

GLASS CEILINGS IN NEW ZEALAND UNIVERSITIES

Inequities in Māori and Pacific promotions and earnings

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Abstract

Māori and Pacific academics make up less than 4% and 1% respectively of New Zealand professors. We investigated ethnic inequities in promotions and earnings in New Zealand universities. Using New Zealand's Performance-Based Research Fund (PBRF) data (2003, 2012, 2018) we found that Māori and Pacific men and also women academics, compared with non-Māori non-Pacific men academics, had significantly lower odds of being an associate professor or professor (professoriate) or of being promoted, and had lower earnings. These inequities were not explained by research performance (measured by PBRF scores), age or field, and remained over time, particularly for women. Māori and Pacific women academics earned on average \$7,713 less in 2018 than non-Māori non-Pacific men academics and had 65% lower odds of being promoted into the professoriate from 2003 to 2018. Our findings suggest that current inequities for Māori and Pacific academics will persist without systemic change in New Zealand universities.

Keywords

Māori, Pacific, university, promotion, remuneration, inequity

Introduction

Māori and Pacific (an umbrella term for a diverse range of peoples from the South Pacific region or people within New Zealand who have strong

family and cultural connections to the Pacific Islands) academics are currently under-represented in New Zealand universities (McAllister et al., 2019; Naepi, 2019; Naepi et al., 2020). Despite

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making up 16.5% of the total New Zealand population, Māori make up approximately 5% of the total academic workforce and less than 4% of professors (McAllister et al., 2019). Similarly, Pacific peoples make up 8.1% of the total New Zealand population, but make up less than 2% of the academic workforce and less than 1% of professors (Naepi, 2019). Recent studies show that there was little change in the percentage of Māori and Pacific academics in New Zealand universities between 2012 and 2017 (McAllister et al., 2019; Naepi, 2019). The need to recruit, retain, support and promote Māori and Pacific academics is critical if universities and the government are to meet their commitments to Te Tiriti o Waitangi, reduce inequitable higher education outcomes and employ a workforce that better represents the New Zealand population. Māori and Pacific academics play a key role in supporting Māori and Pacific students, who are also currently under-represented in university enrolments and completions (Education Counts, 2018, 2019; Kidman et al., 2015; McAllister et al., 2019; Naepi, 2019). These academics are an integral part of New Zealand's research system. They undertake research of relevance to Māori and Pacific communities and ensure that the voices of Māori and Pacific peoples are heard. They also train the next generation of Māori and Pacific researchers to conduct research that is culturally appropriate, and recent research shows that under-represented scholars can produce more novel research (Hofstra et al., 2020).

The Performance-Based Research Fund in New Zealand

In New Zealand, the Performance-Based Research Fund (PBRF) is a tertiary education funding process that measures and grades academics' research performance and funds their institutions accordingly (Tertiary Education Commission [TEC], 2020a). For researchers, it also provides a globally unique set of data that is one way of measuring the majority of New Zealand academics' research performance (Brower & James, 2020). Recently, Brower and James (2020) showed the potential of using PBRF data and provided evidence of a significant gender pay gap in universities in New Zealand. This research resulted in renewed calls by academic leaders across the country to address gender equity (Hancock, 2020; Satherley, 2020). Despite the ethnic wage gap being well established in Aotearoa for Māori and Pacific in the total population (Treasury, 2018), Brower and James (2020) did not examine whether Māori

and Pacific academics, and particularly Māori and Pacific women, were disproportionately affected. Considering intersectional identities, however, is a critical component to addressing diversity and equity issues within higher education. When research on diversity focuses solely on gender issues, it can support a continuing pattern of first-wave feminism in which white women's experiences and voices are centred in the pursuit of gender equity (Ahmed, 2012; Applebaum, 2017; Daniel, 2019). Using an intersectional lens when considering inequity in the academy may shed further light onto how to address these issues, as it has in health research (Cormack et al., 2018). Furthermore, diversity initiatives and policies within higher education have a history of privileging gender over ethnicity (Bhopal & Henderson, 2019a, 2019b; Bhopal & Pitkin, 2020). A lack of acknowledgement that Indigenous scholars and people of colour, particularly women, may be disproportionately disadvantaged within institutional structures could result in ineffective diversity policies focused on gender, that may reinforce white privilege within the academy (Ahmed, 2012, 2017; DiAngelo, 2011; Moreton-Robinson, 2000).

The PBRF was introduced in 2002 and aims to "ensure that excellent research in the tertiary education sector is encouraged and rewarded" through the distribution and allocation of government funding (TEC, 2020a). The quality evaluation component of PBRF results in 55% of the total amount of funding available being allocated to tertiary education providers based on individual research (evidence) portfolios submitted by academics (TEC, 2020a). There have been three full PBRF rounds, in 2003, 2012 and 2018. Eligibility of researchers was determined predominantly by being based in New Zealand and being employed on a continuous basis (either part-time as long as it is greater than 0.2 full-time equivalent [FTE] or full-time) for at least 12 months before the PBRF round begins. Each PBRF eligible researcher is required to submit an individual research portfolio, which is assessed by a panel and given a score based on research outputs (i.e., publications, presentations, funding) and research contributions (i.e., peer esteem, contribution to the research environment). Scores are clustered into the following grades: A (600–700), B (400–599), C (200–399), D (0–199) and R (research inactive; 0–199) and the institution receives funding proportionate to the individual scores of its researchers. The majority of academics employed at New Zealand's eight universities submit portfolios, but there will be

some who choose not to (Brower & James, 2020). The TEC provided \$315,000,000 in PBRF funding in 2019, and \$173,000,000 of this was allocated to institutions based on researchers' scores in the 2018 quality evaluation. Universities received 95.7% of this funding, and the remainder was distributed to other tertiary education organisations (TEC, 2020b).

