Article

The impact on NZ university academic staffing over the pandemic years

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The New Zealand Association of Scientists (NZAS) sought information from all eight New Zealand (NZ) universities via Official Information Act (OIA) requests. The requests were for academic staff numbers on 1st May 2019 and 1st May 2023, capturing data before and after Covid-19 lockdowns. We requested numbers for permanent, fixed-term and casual academic staff for each faculty on those dates with a breakdown of men, women and gender unknown/diverse. The aim was to look for impacts over this period on staff numbers in the sciences and how staff in different types of employment and gender were affected, but we also compared this data to other subject areas taught and researched at NZ universities.

Since May 2023 there have been several additional tranches of layoffs at multiple universities which will not be captured in the data we present here. However, while it is arguable whether these new layoffs are due to the impacts of the COVID19 pandemic and subsequent global financial turmoil, we can see that certain subject areas of academia have already felt the effects in May 2023. Health faculties fared the best over the period, which might reflect the need for health research and development of the health workforce during a global pandemic. However, these gains were accompanied by large losses in humanities, education, and arts, as well as other subject areas such as fundamental sciences and engineering.

Overall university academic staff, May 2019 – May 2023

In May 2019 our universities employed 17,565 academic staff: similar in size to the number of employees of New Zealand's largest company, Fonterra (Fonterra, 2024). It is striking to see however that the academic workforce consisted of only 7129 permanently employed staff (41%). The remaining 59% was divided roughly equally between fixed term and casual staff (see caveats to this below). The May 2019 to May 2023 period did not see overall changes in academic staff numbers, as academic staff numbers in May 2023 were 17,668 (see Table 1).

The picture this data paints varies greatly among institutions suggesting there were differences in the pressures felt by different institutions and differences in the responses these institutions took. Our largest universities, University of Auckland / Waipapa Taumata Rau and University of Otago / Te Whare Wānanga o Ōtākou had no overall changes in total academic staff numbers (see Table 1). Auckland University of Technology (AUT) / Te Wānanga Aronui o Tāmaki Makau Rau had a 6% increase and University of Canterbury / Te Whare Wānanga o Waitaha had a 31% increase in academic staff numbers over the period. Table 1 shows gains in both of these institutions mostly constituted additional casual staff with AUT losing a large number of permanent staff. Similar in size to Otago is Victoria University of Wellington / Te Herenga Waka which saw a 13% drop in academic staff numbers by May 2023, achieved by reducing casual and fixed-term (a.k.a. 'precarious') staff. University of Waikato / Te Whare Wānanga o Waikato shrank by 8% and Massey University / Te Kunenga Ki Pūrehuroa lost 2% of its staff overall between May 2019 and May 2023. This relatively modest number for Massey masks the largest loss of permanent academic staff among all our universities (141 permanent staff) which has been compensated for by fixed term and casual staff. Lincoln University / Te Whare Wānaka o Aoraki, our smallest and most specialised university, remained static at 188 academic staff (see Table 1). This suggests that the size of the institution is not the main factor driving vulnerability to financial stress and subsequent staff losses. Even within the institutions that maintained their overall academic staff numbers there was turbulence at the faculty and school level (as we describe in more detail below).

The winners and losers at the school and faculty level

Overall, faculties with some of the largest decreases in academic staff encompass the arts, humanities, law and business. The University of Auckland saw a drop of 39% in the Law faculty, 32% in the Faculty of Business and Economics and 14% of academic staff in the faculty of Arts. Staff losses in Arts at the University of Auckland were split between casual and permanent staff, however, the reduction in staff numbers in both Business and Economics and Law faculties were mostly made up of casual staff.

At the University of Otago, the Humanities division

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Overall number of academics			Change in number of staff accounted for by contract type		
University	**Number of academics May 2019**	**Change in percentage May 2023**	**Permanent Staff**	**Fixed-term Staff**	**Casual Staff**
Auckland	5,227	0%	-30	391	-352
Otago	3,149	0%	181	-119	-64
Victoria	2,857	-13%	11	-118	-270
AUT	2,062	6%	-89	-31	236
Massey	1,648	-2%	-141	69	40
Canterbury	1,503	31%	76	26	361
Waikato	931	-8%	-26	-47	NA
Lincoln	188	0%	12	-12	NA
Total	**17,565**	**1%**			

Table 1: Changes in total number of academics in all eight NZ universities between May 2019 and May 2023. All changes in percentage for a particular university are relative to the total number of staff in May 2019 at that university. Positive changes are highlighted in green and negative changes are highlighted in red. The contribution of changes within contract type to the overall staff number change is in the right-hand columns, the most negatively and most positively affected type of employment is also highlighted in red and green respectively.

shrunk by 12.4% with the biggest cuts being to a large casual workforce in the College of Education (75% of the staff were casual in 2019 and now this sits around 67%). Over this period, there were outliers such as the School of Performing Arts which almost doubled staff numbers, but most of the additional staff were casual.

