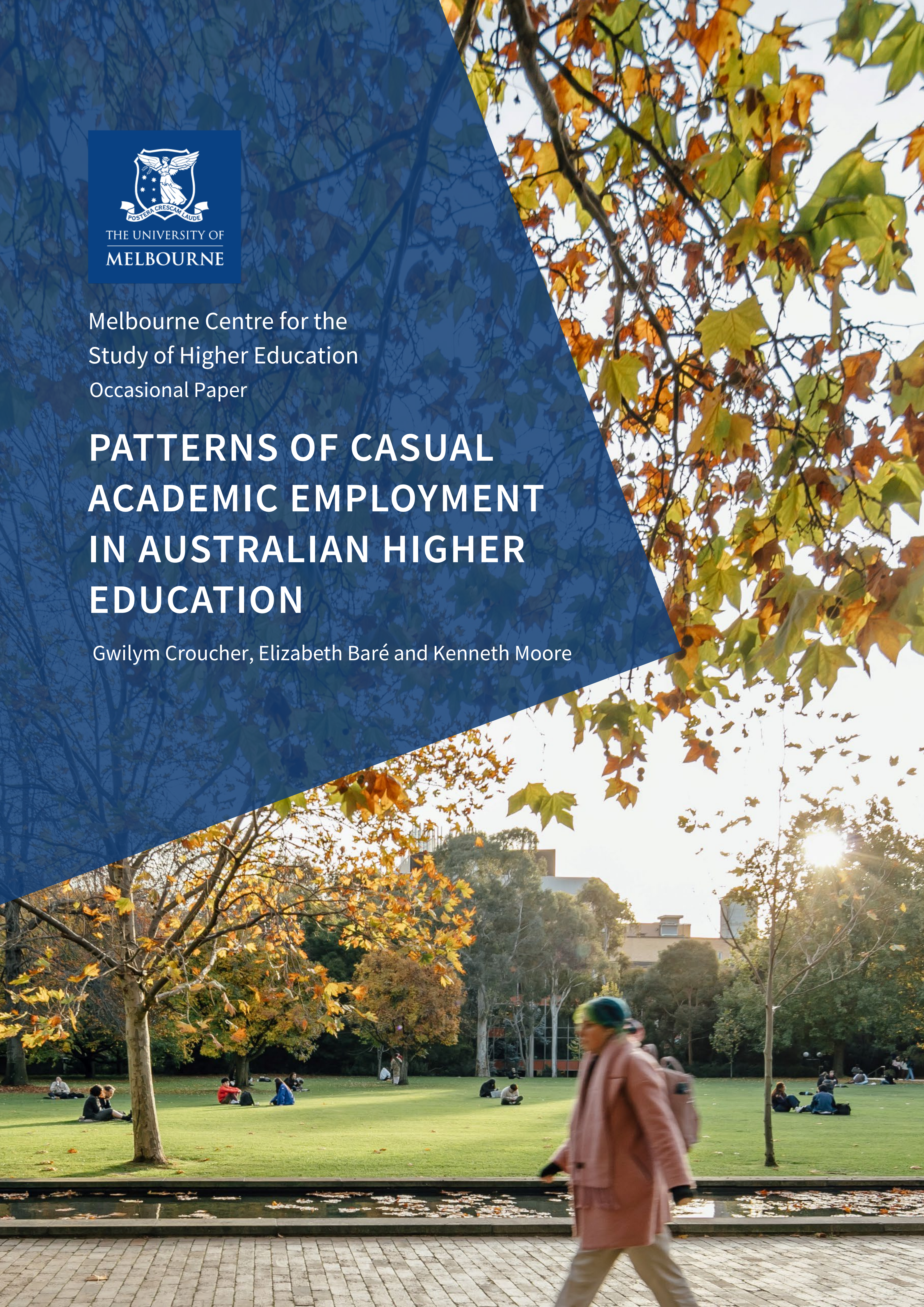

THE UNIVERSITY OF MELBOURNE

Melbourne Centre for the Study of Higher Education
Occasional Paper

PATTERNS OF CASUAL ACADEMIC EMPLOYMENT IN AUSTRALIAN HIGHER EDUCATION

Gwilym Croucher, Elizabeth Baré and Kenneth Moore

The analysis in this Occasional Paper is based on a joint project undertaken with the **Australian Higher Education Industrial Association (AHIEA)**. The design of the study, the analysis of the data and the conclusions are solely those of the authors of this analysis and Occasional Paper.