Māori and Pacific academics and PBRF

It is important to note that there has been active critique of PBRF by New Zealand academics (Curtis, 2007, 2008, 2016; Curtis & Matthewman, 2005; Shore, 2010). It has been described as a:

mode of audit and surveillance which entrenches managerialism, undermines collegiality and academic freedom, promotes individualism, further commodifies higher education, increases workplace stress, induces people to de-prioritise professional activities that are not counted in the PBRF and leads to the proletarianisation of the academic workforce. (Cupples & Pawson, 2012, p. 14)

The PBRF system has also been criticised for disadvantaging Māori academics in a number of ways (Roa et al., 2009). Kidman et al. (2015) highlighted that Māori researchers are not primarily focused on climbing the ladder and a participant in their study noted that PBRF “hasn't made things better for Māori scholars or for Māori” (p. 82). Māori academic careers have different experiences and trajectories than their Pākehā counterparts (e.g., Māori often begin their academic careers at older ages; Kidman et al., 2015). Moreover, others have noted that PBRF does not effectively assess the wide impact Māori scholars have beyond simply publishing in high impact factor journals (Middleton & McKinley, 2010), indicating that not all of the work that Māori scholars do is counted towards PBRF, which makes invisible their wider contribution to the research sphere. Roa et al. (2009) identified 14 problems associated with PBRF that create barriers for Māori researchers. These problems included issues such as PBRF discourages long-term research, PBRF privileges outputs over outcomes in its measures of excellence, PBRF encourages sole-authored publications and those in international journals, and PBRF does not fairly allow for researchers with whānau.

As well as individual Māori researchers being disadvantaged within the current PBRF system, the three *whare wānanga* (i.e., Te Wānanga o Aotearoa, Te Whare Wānanga o Awanuiārangi

and Te Wānanga o Raukawa) are also disadvantaged in accessing this pool of funding as the system privileges Westernised educational approaches and Western ideas of research excellence (Tawhai et al., 2004). This was evidenced when Te Wānanga o Raukawa successfully argued, through the Whakatupu Mātauranga Claim (WAI 2698; Waitangi Tribunal, 2017), that they were significantly disadvantaged by the PBRF funding model and consequently received a \$10 million grant (Johnsen, 2019). Although Pacific researchers have critiqued wider university systems (Kidman & Chu, 2017, 2019; Patterson, 2018), Pacific voices have been lacking in discussions concerning PBRF issues: only one published article has specifically focused on PBRF (see Fairburn-Dunlop, 2004). Further research is therefore needed to analyse how Pacific academics experience and engage with the PBRF process. It is also important to note that recent research illustrated that in 2017, Māori and Pacific made up over 30% of “other” academic staff (i.e., tutorial assistants), which represents a significant portion of the Māori and Pacific academic workforce that will be PBRF ineligible (McAllister et al., 2019; Naepi, 2019). Currently, a review of the PBRF is taking place that involves consultation with the academic community. This consultation includes options to improve support for mātauranga Māori and Pacific research and researchers (e.g., increasing the subject area weighting for evidence portfolios assessed by the Māori Knowledge and Development and Pacific research panels). It is, however, too soon to know whether these changes will occur (Ministry of Education, 2020).

Regardless of some of the issues identified with the PBRF system and its ability to adequately assess Māori and Pacific research approaches and research excellence, the majority of Māori and Pacific academics who are working within New Zealand universities, and who are eligible to take part in the PBRF process, are required by their institutions to do so. Given that Māori and Pacific academics' research is currently assessed by PBRF, investigating how their scores align with other academic outcomes, such as promotions, can provide valuable insight into inequities in the academy. Moreover, PBRF data provide a unique opportunity to examine ethnic inequities in universities for an entire country. Inequities are differences in outcomes that are not only unnecessary and avoidable but also unfair and unjust (Whitehead, 1992).

The present study

In 2019, the authors of this present study published two papers that provided a snapshot of the Māori and Pacific academic workforce between 2012 and 2017 in New Zealand universities (McAllister et al., 2019; Naepi, 2019). These papers found that Māori and Pacific academics were severely under-represented at universities at all levels of the academic workforce (e.g., lecturers, professors) compared with their non-Māori non-Pacific academic peers. Moreover, little progress had been made over time in terms of increasing the proportion of these academics in the workforce (McAllister et al., 2019; Naepi, 2019). In 2020, the authors published a paper looking at issues for Māori and Pacific emerging academics trying to enter the academic workforce (Naepi et al., 2020). This present paper looks at the other end of the academic career spectrum: the academic leaders in New Zealand universities. We investigated why Māori and Pacific were less likely to be in the professoriate (i.e., associate professors and professors), why they were less likely to be promoted into these roles and why their earnings were lower than their non-Māori non-Pacific peers, particularly men. We then examined whether inequities were explained by research performance as measured by PBRF, age or field. Finally, we made forecasts of the future probability of Māori and Pacific academics being in the professoriate or being promoted, and we modelled their future earnings at 5, 10, 15 and 20 years post an academic's first PBRF round.