AUT saw decreases in staff numbers in their Design and Creative Technologies faculty (-87 staff, -15.4%), and in Business, Economics and Law faculty (-33 staff, -11.8%). AUT's Culture and Society faculty increased by 8.5%, however, this was driven by a 30% increase (+56 staff) in hourly paid/casual staff and a loss of 26 fixed term and permanent staff.

Overall staff numbers at Victoria University of Wellington shrunk by 13% and the largest impact was on the Wellington School of Business and Government which had 172 fewer staff members (-32%), the Faculty of Law which had 42 fewer staff members (-27%), and the Faculty of Humanities and Social Sciences which had 165 fewer staff members (-25%). The School of Mathematics and Statistics at Victoria

Caveats of the OIA data

We requested 'academic' staff numbers as a proxy for staff that are involved in both teaching and research. It is important to note however, that there are differences in how universities categorise their staff that limit our ability to get accurate data on the universities' scientific workforce.

- 'Academic' staff does not include all scientific staff: Technical research staff including technicians and research assistants who are a key element of the scientific workforce, are classed as 'professional' instead of 'academic' staff in some institutions (e.g. at the University of Auckland), therefore they are not always included in our numbers.
- Identifying science vs. non-science academics: Due to different grouping of subjects at different universities, the number of academics is listed under faculty or school level and not by subject specifically. However, we attempted to compare the same subject areas across universities by collating data from several schools within a university.
- Variability in classifying casual staff: Some institutions, such as Lincoln and the University of Canterbury do not specify the type of job being performed by their casual staff and so Lincoln did not supply those numbers, whereas Canterbury supplied casual staff numbers that will include non-academic staff.
- Variable precarity in permanent contracts: Within science faculties, 'permanent' academic staff can have different contributions to research and teaching with some staff on a 40:40:20 (research, teaching and service, respectively) whereas others have 100% research. In terms of determining precarity, different types of 'permanent' contracts exist, i.e. in some cases staff are expected to bring in their own salary for the research component of their contract from external funding, and salary is not always guaranteed by the institution.
- FTE vs. staff numbers: In addition, the data is the number of employees rather than full time equivalence (FTE), so we cannot tell whether there is a difference in FTEs over the assessment period that could be masked by an increased use of part-time employees. In the same way we cannot compare the proportion of FTEs in each employment category; permanent, fixed-term and casual.

These caveats mean we are limited in the ability to draw comparisons between institutions; however, we can draw conclusions based on within-institution data. Our data still presents an overall rough picture of changes to academic staff between May 2019 and May 2023. Academic units are referred to as they were named and organised in mid-2023 when we received the OIA data.

also had 21% fewer staff.

At the University of Waikato, which recorded an overall drop in staff numbers of 7.8%, Waikato's School of Arts shrank by 23 staff (-33%), the School of Social Sciences lost 20 staff (-25%). In addition, both the School of Science and the School of Engineering also lost 26 staff altogether, reducing by 12% and 10% respectively.

Massey University has gone through a restructuring of two schools in the College of Sciences between 2019 and 2023 (see the article "The destruction of Sciences at Massey University and why we need an independent entity that can investigate universities" in this issue). Staff that were in the School of Natural and Computational Sciences and the school of Fundamental Sciences in 2019, belonged to the School of Natural Sciences and the School of Mathematical and Computational Sciences in 2023. Comparing the numbers of these two schools shows a drop of 34% in academic staff (a loss of 60 staff). Over the same period, the School of Food and Advanced Technology (also at the College of Sciences) lost 23% of its staff (a loss of 21 staff). Overall, the College of Sciences lost 104 staff in this time (a loss of 19% of its staff). The other loser was Massey Business School which lost 7% of its staff (a loss of 19 staff). The biggest winners at Massey were the College of Creative Arts and the College of Health which increased their numbers by 21% (+35 staff) and 17% (+39 staff) respectively. The College of Humanities and Social Sciences also gained a little (4%, +17 staff).

