

Checking Subtler Gender Differences in New Zealand Sociology PhD Students' Article Production During Enrolment (2010–19)

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Introduction

This research note outlines the findings from empirical analyses of subtle gender differences in the rate of producing published outputs during enrolment in a PhD. Roksa et al. (2022, p. 47) cite studies reporting that “scholarly publication is a long-recognized ‘coin of the realm’, which serves as a significant, though not sole, criterion in faculty hiring decisions.” The rate of publication, an output measure, has to be interrogated, as does the different effort required or obstacles needing to be overcome for different groups of students, such as men and women, to be successful in achieving the same level of research productivity. Other major influences enabling or constraining research productivity during enrolment may include key variables such as ethnicity and socioeconomic status. These structural factors are invisible in university measures of output rates.

Ninety-five New Zealand sociology students completed their doctoral theses in the most recent decade, 2010–19. We had previously reported on a smaller five-year cohort in this journal (Burns & Rajčan, 2019). Over half of these students produced at least one article or book chapter. The present research note is based on the analysis of the refereed journal articles. In effect, the background question of our ongoing research into PhD productivity is whether the highest-earned university qualification is still a PhD—or whether in the reality of the contemporary academic labour market, it has become a PhD plus publications.

The 95 doctoral students achieved overall 131 outputs, of which 104 (79.3%) were journal articles and 27 (20.7%) book chapters. Two thirds of thesis completions were by women. This proportion is in keeping with a decades-long ratio for sociology students (Crothers, 2018; Rajčan & Burns, 2020). The higher proportion of women students and staff in sociology than in other academic fields has not, however, translated into elevation to positions at more senior level (Germov & McGee, 2005; Larkins 2018). The consciousness of the need for a better-balanced gender workforce has grown over several decades in the academy (Bönisch-Brednich & White, 2021).

Bönisch-Brednich and White's (2021) recent Australasian study looking at the push for gender balance referred to variability in individual university responses. For example, they pointed out that only one third of strategic plans specifically mentioned gender, debates about gender quotas for such things as university appointments or senior academic promotions varied markedly, and that senior university managers varied in their commitment to equality or “tinkering around the edges” (Bönisch-Brednich & White, 2021, p. 111). This meant uneven career progress for women in an era of constant restructuring. The goal of greater gender fairness has tended to be assimilated as one strand of a general diversity approach. Marked differences in gender balance by discipline persist through to the present (Winchester & Browning, 2012). Despite these dilemmas, Bönisch-Brednich and White (2021) were broadly positive about

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the progress being made, though there continues to be a rhetorical gap between the commitment of university managers and the outworking of gender policy.

More detailed questions about gender and research productivity

A primary measure of academic research productivity by gender in our study was the count of refereed articles and book chapters. Refereed outputs have become a key criterion in the contemporary academy for entry into postdoctoral positions and academic jobs, as well as for promotion and career progression (Bartkowski et al., 2015; Lei, 2021). Aside from benefit to individual researchers' careers, well-placed outputs have become increasingly important in the Performance-Based Research Fund (PBRF) environment for survival of individual departments and disciplines. This continues for international competitiveness of universities in the neoliberal global higher education sector. There is no necessary connection between gender equality and universities' neoliberal productivist agenda. Some attempts are being made today to link these. For example, the *Times Higher Education* in its Impact Rankings section (Times Higher Education, 2020) states that it:

has produced a ranking focusing on how universities are contributing to gender equality. Some of the measures looked at as part of the ranking are research on gender, policies on gender equality, commitment to recruiting and promoting women, the proportion of first-generation female students and student access measures.

Historically, Curtis and Phibbs (2006) provided an early baseline discussion of five potential drivers of gender differences in the research quality score in New Zealand's then just-introduced PBRF. The importance of gender equality politically and academically means thinking beyond simply counting the number of research outputs. For example, the likely gender differences in efforts to overcome obstacles can vary widely between individuals in achieving a completed thesis (Dever et al., 2008). For instance, women in academia experience higher workloads of pastoral care in teaching roles (Ding, 2021; Hochschild, 1989; O'Meara et al., 2017). In particular, gendered cumulative advantage or disadvantage starts with publishing during the PhD (Horta & Santos, 2016; Lindahl et al., 2020). Brower and James (2020) examined all academics in all disciplines in the PBRF system, and found that "research score and age explain less than half of the approximately \$400,000 lifetime gender pay gap in NZ universities" (p. 8).

Our recently published study focused on PhD publishing practices in sociology, during the period of candidates' enrolment, by institution and gender (Rajčan & Burns, 2022). These analyses were primarily based on the number of refereed journal articles and book chapters involved. After establishing that there was no statistically significant difference in terms of output production between men and women during PhD enrolment (measured by the number of articles and book chapters produced), we pursued a further investigation of potential gendered differences in this cohort's publishing practices by posing the following questions. First, within the similar numbers, were women and men achieving the same quality of publications in terms of journal ranking? Second, was the gender distribution of outputs in sociology versus non-sociology journals the same or different? Third, were women and men equally publishing in local (that is, Australasian) versus international journal outlets? Addressing these three questions is important because of the implications for labour market competitiveness of PhD completers, as well as the long-term future of the sociology discipline.

Method

To see if men's and women's publishing practices were similar in these subtler patterns within the overall count of research outputs, we ran six analyses using non-parametric statistical tests. We initially chose chi-square tests, and then for the journal quality metrics, because of the ordinality in the rankings, applied

the Mann-Whitney test. Running these analyses allowed the broad quality measure of an article's refereed status to be further explored. Gender of PhD students was decided based on names and personal pronouns in their thesis and published work; we did not find any students identifying as non-binary. It is worth considering, however, that gender identity does not equate to personal pronouns or names, which means that nonbinary students may be included in this data. For example, some trans, gender-diverse, takatāpui, and non-binary people do use she/her and he/him pronouns, while not necessarily identifying as a woman or a man. A wider issue in the context of gender inequality in universities is that some PhD students may not feel comfortable asking supervisors or others to use their non-binary pronoun. Using data based on public information from university repositories and research databases meant that this level of granularity was not available.