Methods

The data extract

A data extract was provided by New Zealand's TEC that included nearly 21,000 de-identified PBRF assessments of academic staff of eight universities nationally from the 2003, 2012 and 2018 quality evaluation rounds. This present paper used data that were provided to the TEC by universities and did not include data from the three *whare wānanga* or polytechnics. The data included researchers' personal details—date of birth, gender and up to three ethnicities; employment details—institution name, position title (e.g., senior lecturer), academic unit/division, which we hereafter refer to as “field” (i.e., Business, Science, Medicine, Education, Humanities, Other), and proportion of FTE; and PBRF scores. Approximate salaries were determined using a table provided by Brower and James (2020). These were mean salaries for each position within a given institution in 2012. We then applied the 2012 salary bands to the

2003 and 2018 populations. This means that differences over time are reflective of the population (e.g., changes in promotions, institutions, academic positions) rather than increases in salaries. Earnings were then calculated using salary information to reflect and account for proportions of FTE on a pro-rata basis. We then used the earnings variable versus salaries for all analyses.

As described previously, data were provided to TEC by universities for the three quality evaluation rounds; this included ethnicity data collected by each institution. In the data extract that our research group received from the TEC, few researchers had more than one of the three ethnic group fields. We created “ever” reported ethnicity variables for Māori or Pacific. That is, if a researcher had ever reported Māori or Pacific ethnicity in any of the PBRF rounds, they were attributed that ethnicity in this variable. This resulted in a small increase in the proportion of Māori (2.6% increased to 3.8% in 2003, 3.6% to 4.3% in 2012 and 4.3% to 4.5% in 2018) and Pacific (1.3% to 1.4% in 2012 and 1.3% to 1.4% in 2018). The numbers for Pacific in 2003, however, doubled (0.4% to 0.9%), suggesting a potential issue in the way that Pacific ethnicity was collected or analysed in that PBRF round. We used these two variables to maintain consistency of ethnicity across the three evaluation rounds. Thus, ethnicity reported in each year merged with those in other years. Also, 1,563 genders were reported as “Unknown” and were overwritten if gender was reported in other years. As noted by Brower and James (2020), there were no explicit records of participants who identified as non-binary, although there may have been cases in which gender was not stated. By using “ever” variables, we reduced non-reported ethnicity from $n = 5,579$ to $n = 3,692$ and reduced non-reported gender from $n = 1,563$ to $n = 705$. Those who still had missing ethnicity or gender data ($N = 3,792$) were omitted from subsequent analyses, leaving $N = 17,174$ participants. In this paper, Māori and Pacific participants hereafter refer to those who fell into the “ever” reported ethnicity variables, as identified above.

In 2003 ($N = 4,801$), 1,644 only completed one evaluation round; 1,073 completed one other evaluation—959 in 2012 and 114 in 2018; and 2,084 completed three evaluation rounds. In 2012 ($N = 5,922$), 957 only completed one evaluation round; 959 completed an earlier evaluation, in 2003; 1,922 completed another evaluation, in 2018; and 2,084 completed three evaluation rounds. In 2018 ($N = 6,451$), 2,331 only completed one evaluation round, in 2018; 114 completed an

earlier evaluation in 2003; 1,922 completed an earlier evaluation, in 2012; and 2,084 completed all evaluation rounds, following on from 2003 and 2012.

Academic positions

During the PBRF review process, individuals specify their position titles. We reorganised individuals, based on their position titles, into the following six groups: lecturers, senior lecturers, associate professors, professors, lead roles and other roles. *Lecturers* included participants whose job titles were listed as either lecturers or research fellows. *Senior lecturers* included participants whose job titles were listed as senior lecturer, senior research fellow or senior research lecturer. *Associate professors* included associate professors, and clinical and research associate professors. *Professors* included professors, and clinical and research professors.

The *professoriate* included the associate professor or professor categories listed above. *Lead roles* included participants with job titles such as director, head of department, dean and pro-vice chancellor. However, if these job titles also included information about whether the participant was one of the four categories described above—lecturer, senior lecturer, associate professor or professor categories (e.g., a person's job title was senior lecturer/head of department)—then they were added to one of those four categories. Also, for those participants in a lead role who were a part of the professoriate at a previous PBRF assessment round, they had their previous professoriate positions carried forward. *Other roles* included all other roles (e.g., assistant positions).

Statistical analyses

Stata v15 was used to perform descriptive and regression analyses. Some preliminary descriptive analyses and graphical presentations were performed using R (R Core Team, 2013; StataCorp, 2017).

For regression analyses, we excluded those in lead roles who were not identified in a previous professoriate position, which resulted in $N = 16,779$ participants, with 4,645, 5,820 and 6,314 researchers being assessed in 2003, 2012 and 2018, respectively. For each year, logistic regression analyses were used to model the probability that participants were in the professoriate (associate professor and professor) or a full professor, and linear regressions were used for analyses of earnings. The model coefficients were reported by gender and Māori and Pacific ethnicity, with non-Māori non-Pacific men as the reference group.

Māori and Pacific categories were combined to ensure that the models had sufficient numbers to promote successful estimation of all parameters. Covariate interactions were considered in the model structure but were excluded as very few were significant. Two model configurations were used to regress the covariate factor associations with annual probabilities of achieving professoriate positions (associate professor or professor), and full professor only, as well as earnings. The models used were unadjusted models = ethnicity/gender, and adjusted models = ethnicity/gender, decade of birth (age), PBRF scores and field.