The smallest university, Lincoln, has only three faculties all focused on agriculture and the environment. Total academic staff numbers remained steady at 188, however, there were fluctuations in staff numbers with the growth of the Faculty of Agriculture and Life science accompanied by a shrinkage of the Faculty for Environment, Society and Design.

Bucking the trend seen at other institutions, every faculty at the University of Canterbury increased their academic staff numbers between May 2019 and May 2023; permanent staff were13% up, fixed term staff were17% up and casual staff were 49% up. The University of Canterbury was severely impacted by a drop in student numbers in the aftermath of the 2011 earthquake resulting ultimately in job losses announced in 2012 (RNZ News, 2012). This was followed by a long recovery period and a final return to surplus recorded in the UC Annual report 2019 (University of Canterbury, 2019). Their recovery trajectory has continued through the period since 2019, with academic FTE growing year on year according to the UC Annual Report 2023 (University of Canterbury, 2023). The 'casual staff' category at the University of Canterbury data was not exclusively academic staff and so it is impossible to consider what scale of impact this had on teaching or research delivery. Canterbury's Faculty of Science grew by 10%, which was driven by a small increase in permanent staff numbers (12%) and a larger increase in fixed term (35%). Their largest faculty is Engineering, which grew by 37%, (22%, 28% and 48% permanent, fixed term and casual, respectively).

Faculties focused on training health professionals and carrying out health research were by far the clearest 'winners' over the period under scrutiny (see Table 2). All health faculties/schools increased in size. AUT listed two public health schools in 2019 and only one in 2023. The data from these was combined with the school of clinical sciences which would capture staff moved between schools during the restructure. Altogether over 50% of the increases in academic staff headcount in health faculties/schools were casual staff, which may consist of stronger reliance on postgraduate students to assist in undergraduate teaching. Of the increase in academic staff (629 staff), 33% of the increase was permanent staff, however this figure is mainly bolstered by the trend seen in Otago for moving fixed-term research staff to permanent contracts, a setting that was not seen in other institutions. If you exclude the Otago data, the increase in staff numbers is 8% permanent, 32% fixed-term and 60% casual.

The number of academic staff within fundamental or natural science faculties and schools including engineering and computer science across the universities remained static with an increase of 53 positions (just under half a percentage). However, at the level of individual institutions there was much turbulence over the assessment period. There were large job losses at both AUT and Massey (103 and 81 fewer academic staff respectively). Large increases in fixed term staff numbers at Auckland, particularly in the Faculty of Science, were accompanied by a loss of casual jobs. Fixed term roles are often linked to contestable research funding which is unstable and so these positions are at greater risk of loss than permanent roles. Canterbury's substantial increase in staff numbers (up 28%) was mostly underpinned by a large number of increased casual staff in the School of Engineering. Precariously employed staff at the University of Waikato and Victoria university also saw job losses. Overall, there were no changes in the number of permanently employed academic staff in the fundamental or natural sciences.

Gender

Overall, the proportion of women staff increased slightly, making up 52% of academics in 2019 and 56% in 2023. Most institutions saw small increases in the percentage of women academic staff except for Waikato (51% to 42%). Lincoln has the lowest representation of women academic staff (35% in 2019 and 36% in 2023) and this is amplified in their permanently employed academic staff (32% in 2019 and 34% in 2023). Although women make up over 50% of the total academic staff numbers in most universities, women staff are underrepresented in permanent academic staff which is likely to include more senior and more stable positions (the only exception is Waikato where the percentage of women in permanent positions is higher than the percentage of women in all academic positions). There are some notable differences in gender split within subject areas, with women staff percentage higher in Education schools and faculties but lower in Engineering faculties, particularly striking in Auckland and Canterbury. Auckland's Faculty of Education and Social work had 78%- and 81%-women academic staff

Health Sciences			Change in number of staff accounted for by contract type		
University	**Number of academics May 2019**	**Change in percentage May 2023**	**Permanent Staff**	**Fixed-term Staff**	**Casual Staff**
Otago	1,916	5%	162	-85	17
Auckland	1,507	15%	9	113	106
AUT	596	52%	69	13	229
Massey	236	17%	-12	27	24
Victoria	103	70%	26	41	5
Canterbury	55	65%	4	-2	34
Waikato	29	62%	12	6	NA
Total	**4,442**	**14%**			

