant source*	*No. of grants*
University of Western Australia	Local, federal and international governments, and private organizations	92
University of New South Wales	Own university funding, non-profit local organizations such as the Australian Housing and Urban Research Institute (AHURI), and international governments	86
Griffith University	Local and international governments, and own University funding	83
Western Sydney University	Own University funding, local and federal governments	64
University of Melbourne	Own University funding and local government	36
RMIT	AHURI, local and international governments	31
University of Sydney	AHURI and local organizations (e.g. National Sea Change Taskforce)	25
University of Tasmania	Local and federal government	25
University of Sunshine Coast	Local, federal and international government	24
University of Queensland	Own university funding, local and international governments	22
La Trobe University	Local and federal government agencies (e.g. AUSAID)	16
University of Technology Sydney	Local government and international organizations (e.g., Royal Institution of Chartered Surveyors)	16
Curtin University	Local and international governments	14
University of Macquarie	International organizations and other local Universities	14
University of Adelaide	International governments	11
Bond University	Local government agencies (e.g., Gold Coast City Council)	6
University of Canberra	International governments	6
Deakin University	Local and federal government agencies (other than the ARC)	6
Queensland University of Technology	Own university funding and local government	6
University of South Australia	Local government	6
Edith Cowan University	Local government	3
University of New England	Other local university	1
James Cook University	N/A	0
Southern Cross University	N/A	0
Total		**593**

This is in contrast to the US were most funding for planning comes from sources other than the National Science Foundation – the American equivalent of ARC. Moreover, compared to Australia, a significantly higher amount of financial support is provided to planning in the US in the form of government grants for research (Troy 2013). This is due to the fact that planning, as a discipline, has a longer history and is more consolidated in the US than in Australia. In the post-war period, planning was offered as a major in only a limited number of Australian universities. The country relied on a "physical determinist, non-research-based approach" to planning its cities (Troy 2013, p. 142). Over time, planning programs in Australian universities assumed the features of vocational training programs. The government had little interest in funding planning research because traditionally, the development industry was a source of income for the major political parties, and this industry viewed planning as a constraint on its activities. Rigorous "research into aspects of urban Australia revealed too many inconvenient truths and therefore it was politically ignored" (Troy, 2013, p. 145). By contrast, during the same period, the US offered training and research-based models of instruction, such as those imparted by MIT and University of California at Berkeley. Australia did not start following the US lead until the mid-1990s (Troy 2013).

Conclusion

The main findings of this benchmarking study are summarized below and in Table 10:

- Wide **gender gaps** exist in Australian planning academia. The "leaking pipeline phenomenon" is significant. While women enter the profession in larger numbers than men, planning programs emphasize the retention and/or promotion of men, and this translates into much higher numbers of men in the professorial ranks. All metrics (publications, citations, grants) are lower for women than for men. Also, women are underrepresented on the ARC College of Experts, which evaluates grant applications.

- The mean number of **publications** is 29.5/person or 2.7/person/year. In Go8 universities, the mean number of publications/person is 36 (22 percent higher than the average). However, not all Go8 universities are among the top ten in terms of publications by planning academics.

- The mean number of **citations** is 316/person or 29/person/year. In Go8 universities, the mean number of citations is 368/person (17 percent higher than the average) and 32/person/year (10 percent higher than average). As with publications, not all Go8 universities are among the top ten in terms of citations.

Table 10. Grants awarded to planning faculties from other sources (2006-2016).

	Publications/academic (mean)		*Citations/academic (mean)*		*ARC funding/academic (mean)*
	Total	Per Year	Total	Per Year	Per Year
All universities	29.5	2.7	316	29	$17,000
Go8 universities	36.0	3.3	368	32	$35,000

- While the number of publications increases as academics progress through the ranks, academic output tends to plateau once individuals reach the top rank of Professor. By contrast, citation counts increase steadily as academics progress along their career, nearly doubling from one academic level to the next.

- Overall, a weak statistical relationship exists between the number of publications and citations.

- The average level of citations per person is much lower in Australia than in the US.

- While planning academics publish in a diverse range of **journals**, the impact factors of those journals are generally low - ranging from 0.69 to 2.56. Furthermore, many reputable journals do not have an impact factor.

- Attracting **grants** is difficult for planning academics. The ARC is the main funder of planning research. Between 2006 and 2016, a majority (61 percent) of planning academics did not attract any ARC grants. The statistical relationship between the number of grants awarded and publications/citations is weak. On average, planning academics attract less than $17,000 of ARC funding per year. In Go8 universities, planning academics generate about $35,000 annually on average – nearly double the national average for planners. The likelihood of acquiring an ARC grant is higher for men in senior positions and in Go8 universities.