Alternative repeated measures regression models were adopted to model promotions for 5,077 individuals who completed at least one follow-up evaluation round between 2003 and 2018. Mixed model logistic regression analyses were used to model promotion to the professoriate or to professor. Mixed model linear regression analyses were used to model earnings. Covariate interactions were excluded again as very few were significant. Two model configurations were used to adjust for covariate factors on the probability of achieving professoriate positions or becoming a professor over time. Similar model configurations were reported to adjust for covariate factors associations with earnings. The models were: unadjusted models = ethnicity/gender and adjusted models = ethnicity/gender, age (decile of birth), PBRF scores and field.

Predictive estimates were generated from the fully adjusted model estimated for four five-year PBRF follow-up evaluation rounds, that is at 5, 10, 15 and 20 years post an academic's first PBRF evaluation.

Results

Characteristics of PBRF participants

The percentage of PBRF participants who ever reported having Māori ethnicity remained relatively stable across the three funding rounds (2003, 2012 and 2018) with a range from 4.8% to 5.3% (see Table 1). For Pacific, there was a slight increase in percentage from 1.3% to 1.6% from 2003 to 2018, and still very few PBRF participants who reported Pacific ethnicity (1.5% on average over the three time points; see Table 1). By the 2018 funding round, there were more Māori and Pacific academics who were women than men.

Table 2 shows the number and percentage of PBRF participants in different academic positions who were evaluated in all three PBRF rounds and who had ethnicity and gender information. Non-Māori non-Pacific PBRF participants made

TABLE 1 Characteristics of participants by ethnicity and gender in the 2003, 2012 and 2018 Performance-Based Research Funding rounds

	2003		2012		2018		Total all years	
	N	%	N	%	N	%	N	%
Māori	256	5.3%	285	4.8%	335	5.2%	876	5.1%
Women	140	2.9%	168	2.8%	196	3.0%	504	2.9%
Men	116	2.4%	117	2.0%	139	2.2%	372	2.2%
Pacific	63	1.3%	91	1.5%	103	1.6%	257	1.5%
Women	25	0.5%	44	0.7%	61	0.9%	130	0.8%
Men	38	0.8%	47	0.8%	42	0.7%	127	0.7%
Non-Māori/Pacific	4,482	93.4%	5,546	93.7%	6,013	93.2%	16,041	93.4%
Women	1,686	35.1%	2,215	37.4%	2,630	40.8%	6,531	38.0%
Men	2,796	58.2%	3,331	56.2%	3,383	52.4%	9,510	55.4%
Total	4,801	100.0%	5,922	100.0%	6,451	100.0%	17,174	100.0%

Note. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported being men or women. Those participants who had missing ethnicity or gender data were excluded from the analyses.

TABLE 2 Characteristics of participants by ethnicity and academic position in the 2003, 2012 and 2018 Performance-Based Research Funding rounds

Academic position	Total number	Non-Māori/Pacific		Māori		Pacific	
		Number	Percentage	Number	Percentage	Number	Percentage
Other	2,051	1,918	93.5%	105	5.1%	28	1.4%
Lecturer	3,630	3,266	90.0%	290	8.0%	74	2.0%
Senior Lecturer	6,399	5,987	93.6%	303	4.7%	109	1.7%
Associate Professor	2,250	2,155	95.8%	76	3.4%	19	0.8%
Professor	2,353	2,256	95.9%	74	3.1%	23	1.0%
Lead Roles	491	459	93.5%	28	5.7%	4	0.8%
Total	17,174	16,041	93.4%	876	5.1%	257	1.5%

Note. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported a specific gender. Those participants who had missing ethnicity or gender data were excluded from the analyses.

up 90% or more of the academics in every academic position and more than 95% of associate professors and professors. Māori made up > 4% of associate professors or professors, while Pacific made up less than 1% (see Table 2).

Māori and Pacific earnings

Using non-Māori non-Pacific men as a reference group, we compared earnings for Māori and Pacific men, Māori and Pacific women, and non-Māori non-Pacific women (see Table 3). As described previously, Māori and Pacific were combined to ensure that the models had sufficient numbers to promote successful estimation of all parameters.

Compared with non-Māori non-Pacific men, all other groups had significantly lower earnings at each of the three periods based on the unadjusted model. When analyses controlled for research performance, age and field, however, Māori and Pacific men’s salaries were no longer significantly different from other men in 2003 or 2012. The earnings of Māori and Pacific women were significantly lower at all three time points after adjusting for covariates. In 2018, Māori and Pacific women compared with non-Māori non-Pacific men earned \$7,713 less on average, once research performance, age and field were taken into account.