The variables were operationalised as follows: First, for testing journal quality, SCImago quartile ranking of journals (<https://www.scimagojr.com>) and 2010 Excellence in Research in Australia (ERA) journal rankings were used (Murray & Skead, 2020). Second, for determining distribution between sociology and non-sociology outlets, the ERA 2018 journal list was used (Australian Research Council, 2018). Third, Ulrichsweb and journal homepages were used to determine whether journals were Australasian or international (<https://www.ulrichsweb.com/ulrichsweb/faqs.asp>). These measures are further explained as part of presenting the findings.

Results

The results of the six analyses were tabulated and calculated individually providing a more fine-grained assessment of differences between men and women PhD students' publishing patterns (Table 1).

Table 1. Gender by publication quality, sociology vs non-sociology, Australasia vs international

Measure	Test	<i>p</i> -value	significance
SCImago quartiles	Mann-Whitney	0.62	not significant
ERA 2010 A*, A, B, C rankings	Mann-Whitney	0.19	not significant
Sociology vs non-sociology journals	chi-square	0.82*	not significant
Sociology vs non-sociology articles	chi-square	0.80*	not significant
Australasian vs international journals	chi-square	0.16*	not significant
Australasian vs international articles	chi-square	0.37*	not significant

*Yates correction

Journal quality metrics

To determine whether there were gendered differences in the publication quality between men and women, we adopted SCImago's quartile ranking of journals which allocates journals into four quartiles—Q1 being the top quartile and Q4 being the lowest—based on the SCImago Journal Rank (SJR) indicator (Moura et al., 2019). SJR “considers journal impact in terms of the citations received, taking into account the quality of the citing journals” (Jokić et al., 2018, p. 1379). We also used the 2010 ERA journal rankings where journals were assigned A*, A, B or C ranking (subsequently discontinued) (Murray & Skead, 2020). According to the ERA 2010 Evaluation guidelines, these rankings range from an “A* journal [which] would be one of the best in its field or subfield” through to C which “includes quality, peer reviewed, journals that do not meet the criteria of the higher tiers” (Australian Research Council, 2010, p. 51). In both cases, the Mann-Whitney test indicated that the differences between the men's and women's publishing quality do not go beyond what would be expected by chance.

Sociology or non-sociology publishing

We tested gender differences in publishing in sociology and non-sociology journals using the journal For coding (Australian Bureau of Statistics, 2008) published in the ERA 2018 journal list (Australian Research Council, 2018). Publishing inside or outside sociology may have potential consequences for career progression within the discipline, as well as being important for the long-term future of the discipline (Burns and Rajčan, 2021; Crothers, 2018; Warren, 2019). It is not surprising that both genders are publishing in sociology, the greater count by women a reflection of the gender balance overall. The two chi-square tests showed no significant differences between genders in terms of publishing in sociology versus non-sociology. The tests examined potential differences whether considered in terms of the articles that were published or the journals in which the articles appeared.

Australasian or international publishing

We tested if sociology doctoral students are eschewing New Zealand and Australian journals (considered as the local sphere) in preference for international journals and whether there is a gender difference. To distinguish between Australasian and international journals, we used Ulrichsweb and journal websites. The results showed that there was no significant difference between men and women in Australasian versus overseas publishing. Overall, PhD completers published more in international journals, but without significant differences between men and women in this practice. It can be noted that men were 1.74 times more likely than women to publish internationally rather than domestically, but on the sample size here, this was not statistically significant at the 95% confidence interval.

Conclusion

This report documents six statistical analyses of three comparisons affecting men and women producing refereed articles during contemporary PhD enrolment in sociology in New Zealand. We looked at journal quality, publishing in sociology or non-sociology journals, and Australasian or international journals. By doing this, we aimed to show a more nuanced consideration than a gross comparison of the number of refereed outputs between genders. We make four main points in summary here.

First, that there is no statistically significant difference on any of these six measures is noteworthy, and potentially a good sign. There are, however, many points for interrogation for improving gender equity that these results raise. As noted earlier, gender differences in publishing contribute to cumulative advantage starting within the PhD (Lindahl et al., 2020). There is clear room for examining gendered publication opportunities in the early career period, as well as thinking about PhD completers who follow different career paths outside universities.

Second, as well as several theoretical points when interpreting these results, it is necessary here to be very cautious of these results because of the small sample size involved; larger data sets mean the power of such tests could be relied on much more. What is worth noting here, along with this strong caution, is the usefulness of the present exercise as a template for other researchers repeating the analyses with other cohorts or adding different analyses to investigate other possible subtle differences.

Third, for some decades, issues of gender equity and opportunity have grown increasingly central in higher education, both in New Zealand and internationally. Obvious progress measures can easily obscure hegemonic patterns of gender difference that persist or re-emerge in different forms. What these are and how they function remain ongoing questions. A short report such as this is simply a minor contribution to these much larger and important social changes and the accompanying debates about them.

Reporting this statistical information necessarily speaks to wider debates by feminist scholars and others who bring their perspectives to interpreting the substantive significance that these differences and non-differences may indicate (Sang, 2018). Major cultural shifts such as gender participation, roles and

success take many years. Furthermore, theoretical and qualitative perspectives are necessary to invigilate these patterns in relation to structural and discursive frameworks that may undermine or redirect patterns of change. Even a sense of positive change needs continual questioning as each decade reshapes the contribution and valuation of women and men in the contemporary university environment.

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