We would like to thank the hard-working staff in the HR/Payroll departments of universities sampled for their cooperation in providing deidentified data and their patience in responding to our refined requests for data. Their support and contribution have been invaluable.

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1. EXECUTIVE SUMMARY

The use of casual contract employment has become a prominent feature in higher education institutions worldwide, including the growth of adjunct roles in the United States and fixed-term teaching staff positions in the UK.

In Australia, this trend has been a subject of significant controversy and national attention in recent years, as casual academic employees often fulfill core duties with less job security and remuneration than their ongoing counterparts. Concerns have been raised by policymakers, unions, and academic managers about the long-term ramifications of high levels of casualisation, including the potential impact on teaching quality, workforce sustainability, underpayment, and illegal work practices. A particular concern is the existence of a "precariat" – academics seeking stable employment but finding only casual options, working close to full-time hours over many years. Despite the significance of casual employees in the Australian higher education workforce, there is a lack of systematic evidence on the prevalence of these "permanent casuals." This is due to the inconsistent data published by universities on the actual number of individual casual staff employed and their characteristics.

To address this lack of granular and systematic analysis, this study examines academic casual employment at five universities during a single year (2021), aiming to understand the different patterns and characteristics of casual employment in Australian universities and determine whether there is a "typical" academic casual employee. The analysis of anonymised payroll data reveals that there is no dominant stereotype of a casual academic employee, but rather there are distinct patterns differentiating various types of academic staff members based on their characteristics.

The key differentiator appears to be the number of years employed at a university, as well as the discipline in which academics undertake casual work. Age grouping and possession of a doctoral degree are less significant factors explaining differences in employment patterns within the sample.

On average, the casual employees in the sample were paid for 189 hours over the year, roughly equivalent to one full day per fortnight (0.1 FTE). However, the majority of casuals were paid for fewer hours than this, with over half of the casual academics at three universities analysed being paid for less than three weeks (full-time equivalent) in 2021. It is important to note that the sample data cannot reveal whether casual academics work at multiple universities, suggesting that significant hours worked by an individual may be more common than the sample suggests.

At one university, casuals had engagements working for more than one department, and the sample data suggests that, on average, those who have been employed for a longer period work a higher number of casual hours for all activities. Institutions with higher numbers of younger casuals also had larger numbers of higher degree research students, implying that many casuals are also students. While the majority of casual academics work relatively few hours, there are small cohorts working large numbers of hours, with around 5% of the casual academic workforce at one university engaged in teaching and teaching-related duties exceeding the maximum teaching load for Teaching only academic staff prescribed by the Enterprise Bargaining Agreement (EBA). Casual staff in Business and Economics and Arts are more likely to work the equivalent or greater hours than the maximum teaching load, although the numbers are small.

The differentiation in employment patterns and activity types likely stems from differences in discipline/faculty practices. For example, a detailed analysis shows longer-term teaching academics in Business and Economics and Arts, while shorter-tenure staff were employed elsewhere. The cluster analysis in the final section provides useful examples of this differentiation, and that age and qualification were not significantly associated with nature and frequency of casual academic work. Overall, this study emphasises the complexity around casual academic employment in Australia, and suggests many generalisations about widespread 'casualisation', both positive and negative, are likely inaccurate.

2. INTRODUCTION

Casual and similar contractual forms of paid employment are ubiquitous around the world and a prominent feature of most economies. Higher education providers, colleges and universities worldwide have widely used such forms of “contingent academic employment” (Champlin & Knoedler, 2017; Pineda, 2023), including the growth in “adjunct” roles in the United States (Fure-Slocum & Goldstene, 2024) and the shift towards so-called “zero hour” contracts (Datta et al., 2019) and fixed-term teaching staff positions in the U.K. This has been a feature of Australian higher education in the last several decades and the subject of significant controversy and national attention in recent years, especially where those on casual contractual arrangements are seen as fulfilling core academic duties but with significantly less job security and remuneration than other academic staff.