It is hoped that these findings will be of help to university administrators on matters of review and promotion of planning academics, and will serve as a point of comparison between Australian planning academia and the rest of the world. However, it must be noted that, while we have conducted a practical study based on metrics, we do not, by any means, suppose that metrics must always remain the most highly valued technology in relation to information on the performance of academics in the planning arena.

References

Aguillo, Isidro F. 2012. “Is Google Scholar Useful for Bibliometrics? A Webometric Analysis.” *Scientometrics* 91(2):343-351.

Asmar, Christine. 1999. “Is there a Gendered Agenda in Academia? The Research Experience of Female and Male PhD Graduates in Australian Universities.” *Higher Education* 38:255-273.

Australia, Group of Eight. 2016. “The Group of Eight: Australia’s Leading Universities, Leading Excellence, Leading Debate.” Available at: go8.edu.au. Last accessed on 14 November 2016.

Australian Research Council. 2016. “ARC Grants.” Available at: https://rms.arc.gov.au/RMS/Report/Download/Report/d6b15b2b-3a50-4021-8e6f-6c7ef1cba553/0 Last accessed on 19 January 2016.

Australian Research Council. 2016. “Selection report: Discovery Projects 2016.” Available at: http://www.arc.gov.au/selection-report-discovery-projects-2016. Last accessed on 19 January 2016.

Bentley, Peter. 2011. “Gender Differences and Factors Affecting Publication Productivity among Australian University Academics.” *Journal of Sociology* 48(1):85-103.

Bornmann, Lutz and Hans-Dieter Daniel. 2008. “What Do Citation Counts Measure? A Review of Studies on Citing Behavior.” *Journal of Documentation* 64(1):45-80.

Bornmann, Lutz and Hans-Dieter Daniel. 2009. “The State of h-Index Research. Is the h-Index the Ideal Way to Measure Research Performance?” *EMBO Reports* 10(1):2-6.

Brembs, Björn, Katherine Button, and Marcus Munafò. 2013. “Deep Impact: Unintended Consequences of Journal Rank.” *Frontiers in Human Neuroscience* doi:10.3389/fnhum.2013.00291.

Byrne, Jason. 2017. “A Systematic Overview of Australian Planning Research.” In *Routledge Handbook of Australian Urban and Regional Planning*, N. Sipe and K. Vella (Eds.), London: Routledge.

Campbell, Philip. 2008. “Escape from the Impact Factor.” *Ethics in Science and Environmental Politics* 8:5-7.

Checkoway, Barry. 1997. “Reinventing the Research University for Public Service.” *Journal of Planning Literature* 11(3):307-319.

Connell, Raewyn. 2015. “Australian Universities under Neoliberal Management: The Deepening Crisis.” *International Higher Education* 81:23-25.

Frank, Nancy. 2008. “Measuring Public Service: Assessment and Accountability - To Ourselves and Others.” *Journal of Planning Education and Research* 27(4):499-506.

Harzing, Anne-Wil. 2010. *The Publish or Perish Book: Your Guide to Effective and Responsible Citation Analysis.* Melbourne: Tarma Software Research.

Hirsch, Jorge. 2005. “An Index to Quantify an Individual’s Scientific Research Output.” *Proceedings of the National Academy of Sciences of the United States of America* 102(46):16569-16572.

Hurt, Christine, and Tung Yin. 2006. “Blogging While Untenured and Other Extreme Sports.” *Washington University Law Review* 84(5): 1235-1255.

Hyland, Ken. 2016. *Academic Publishing: Issues and Challenges in the Construction of Knowledge*. Oxford, UK: Oxford University Press.

Kousha, Kayvan, and Mike Thelwall. 2008. “Sources of Google Scholar Citations outside the Science Citation Index: A Comparison between Four Science Disciplines.” *Scientometrics* 74(2):273-294.

Kousha, Kayvan, Mike Thelwall, and Somayeh Rezaie. 2010. “Using the Web for Research Evaluation: The Integrated Online Impact Indicator.” *Journal of Informetrics* 4(1):124-135.

Krumholz, Norman. 1986. “From Planning Practice to Academia.” *Journal of Planning Education and Research* 6(1):60-65.

Martin, Wachs. 1994. “The Case for Practitioner Faculty.” *Journal of Planning Education and Research* 13(4):290-296.

Postman, Neil. 1993. *Technopoly: The Surrender of Culture to Technology*. New York: Vintage.