Table 2: Detailing changes in academic staff numbers in NZ health faculties and schools from May 2019 to May 2023. Faculties and Schools included: **Auckland**, Faculty of Medical and Health Sciences; **Otago**, Health Sciences Division; **Canterbury**, Faculty of Health; **Victoria**, Wellington Faculty of Health; **AUT** School of Clinical Sciences & Public Health and Psychosocial Studies & Public Health and Interdisciplinary Studies (Public Health and Psychosocial Studies wasn't included in 2023 numbers suggesting restructuring); **Waikato**, School of Health and **Massey**, College of Health. Positive changes are highlighted in green and negative changes are highlighted in red. The contribution of changes within contract type to the overall staff number change is in the right-hand columns, the most negatively and most positively affected type of employment is also highlighted in red and green respectively

in 2019 and 2023 respectively. Faculty of engineering had 21% and 26% women academics respectively. Canterbury's Faculty of Education 69% and 79% respectively and the Faculty of Engineering was 30% and 37% respectively. Otago's Division of Geography had 23% women staff in 2019 and 53% in 2023 whereas Otago's Faculty of Education was 90% women staff in 2019 and 93% in 2023. Although representation of women is in general improving, there is a clear disparity in the type of employment women academic staff are occupying.

Data of non-binary or undisclosed gender is scarce. Some universities did not collect this data or did not provide it as numbers were low enough to potentially allow identification of individuals. The numbers we did receive are too small to draw conclusions and hence are not included here.

Conclusions

The data we obtained, comparing the number of academic staff in May 2019 with the numbers in May 2023, has shown that the period of Covid-19 lockdowns affected universities in NZ differently, with some gaining staff and some losing staff overall. A common area of growth in all our universities was health, which might be expected during a time of a global pandemic and shows that universities can respond quickly at a time of crisis. The growth in health, however, was accompanied by decreased staff numbers in other subjects such as humanities, law, business, and education as well as other science subjects, which meant that overall academic staff numbers in NZ remained almost static (1% increase).

We found that only 41% of the academic workforce was employed in permanent positions in 2019. This figure is much lower than in the UK where 67% of academic staff were employed in permanent or open-ended positions in 2018 (University and College Union, 2019). While this figure did not change in 2023, the 1% increase in the overall number of academics was mostly achieved through an increase in the number of 'fixed term' employed staff. This is a concerning trend. A recent survey of people employed by universities on precarious employment contracts suggests these staff receive less benefits and disturbingly 28.9% had been precariously employed for 5 years or more (Simpson et al., 2022). Reliance on precarious staff to support teaching and research increases instability both for the staff involved but also for the delivery of teaching and research. The negative impacts of precarious employment on academic staff themselves have been well studied and there is a drive to reduce precarity in academia by organizations including the OECD (Initiative for Science in Europe, 2020; OECD Publishing, 2021). Alongside the personal impacts, a reliance on precarious teaching staff has been shown to impact on the quality of teaching that institutes can deliver (Kahn et al., 2024). Although mobility of the research workforce has been viewed as having a positive impact on research and an essential part of a research career, the competitive funding models driving precarity in research contracts (and necessitating mobility) is likely to be impacting research quality; replacing harder projects that require long-term, complex investigation for more "predictable, fashionable, short-sighted, and overpromising" research projects (Meirmans, 2024). Indeed, as scientists often hold very specialised and unique skillsets, turbulence in the workforce will drive a loss of skills and knowledge that can take a long time to regain.

High level of job insecurity in academia is a known issue as highlighted by a University and College Union (UK) report in 2019 citing 33% of all academics are employed on fixed term contracts, this proportion is increased for those on teaching-only contracts (44%) and research-only contracts (68%) (University and College Union, 2019). This compares to a 2022 figure of approximately 95% of all working adults (under 64 years old) employed in the UK in permanent employment (Office of National Statistics, 2023)

Fundamental/Natural sciences including engineering and computer science			Change in number of staff accounted for by contract type		
University	**Number of academics May 2019**	**Change in percentage May 2023**	**Permanent Staff**	**Fixed-term Staff**	**Casual Staff**
Auckland	1,799	5.8%	20	180	-95
Victoria	970	-6.6%	16	-10	-70
Canterbury	803	28%	51	31	143
Otago	425	0.7%	-1	-4	8
Waikato	342	-9.4%	0	-32	NA
AUT	320	-41.6%	-54	-16	-63
Massey	267	-30.3%	-34	-26	-21
Total	**4,926**	**0.47%**			