TABLE 3 Mean earnings by ethnicity and gender for participants in the 2003, 2012 and 2018 Performance-Based Research Funding rounds

	2003			2012			2018		
	Earnings ¹	Unadj	Adj ²	Earnings ¹	Unadj	Adj ²	Earnings ¹	Unadj	Adj ²
Non-Māori/ Pacific men	\$104,152	Ref	Ref	\$114,283	Ref	Ref	\$112,977	Ref	Ref
Māori/ Pacific men	\$91,091	-\$13,061 (<i>p</i> = 0)	-\$2,035 (<i>p</i> = 0.37)	\$106,492	-\$7,790 (<i>p</i> = 0.0076)	-\$2,261 (<i>p</i> = 0.34)	\$104,870	-\$8,107 (<i>p</i> = 0.0047)	-\$5,136 (<i>p</i> = 0.023)
Non-Māori/ Pacific women	\$87,064	-\$17,088 (<i>p</i> = 0)	-\$6,646 (<i>p</i> = 0)	\$96,792	-\$17,490 (<i>p</i> = 0)	-\$7,657 (<i>p</i> = 0)	\$97,297	-\$15,680 (<i>p</i> = 0)	-\$5,776 (<i>p</i> = 0)
Māori/ Pacific women	\$82,954	-\$21,198 (<i>p</i> = 0)	-\$4,307 (<i>p</i> = 0.046)	\$92,472	-\$21,810 (<i>p</i> = 0)	-\$9,352 (<i>p</i> = 0)	\$100,828	-\$12,149 (<i>p</i> = 0)	-\$7,713 (<i>p</i> = 0.0002)

Notes. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported a specific gender. Those participants who had missing ethnicity or gender data were excluded from the analyses. Excluded are those in lead roles (e.g., head of department) whose other academic positions (e.g., senior lecturer, professor) were not recorded.

¹ Earnings were calculated using salary information to reflect and account for proportions of FTE on a pro-rata basis.

² Adjusted values take into account research performance (PBRF score), age and field (e.g., Business, Medicine).

TABLE 4 The odds that over time (2003, 2012 and 2018) Māori and Pacific are in the professoriate (associate professor or professor), a full professor or promoted

	Whole cohort				Not including professors (A/P or professor) at first evaluation ¹			
	Unadjusted		Adjusted ²		Unadjusted		Adjusted ²	
	Odds ratio ³	Standard error	Odds ratio ³	Standard error	Odds ratio ³	Standard error	Odds ratio ³	Standard error
<i>Professoriate</i>								
Non-Māori/ Pacific men	1.000	Ref	1.00	Ref	1.000	Ref	1.000	Ref
Māori/Pacific men	0.450	0.07***	0.464	0.08***	0.524	0.09**	0.481	0.11**
Non-Māori/ Pacific women	0.397	0.02***	0.501	0.03***	0.577	0.04***	0.671	0.05***
Māori/Pacific women	0.279	0.04***	0.318	0.06***	0.408	0.07***	0.350	0.07***
<i>Professor</i>								
Non-Māori/ Pacific men	1.000	Ref	1.00	Ref	1.000	Ref	1.000	Ref
Māori/Pacific men	0.543	0.1**	0.640	0.14*	0.562	0.12**	0.603	0.16
Non-Māori/ Pacific women	0.381	0.03***	0.491	0.04***	0.479	0.04***	0.616	0.06***
Māori/Pacific women	0.277	0.06***	0.405	0.09**	0.344	0.08***	0.414	0.11**

Notes. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported a specific gender. Those participants who had missing ethnicity or gender data were excluded from the analyses. Excluded are those in lead roles (e.g., head of department) whose other academic positions (e.g., senior lecturer, professor) were not recorded. Included are all researchers from 2003 to 2018 with at least one follow-up round.

¹ This column reflects promotions over time.

² Adjusted values take into account research performance (PBRF score), age and field (e.g., Business, Medicine).

³ Odds ratios, after one PBRF assessment cycle, significantly differ from one (unit) differ from zero with a **p*-value < 0.05, ***p*-value < 0.01, ****p*-value < 0.0001.

Māori and Pacific associate professors, professors and promotions

Compared with non-Māori non-Pacific men, the odds that Māori and Pacific men were in the professoriate or were professors across the three evaluation rounds were significantly lower (see Table 4). In particular, after adjusting for research performance, age and field, they had 54% lower odds of being in the professoriate and 36% lower odds of being a full professor over time. Moreover, they had 52% lower odds of being promoted into the professoriate than non-Māori non-Pacific men after accounting for research performance, age and field. Over time, Māori and Pacific women had 68% lower odds of being in the professoriate and 65% lower odds of being promoted into the professoriate than non-Māori non-Pacific men after controlling for research performance, age and field. Similarly, they had 59% lower odds of being a professor or being promoted to a professor, after controlling for confounding variables.

We used PBRF data from 2003, 2013 and 2018 to predict a number of future scenarios at 5, 10, 15 or 20 years after a person's first PBRF assessment (see Figures 1 and 2). As described previously, predictive estimates were generated from the fully adjusted model and estimated for four five-year PBRF follow-up evaluation rounds. Due to small numbers, Māori and Pacific categories were combined. Māori and Pacific women

consistently had the lowest probability of being promoted into the professoriate (see Figure 1A) and of becoming a full professor (see Figure 1B). Māori and Pacific men also had lower probabilities over time of being promoted to the professoriate and to professor than non-Māori non-Pacific men (see Figure 1). Moreover, estimated differences in outcomes between Māori and Pacific academics and non-Māori non-Pacific men increased over time (see Figure 1). Māori and Pacific women also had the lowest predicted earnings over time (see Figure 2 and Table 5).