Rightly, public policymakers, unions and academic managers are concerned about the long-term ramifications of high levels of casualisation and the impact on students and staff. A reoccurring concern around the world has been the potential implications for the quality of education from universities’ reliance on contingent academic employment. Another major concern has been the effect that widespread contingent academic employment may have on the sustainability of the academic workforce (OECD, 2021). The Australian debate on casual employment has highlighted many of these concerns, including extensive cases of underpayment and illegal work practices in casual employment.

Underlying this debate in Australia are concerns that universities have systematically used casual academic employees to replace roles that have traditionally been undertaken by academics employed on an ongoing basis. A common concern is that there are large numbers of ‘permanent’ casuals working close to full-time hours and who have done so for many years. This has been styled ‘the precariat’, where academics seeking ongoing stable employment find casual employment as their only option. This stands in contrast to perceptions that academic casuals are those seeking temporary employment to gain further experience, undertaking only short-term work while studying or coming from industry to occasionally give a lecture. Despite casual employees being a major part of the higher education workforce in Australia, there is currently no systematic evidence of how prevalent are “permanent casuals” in Australia.

Establishing patterns of casual employment in Australia has been difficult as there is no detailed data published for casual employment across all universities. The public data does not report headcount data on the actual number of individual casual staff they employ over a given period and only offers some limited additional information, such as level. As a result, understanding the characteristics and prevalence of casualised academic staff at Australian universities is not possible with the public data and changes can only be reliably tracked through an aggregated “full-time equivalent” (FTE) measure that counts the number of casual staff in terms of their notional equivalence to full-time employees’ working hours. In 1996, 16.32% of all academic staff (FTE) were employed casually and by 2019, just before the outbreak of Covid-19 in Australia, the share of casual academic staff had risen to 24% of all academic staff (FTE) and, despite some decline due to job cuts over the following years, has consistently remained well above the 20% mark (Department of Education, 2024).

In reality, analysts have argued the actual number of individual academic staff who are employed as casuals at Australian universities is a much higher proportion of the overall workforce headcount than the FTE numbers suggest. Informed estimates for the National Tertiary Education Union (NTEU) and others drawing on alternative sources of data, for example, put the number of individuals employed on a casual basis at Australian universities at close to eight times the FTE aggregate figure, which broadly fits with the data presented here.

To understand the characteristics and prevalence of different types of academic casual employment and address the lack of granular and systematic data, this study examines academic casual employment at five universities during a single year. These five universities were chosen to offer a diversity in size, age and location. It asks whether or not there is such a thing as 'typical' academic casual employees and how we might understand the different patterns and characteristics of casual employment in Australian universities.

3. METHOD

This study uses data for 2021 and captures several staff characteristics. This study seeks to show different 'types' of 'typical' casual academic staff. The anonymised sample is derived from payrolls of five selected universities, chosen to provide a snapshot of institutions of different sizes and compositions located around the country. The sample includes universities from five different states, and three of the universities belong to three separate peak bodies, the Group of Eight (Go8), Innovative Research Universities (IRU) and the Australian Technology Networks of universities (ATN). The data captures around 2.3 million recorded casual hours in 2021. The study used unit-level data for three of the universities (X, Y and Z) and aggregated data for two (universities CC and EE). The sample is summarised in Table 1.

Table 1: Summary of data sample

Designation	Granularity of data	Summary of data
University X	Unit	2,516 individual academic casuals, 688,782 hours
University Y	Unit	1,928 individual academic casuals, 202,048 hours
University Z	Unit	1,882 individual academic casuals, 440,181 hours
University CC	Aggregated	3,273 individual academic casuals, 670,263 hours
University EE	Aggregated	2,439 individual academic casuals, 320,876 hours

The data set contained several key variables related to casual academic employment. Firstly, it included the total casual hours worked by each payroll code for the relevant types of casual academic work, as outlined in Appendix 1. Secondly, it captured the total number of individuals paid under each payroll code during 2021, providing insight into the number of people performing each type of casual work. Additionally, the data set contained the overall total number of individuals who have been paid as academic casuals in 2021. The data was further broken down by age cohort, with individuals grouped according to Department of Education data collection requirements, ranging from under 25 to 65 and over. This allowed for an analysis of the age distribution of casual academic staff. Moreover, the data set provided information on the length of time each individual has been on the payroll, categorised into spans of less than 1 year, 2-4 years, 5-10 years, and more than 10 years, shedding light on the tenure of casual academic employees. Finally, the data set identified the faculty, school, or department where the casual academic work was undertaken, enabling an examination of the distribution of casual employment across different units within the university. To ensure comparability, all casual employees were assigned to a broad discipline based on their field of education and academic unit through a concordance table. Using this generic discipline typology is preferable to using the straight field of education as it disaggregates law from society and culture.