Table 3: Detailing changes in academic staff numbers in NZ fundamental/natural sciences including engineering and computer science faculties and schools from May 2019 to May 2023. Faculties and Schools included: **Auckland**, Faculty of Engineering & Faculty of Science; **Victoria**, School of Engineering and Computer Science & School of Mathematics and Statistics & Wellington Faculty of Science; **Canterbury**, Faculty of Engineering & Faculty of Science; **Otago**, Sciences Division; **Waikato**, School of Computing and Mathematical Sciences & School of Engineering & School of Science **AUT**, Engineering, Computer and Mathematical Sciences; **Massey**, School of Fundamental Sciences† & School of Natural and Computational Sciences† & School of Food and Advanced Technology & School of Natural Sciences‡ & School of Mathematics and Computational Sciences‡ (School restructure occurred during the assessment period, †2019 only, ‡2023 numbers only). Positive changes are highlighted in green and negative changes are highlighted in red. The contribution of changes within contract type to the overall staff number change is in the right-hand columns, the most negatively and most positively affected type of employment is also highlighted in red and green respectively.

	All academic Staff		Permanently employed staff	
University	**% Female 2019**	**% Female 2023**	**% Female 2019**	**% Female 2023**
AUT	58%	64%	52%	59%
Otago	57%	61%	50%	54%
Massey	53%	56%	49%	49%
Auckland	52%	55%	47%	49%
Waikato	51%	42%	49%	44%
Victoria	50%	54%	45%	50%
Canterbury	45%	51%	38%	40%
Lincoln	35%	36%	32%	34%
Total	**52%**	**56%**	**45%**	**48%**

Table 4: Detaining percentage of academic staff that are recorded as women in all types of employment combined (permanent, fixed term and casual) or in permanent employment only. Values below 50% are highlighted in red

and according to data on public service employees in NZ, over 90% of public servants are employed on permanent contracts (Te Kawa Mataaho/Public Service Commission, 2021). Non-European and women are more likely to be impacted by job insecurity in academia (University and College Union, 2019) and outside academia (Office of National Statistics, 2023). We did not request ethnic breakdown of staff in this instance, so we cannot show if any ethnicities were more impacted than others by the turbulence over the period under assessment. However, we note that Māori and Pacific academic staff made up less than 5% and less than 2% respectively of the total academic staff in 2017 (McAllister et al., 2019; Naepi, 2019). A future direction would be to check if this figure has improved past the pandemic years. There are also likely to be disparities in the gender and ethnic make-up of part-time vs. full-time employment (Te Kawa Mataaho/Public Service Commission, 2021) that should be addressed in future assessments by collecting FTE rather than staff headcounts.

The data also does not include an apparent 'long tail' of post-global pandemic impacts including a drop in student numbers that have been blamed for several tranches of job losses either actioned or proposed since May 2023 (Smith, 2024). These include voluntary redundancies at Otago with the threat of more job cuts in the pipeline, 140 jobs disestablished at Victoria in Sept 2023 (Schwanecke, 2023), further cuts at Massey (Morton, 2023) and proposed cuts at AUT. In March 2024 Auckland announced a reshuffle of Arts, Education and Social work faculties that will likely result in further job losses, although the scale is not yet known (University of Auckland, 2024). In addition, the disestablishment of recently formed Te Pūkenga will also lead to job losses in the polytechnic sector (RNZ News, 2023).

Our universities make up a large and integrated portion

of our national science system as illustrated by the cohesive way the government has simultaneously set up a coordinated Science System Advisory Group and a University Advisory Group with the same chair to ensure both advisory groups work to develop transformation that is mutually beneficial (Collins and Simmons, 2024). Universities are critical for training the science sector workforce but are also responsible for delivering independent (free of commercial interests) science research. Hence universities act as incubators of the country's future innovations and provide reliable sources of information (which have proven crucial during the pandemic). It is therefore deeply concerning to see the turbulence and instability within the fundamental/natural sciences including engineering and computer science revealed by our data (Table 3). Something we hope will be addressed by the Advisory Groups.

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