Discussion

In this paper, we examined ethnic inequities in earnings and promotions for Māori and Pacific academics within New Zealand universities. Moreover, we examined whether these inequities could be explained by differences in research performance, age or field using a globally unique dataset: New Zealand's PBRF. We found that both Māori and Pacific women and men, compared with non-Māori non-Pacific men, had significantly lower odds of being in the professoriate (associate professors and professors) or being full professors, and of being promoted to the professoriate or to full professor. These differences remained after taking into account research performance, age and academic field. Māori and Pacific academics also earned significantly less between 2003 and

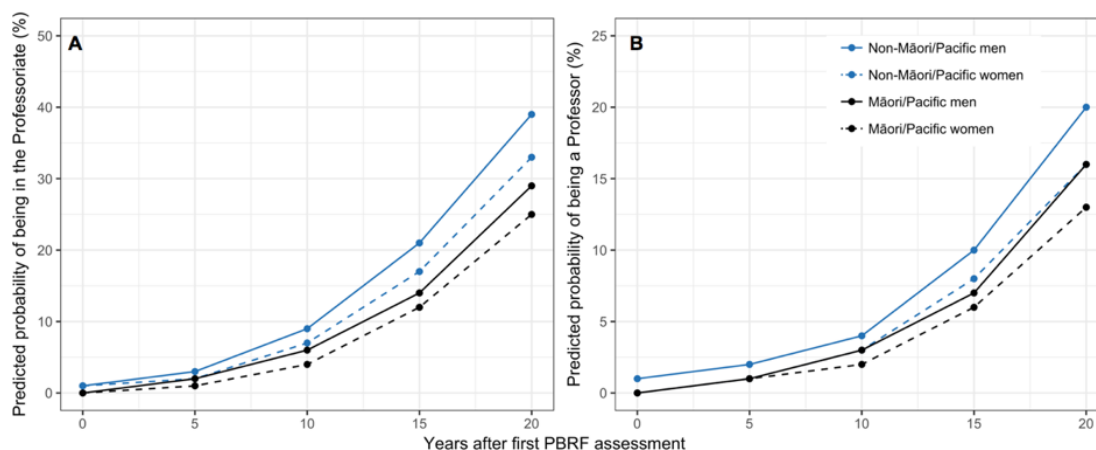


FIGURE 1 Predicted probability (mixed logistic models) of being promoted to the professoriate (A) or to full professor (B) in 5, 10, 15 and 20 years after a person's first Performance-Based Research Funding evaluation round for Māori and Pacific, and non-Māori non-Pacific by gender

Notes. Includes all researchers from 2003 to 2018 with at least one follow-up round and excludes researchers in Figure A, who were associate professors or professors in their first PBRF round, or in Figure B, who were professors in their first PBRF round. These are participants who "ever" reported having Māori or Pacific ethnicity and who "ever" reported being men or women. Those participants who had missing ethnicity or gender data were excluded from the analyses. The figures display adjusted values that take into account research performance (PBRF score), age and field (e.g., Business, Medicine).

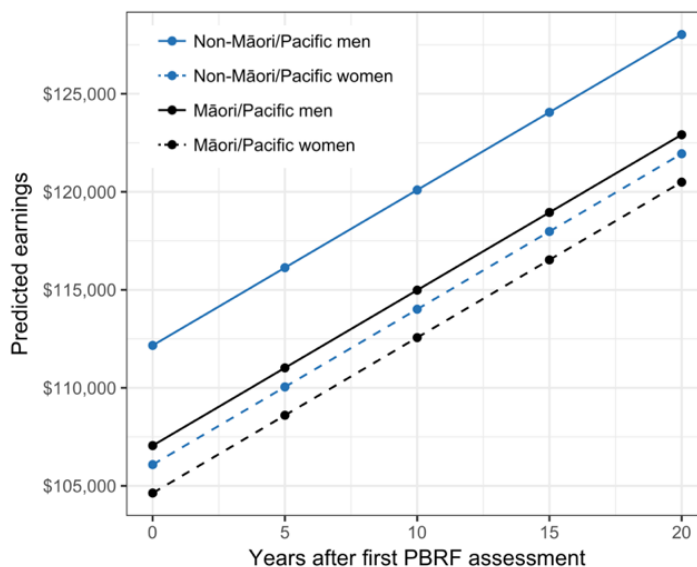


FIGURE 2 Predicted probability (mixed linear models) of earnings in 5, 10, 15 and 20 years after a person's first Performance-Based Research Funding evaluation round for Māori and Pacific, and non-Māori/Pacific by gender

Notes. Includes all researchers from 2003 to 2018 with at least one follow-up round. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported being men or women. Those participants who had missing ethnicity or gender data were excluded from the analyses. Earnings were calculated using salary information to reflect and account for proportions of FTE on a pro-rata basis. The figure displays adjusted values that take into account research performance (PBRF score), age and field (e.g., Business, Medicine).

TABLE 5 Average earnings differences by ethnicity and gender at 5, 10, 15 and 20 years after a person's first Performance-Based Research Funding evaluation round

	Unadjusted		Adjusted ²	
	Difference	Standard error	Difference ¹	Standard error ¹
Non-Māori/Pacific men	\$–	Ref	\$–	Ref
Māori/Pacific men	–\$10,729	\$2,388***	–\$5,111	\$1,687**
Non-Māori/Pacific women	–\$13,390	\$869***	–\$6,083	\$643***
Māori/Pacific women	–\$16,978	\$2,188***	–\$7,531	\$1,573***

Notes. These are participants who “ever” reported having Māori or Pacific ethnicity and who “ever” reported a specific gender. Those participants who had missing ethnicity or gender data were excluded from the analyses. Excluded are those in lead roles (e.g., head of department) whose other academic positions (e.g., senior lecturer, professor) were not recorded. This includes all researchers from 2003 to 2018 with at least one follow-up round.