Priem, Jason, Dario Taraborelli, Paul Groth, and Cameron Neylon. 2010. “Altmetrics: A Manifesto.” Available at: http://altmetrics.org/manifesto Last accessed on 9 November 2016.

Sanchez, Tom. 2014. “Academic Visibility for Urban Planning and the Webometric Future.” *The Journal of the World Universities Program* 6(2):37-52.

Sanchez, Tom. 2016a. “Faculty Performance Evaluation Using Citation Analysis: An Update.” *Journal of Planning Education and Research* DOI: 10.1177/0739456X16633500.

Sanchez, Tom. 2016b. “Planning Citation Analysis: Update.” Available at: http://tomwsanchez.com/planning-citation-analysis-update/ Last retrieved on 13 September 2016.

Simons, Kai. 2008. “The Misused Impact Factor.” *Science* 322(5899):165.

Spain, Daphne. 1992. “Creating and Defending Links between Teaching, Research, and Public Service.” *Journal of Planning Education and Research* 12(1):77-79.

Stevens, Garry. 1990. “An Alliance Confirmed Planning Literature and the Social Sciences.” *Journal of the American Planning Association* 56(3):341-349.

Thoreau, Henry David. 1854. *Walden, and on the Duty of Civil Disobedience*. Boston: Ticknor and Fields.

Wiewel, Wim, Virginia Carlson, and Suzanne Friedman. 1996. “Planning the New Urban University: The Role of Planning Departments.” *Journal of Planning Education and Research* 16(2):127-135.

White, Kate. 2001. “Women in the Professoriate in Australia.” *International Journal of Organisational Behaviour* 3(2): 64-76.

Notes

[1] Group of Eight (Go8) is a coalition of research-intensive Australian universities. It includes: University of Western Australia, Monash University, Australian National University, University of Adelaide, University of Queensland, University of Melbourne, University of New South Wales, and University of Sydney (Australia, Go8 2016).

[2] Formerly known as Thomson Reuters.

[3] The concept of grading students' work quantitatively is relatively recent too. It did not emerge until the late 18th century. The first numerical grading systems were employed at the University of Cambridge and Yale University. A few universities and colleges are now eschewing grades in favor of qualitative feedback and simple pass/fail evaluations.

[4] Microsoft Excel was used to analyze the data.

[5] The analysis did not account for the fact that some academics may not have been employed in their current job during the entire study timeframe.

[6] For the purpose of this study, data for "Research Associates" was combined with data for "Research Fellows" as there was a single researcher listed in the "Research Associate" category.

[7] A similar study identified 23 programs and 164 staff members (Byrne 2017). That study, which sourced data from both Scopus and Google Scholar, excluded research-only staff and considered only planning academics on a "standard" appointment, which in Australia typically consists of 40% research, 40% teaching, and 20% service.

[8] In some universities, the term "Reader" is used.

[9] These include the following: (1) University of Adelaide, Adelaide, Centre for Housing, Urban and Regional Planning; (2) Griffith University, Brisbane and Gold Coast, Cities Research Centre; University of Melbourne, Melbourne, Melbourne Sustainable Society Institute; (3) University of New South Wales, Sydney, City Futures Research Centre; (5) University of Sydney, Sydney, Planning Research Centre; (6) University of Western Australia, Perth, Centre for Regional Development; and (7) RMIT University, Melbourne, Centre for Urban Research. The latter is the largest urban research center in Australia, with 20 fellows. Many staff members in these centers are not planners but rather geographers, environmental scientists, economists, etc., and were therefore excluded from this study. Some staff members listed as research fellows in these centers (e.g., at RMIT, Griffith University, University of Melbourne, and University of Sydney) are also listed as lecturers or professors in the respective planning departments.

[10] It is well possible that a correlation exists. For example, in programs that have large class sizes or intensive studio teaching, the faculty might be left with little time for research.

[11] Two female academics, Danica Savonick and Cathy N. Davidson, have compiled an annotated biography of important recent studies on gender bias in academia, in Australia and elsewhere: blogs.lse.ac.uk/impactofsocialsciences/2016/03/08/gender-bias-in-academe-an-annotated-bibliography/#new

[12] Including journal articles, conferences papers, books (edited and authored), and book chapters.

[13] It must be noted that, some grant figures are overestimated because the data on funding overlap due to the fact that research teams which bid on ARC grants often include academics from two or more domestic universities.

[14] These figures are estimates based on current staff numbers. During the study timeframe, staff numbers may have fluctuated in some programs.

[15] There is collinearity between these publication and citation metrics, as noted.