The study uses two approaches to the analysis. The first is a set of descriptive statistics to examine characteristics and work patterns of casual academic employees that offer a snapshot of how they are employed and the activities they undertake. The second was to build a picture of different 'typical' casual employees through clustering analysis. This analysis examined the relationship between hours worked/FTE for different types of casual academic duties (tutoring, lecturing, marking, etc.) and specific employee characteristics (age group, time employed at the university, faculty location, and doctoral qualification). An Agglomerative Hierarchical Clustering (AHC) method was employed to establish classifications (clusters) of related characteristics in the sample, statistically grouping characteristics to show common themes across institutions for the types of casual staff contracted for different work. This robust method provided insights into the profiles of different casual employee types at Universities X, Y, and Z in 2021. Further details of this approach are in the Appendix 2.

4. WHAT ACTIVITIES ARE ACADEMIC CASUALS UNDERTAKING?

In 2021, around 2.3 million academic casual hours were worked in the universities in this study. Marking and tutoring were the majority of these, with lecturing a small proportion of total hours (Figure 1). Almost a third of academic casuals were undertaking "other academic duties", which is a combination of different activities, including some work classified as related to teaching and education, such as attending lectures and some preparation, including attending meetings, training, course coordination and related administration and at times research.

The data suggests that some often-repeated statements about casual academic employment are likely misrepresentations. For instance, the claim that a significant proportion of casual academic work is related to clinical training in medicine and nursing is inaccurate, at least for the sample universities. Two of the sample universities have major medical and health sciences schools, and several have nursing schools, and the percentage of hours is arguably lower than has been implied in the public debate at times.

So, too, the data raises questions about the commonly portrayed narrative around the widespread casualisation of lecturing, where hours paid for lecturing represent a small proportion of the total. While it is beyond the scope of the study to examine total lecturing hours at each university in detail, using national data to supplement data from the universities, it is estimated that paid casual lecturing accounted for less than one per cent of all lecture hours in 2021 at the five universities (Department of Education, 2024). However, the proportion varied significantly between academic units (see section 5 of this report).