¹ Adjusted values that take into account research performance (PBRF score), age and field (e.g., Business, Medicine).

* p -value < 0.05, ** p -value < 0.01, *** p -value < 0.0001.

2018, particularly Māori and Pacific women, than non-Māori non-Pacific men. These differences in earnings for Māori and Pacific women remained after controlling for research performance, age and field. Furthermore, by estimating promotions and earnings at 5, 10, 15 and 20 years post an academic's first PBRF round, we found that

these ethnic inequities either persisted or increased respectively, over time.

Māori and Pacific academics experience systemic structural disadvantage in New Zealand's higher education system. Our findings provide quantitative evidence to support previous qualitative research that Māori and Pacific face racism

in New Zealand's universities (Kidman, 2020; Kidman & Chu, 2019). The present study also supports recent quantitative studies that show a severe under-representation of Māori and Pacific staff within universities, beginning with emerging academics (McAllister et al., 2019; Naepi, 2019; Naepi et al., 2020). Moreover, the present findings support the voices of academics who have described the day-to-day reality of feeling isolated within New Zealand universities (Hurihanganui, 2018; Kidman et al., 2015; McPhee, 2018; Patterson, 2018). While the findings of the present study are stark, for many Māori and Pacific academics they will come as little surprise. Moreover, the findings may offer little hope of change for these academics unless universities actively address the severe under-representation of Māori and Pacific academics in New Zealand universities by setting and then achieving recruitment and promotion targets.

Māori and Pacific currently make up less than 5% of all New Zealand professors. The lack of Māori and Pacific academic staff at the highest levels has implications in terms of university leadership. Associate professors and professors carry more institutional capital than other academics, and they operate in the higher echelons of academic prestige economies whereby institutional elites recognise, validate and confer status on others within those cliques (Headworth & Freese, 2016). If Māori and Pacific are not in senior roles within the professoriate, universities may be likely to continue to make decisions that reinforce current university practices, which could function to marginalise Māori and Pacific academics, students and communities (Ahmed, 2012).

PBRF as a magnifying glass

PBRF is the system through which the government measures research performance to determine funding in New Zealand. As described previously, there have been a number of criticisms of the PBRF system (e.g., the focus on short-term outputs versus long-term outcomes and unfairly disadvantaging Māori and Pacific researchers). However, PBRF does provide a uniform measuring tool for academics in New Zealand and therefore can act as a "magnifying glass" through which to examine the system's current inequitable treatment of Māori and Pacific academics. Brower and James's innovative 2020 study provided a template of how to do this by describing the inequitable treatment of women academics within New Zealand universities. Their findings made national and international headlines and a number of New

Zealand's academic leaders called for systemic change to address discrimination within academia (Heather, 2020). Our findings show that for equity initiatives to be truly successful, they must also address institutional racial discrimination within the academy and consider intersectional identities.

As Brower and James (2020) pointed out, there may be a number of reasons why there are differences in New Zealand academic outcomes even if research performance, age and field are taken into account. Other factors that may affect outcomes include differences in teaching performance or service. Yet, previous research has described the high workloads that Māori and Pacific academics have that include academic and pastoral care of Māori and Pacific students, being the voice on Māori and Pacific issues (e.g., providing advice and consultation on research) and service to the wider community. Moreover, Māori and Pacific academics report cultural taxation when working in universities—repeatedly sharing stories of being overworked (Ahenakew & Naepi, 2015; Kidman & Chu, 2017, 2019; Kidman et al., 2015; Naepi, 2019, 2020; Naepi et al., 2017; Patterson, 2018). Brower and James (2020) also noted that PBRF scoring focuses on quality rather than quantity, and previous research suggests that men publish more than women (Elsevier, 2017). Moreover, applicants with more peer-reviewed publications are more likely to be promoted and earn more (Baker, 2010; Nakhaie, 2007). These gender inequities in publishing may be further compounded by ethnicity, as previous research has shown that Māori and Pacific researchers do not necessarily prioritise publications (Kidman et al., 2015; Patterson, 2018). However, Māori and Pacific academics did have lower PBRF scores than non-Māori non-Pacific men academics (results are not presented but can be provided upon request), which suggests that this explanation is unlikely. With this dataset, we also cannot ascertain whether non-Māori non-Pacific men are hired directly into higher academic levels and then promoted at similar speeds, which may affect the results of this study (Brower & James, 2020).

Committing to change

Our findings suggest that current inequitable—meaning unfair and unjust—outcomes for Māori and Pacific academics, particularly at the highest levels of academia, will remain unless there is systemic change in New Zealand universities. The lack of inclusion of Māori and Pacific within New Zealand universities is not new. Previous authors have written about the historical policies

and practices that resulted in the widespread exclusion of Māori from university education until the 1970s (Simon, 1992; Theodore et al., 2016; Waitangi Tribunal, 1999). More recently, increasing numbers of Māori and Pacific students have been enrolling in New Zealand universities (Education Counts, 2018). In today's universities, however, these students will be primarily taught by non-Māori non-Pacific academics (Naepi et al., 2020). Systemic change, aligned with Te Tiriti o Waitangi, through equity policies and practices is needed to increase the proportion of Māori and Pacific academics alongside active support. The authors of this current paper have previously described how all eight of New Zealand's universities have equity and/or diversity policies and strategic frameworks relating to Māori students and academic staff (McAllister et al., 2019). There are also national and university policies concerning education needing to better serve Pacific peoples (Naepi, 2019). However, there has been little change in the proportion of Māori and Pacific academics within New Zealand universities in the past decade (McAllister et al., 2019; Naepi, 2019), and our findings suggest that these inequities are likely to persist.