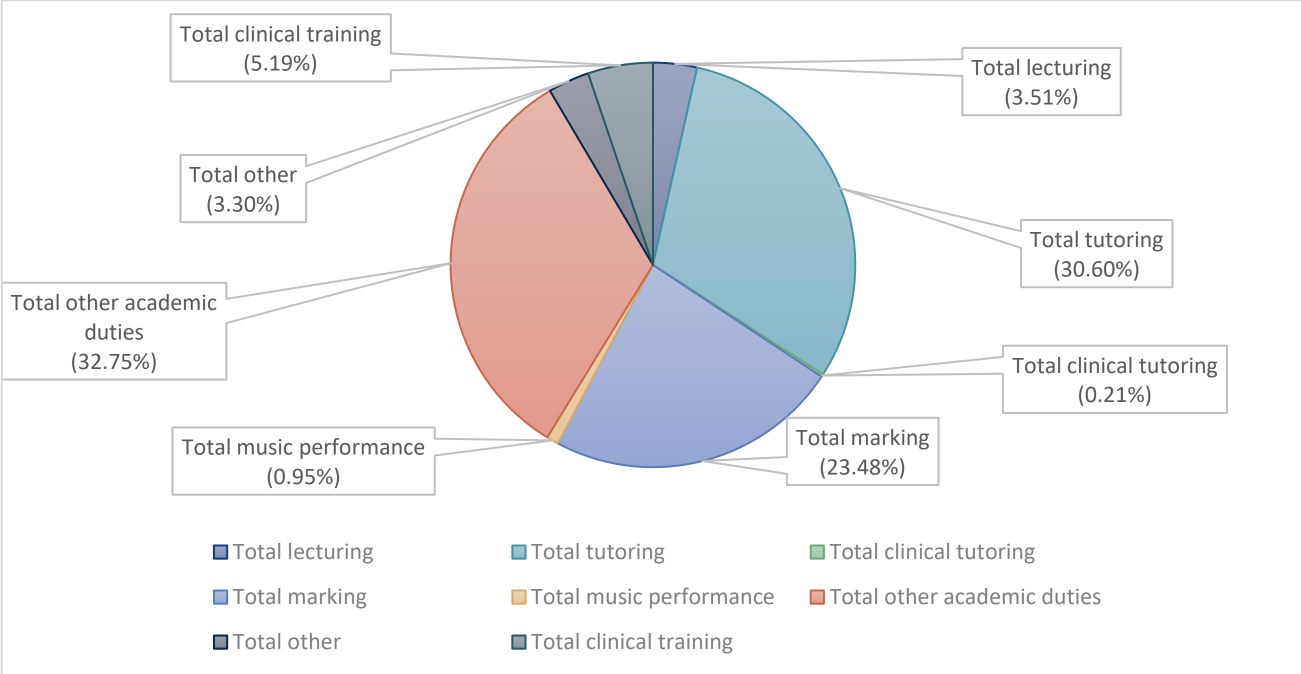

Figure 1: Casual academic activities by hours and proportion at the 5 sample universities in 2021

Three of the universities (X, Y and Z) were examined in detail to investigate the distribution of casual academic hours worked. At these universities, the majority of casual academics only work for the equivalent of a few weeks each year, with around half paid for the equivalent of three weeks of work or less. For example, a detailed breakdown for University Y shows the following:

- **Lectures:** More than half of academic casuals who delivered lectures were paid for twelve hours or less in 2021. Only three per cent were paid for more hours than the equivalent of delivering a two-hour lecture each week for a 12-week subject for two semesters. That is, they were paid for more than the lectures for two subjects per year.
- **Marking:** Half of the casuals who were paid for marking did so for less than the equivalent of four days.
- **Tutorials:** A quarter of casuals delivering tutorials were paid for less than 14.5 hours, and half were paid less than 37.25 hours, or roughly a full week equivalent.
- **Music tuition:** Around half of the casual employees providing music tuition were paid for less than a full-time equivalent week.

5. IN WHAT DISCIPLINES DID ACADEMIC CASUALS WORK?

To examine the difference between different areas of teaching and research, three universities (X, Y and Z) where more granular data was available were analysed. They demonstrate notable differences across areas of teaching and research. As noted above, for the analysis, casual employees were assigned to a broad discipline area based on their field of education and academic unit. Due to some limitations in classification, Architecture, Building and Planning were excluded.

Overall, the broad academic discipline area with the highest mean total hours worked across all work types was Management and Commerce, with 152.2 average hours for academic activities for 2021, which was higher than the average across all casuals of 110.1 hours that year. While using the mean hides a wide variety of hours worked by individuals, it provides a useful way to compare universities of different sizes and compositions. See section 11 for a discussion of casuals who worked very high hours.

Looking in more detail, in 2021 the highest mean hours paid for preparing and delivering lectures were for Management and Commerce, with academics working an average of 134 hours (for 213 people). The second highest was Information Technology, with a mean of 116 hours (for 17 people). On the other end of the spectrum, the lowest mean hours for lecturing in 2021 was Education, with an average of 14 hours (13 people).

For marking, the broad academic discipline area with the highest mean of total hours was again Management and Commerce (mean of 155 hours for 508 people). Perhaps unsurprisingly, given the prevalence of long-form essays, the second highest was Arts, where academics worked an average of 124 hours (462 people). The broad academic discipline area with the lowest average of total hours for marking was Engineering and Related Technologies, with an average of 56 hours (54 people). The areas with large headcounts for marking were Natural and Physical Sciences (753), Management and Commerce (508), and Health (575), which is unsurprising given the volume of exams in those areas.

For tutorials, the broad discipline area with the highest average total hours was again Management and Commerce, with academics working an average of 232 hours (407 people). The second highest was Creative Arts at 157 mean hours paid in 2021 for tutorials, although Arts, Education, Health and Law all had average hours over 130 per year. The broad academic discipline with the lowest average of total hours for tutorials was Engineering and Related Technologies, with a mean of 59 hours for 29 people.