In 2018, Professor Jacinta Ruru, the first Māori professor of law, called the lack of Māori academics a "crisis" that needed to be fixed (McPhee, 2018). She argued for the setting of rigid targets and clear action plans to increase the number of Māori academics. This call for rigid targets and clear action plans can be extended to Pacific peoples, who make up > 2% of New Zealand academics and > 1% of New Zealand professors. What follows are some possible interventions that universities could consider in order to address these inequities:

1. Recruitment and promotional processes need to be reviewed and changed so that they better recognise Māori and Pacific research excellence. This should include, but not be limited to, recruitment and promotion panels that have Māori and Pacific members, restructuring and rewriting human resources systems to reflect Treaty principles, and the setting of Māori and Pacific recruitment and promotion targets at an institutional, faculty and discipline level.
2. Research funding organisations need to centre diversity and equity when making funding decisions through the setting of targets.
3. Universities need to support more Māori and Pacific academics into a broad range of leadership positions (e.g., heads of departments, pro-vice chancellors, deputy vice-chancellors, vice-chancellors).
4. The Tiriti principle partnership needs to be adhered to, including but not limited to, Māori representation at all academic levels, including senior management.

These targets and action plans will help to ensure there are Māori and Pacific leaders throughout the university. Māori and Pacific leaders who can drive change by providing solutions that best fit Māori and Pacific academic realities, priorities and aspirations. And now, more than ever, Māori and Pacific academics need university leaders to listen to them, to hear their concerns and to act. This present study will only add to the growing evidence base that exposes institutional racism within New Zealand universities.

The government also has an important role to play in creating incentives for universities to address institutional discrimination and to meet Te Tiriti o Waitangi and equity obligations. This could include levers such as equity performance indicators and funding to improve the recruitment, retention and promotion of Māori and Pacific academic staff. This should be backed by strong policy instruments that would require universities to shift their practices, much as they did when PBRF was first introduced. Beyond universities, the government could channel research funding in ways that would better support whare wānanga or Māori and Pacific research hubs outside of the ivory towers—places where Māori and Pacific knowledge is taught, validated and counted and where Māori and Pacific academics are recruited, supported and can therefore flourish.

Future work

One potential limitation of this research is that demographic data, including ethnicity data, were provided by universities to the TEC and universities may use different methods to collect and collate these data. Another limitation of this research is that a significant portion of the Māori and Pacific academic workforce are employed precariously and are therefore PBRF ineligible and are not captured by this dataset; forthcoming research further explores precarity issues. We also acknowledge that within this dataset inaccurate notions of gender binaries are reinforced through the analysis of only "women" and "men" and note that in future we will strive to include a more inclusive gender spectrum. Also, qualitative research is required to investigate the experiences of Māori and Pacific academics within the promotion system

and to understand how racism in academic promotions can be addressed. Finally, there is a need for qualitative research that explores how and why universities in Aotearoa have continued to uphold practices and habits that discriminate against Māori and Pacific. We encourage other research that widens the scope to consider other equity groups.

Conclusions

Our study found that research performance (as measured by PBRF score), age and field did not explain why many current New Zealand university students are not being taught by Māori or Pacific professors. We found that New Zealand universities significantly privilege non-Māori non-Pacific men over Māori and Pacific women and men academics in terms of career recognition and remuneration. Our findings indicate that current inequitable—that is, unfair and unjust—outcomes for Māori and Pacific academics will persist or increase unless there is systemic change within New Zealand universities. Moving forward, universities need to take significant steps to actively address institutional racism and sexism in both recruitment and promotion processes. Universities need to urgently reimagine and recreate the promotional system and move towards a system that meaningfully responds to and incorporates Tiriti rights, reflects a Tiriti partnership and recognises Māori and Pacific excellence.

Acknowledgements

Tara McAllister thanks the Ministry of Business, Innovation and Employment and the Office of the Prime Minister's Chief Science Advisor, who instigated this research. Tara also thanks Te Pūnaha Matatini for providing funding for her postdoctoral position. Jesse Kokaua was supported by a Health Research Council (HRC) Post-Doctoral Fellowship [grant number 17/466]. Reremoana Theodore was supported by an HRC Māori Emerging Leader Fellowship [grant number 18/644]. We acknowledge Sarah Townsend and Morgan Healey (TEC) who were integral in obtaining and understanding this data. We thank Professor Shaun Hendy and the two anonymous reviewers for their comments on this manuscript.

Glossary

Aotearoa	New Zealand
Māori	Indigenous peoples of Aotearoa New Zealand
mātauranga Māori	Māori knowledge

Te Tiriti o Waitangi	Māori version of the Treaty of Waitangi signed in 1840 proposing alliance with the Crown
whānau	family; nuclear/extended family
whare wānanga	Māori university

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