Table 2: Academic activities at universities X, Y and Z

	Broad Academic Discipline Area	Sum of Headcount	Mean Total Hours Worked
Lecturing	MANAGEMENT AND COMMERCE	213	134.6
	INFORMATION TECHNOLOGY	17	116.1
	CREATIVE ARTS	46	90.0
	LAW	100	65.7
	NATURAL AND PHYSICAL SCIENCES	124	45.5
	ARTS	127	41.6
	ENGINEERING AND RELATED TECHNOLOGIES	13	41.2
	HEALTH	112	32.9
	EDUCATION	13	12.8
Marking	MANAGEMENT AND COMMERCE	508	155.2
	ARTS	462	124.9
	LAW	239	110.6
	EDUCATION	223	91.9
	INFORMATION TECHNOLOGY	82	78.9
	CREATIVE ARTS	77	71.9
	NATURAL AND PHYSICAL SCIENCES	753	69.5
	HEALTH	575	68.5

	Broad Academic Discipline Area	Sum of Headcount	Mean Total Hours Worked
	ENGINEERING AND RELATED TECHNOLOGIES	54	56
Tutorials	MANAGEMENT AND COMMERCE	407	232.3
	CREATIVE ARTS	156	157.5
	ARTS	273	153.3
	LAW	188	146.6
	HEALTH	435	145.1
	EDUCATION	187	135.9
	INFORMATION TECHNOLOGY	29	90.8
	NATURAL AND PHYSICAL SCIENCES	257	79.7
	ENGINEERING AND RELATED TECHNOLOGIES	29	59.8

6. HOW LONG HAVE CASUAL ACADEMICS BEEN EMPLOYED IN THE SAME ROLE?

Prima facie, the length of service data for university indicates that the majority of casuals has worked for four years or less, with roughly 70 per cent of casuals serving less than four years at three of the five universities examined (Figure 2). This could suggest that many casuals are PhD students. At the same time, a more detailed analysis needs to be completed for this to be confirmed, as Appendix 3 shows for PhD enrolments in 2021, those areas with high numbers of casuals who were employed on a short-term basis have high numbers of PhD students, such as for marking in Natural and Physical Sciences at University X. In contrast, in Management and Commerce at University X where there is a larger number of long-term employees, there is a small number of PhD students. As Figure 2 shows, around 14 per cent have served more than ten years.

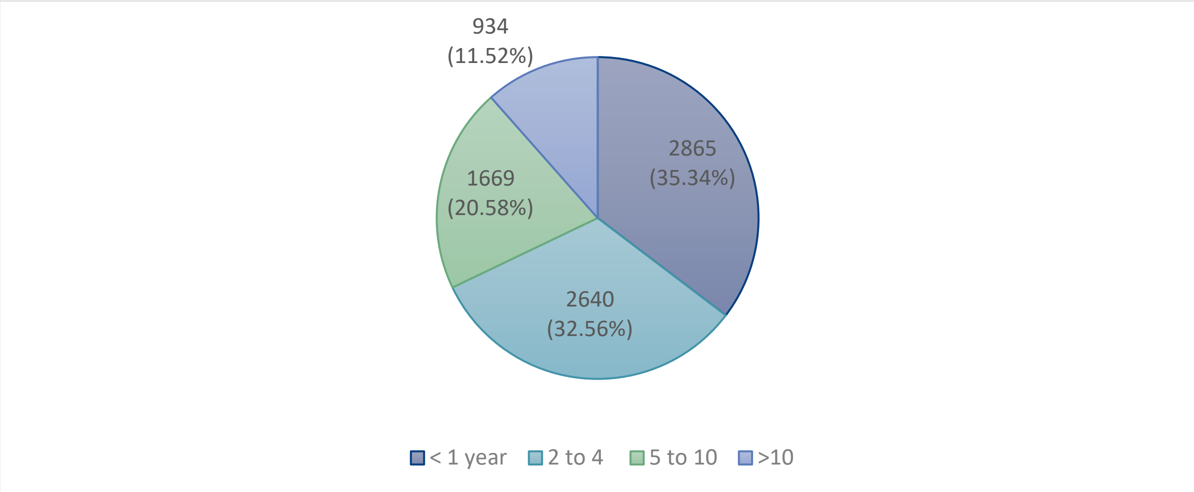

Figure 2: Length of engagement for universities X, Y and Z

The average length of engagement with the university appears to vary between activities, for which University Z provides a good illustration. Figure 3 shows that most of those lecturing have been at University Z for at least five years and a fifth for over ten years. A similar pattern existed for tutoring. However, for marking and other duties, casuals, on average, had been employed for a shorter period.

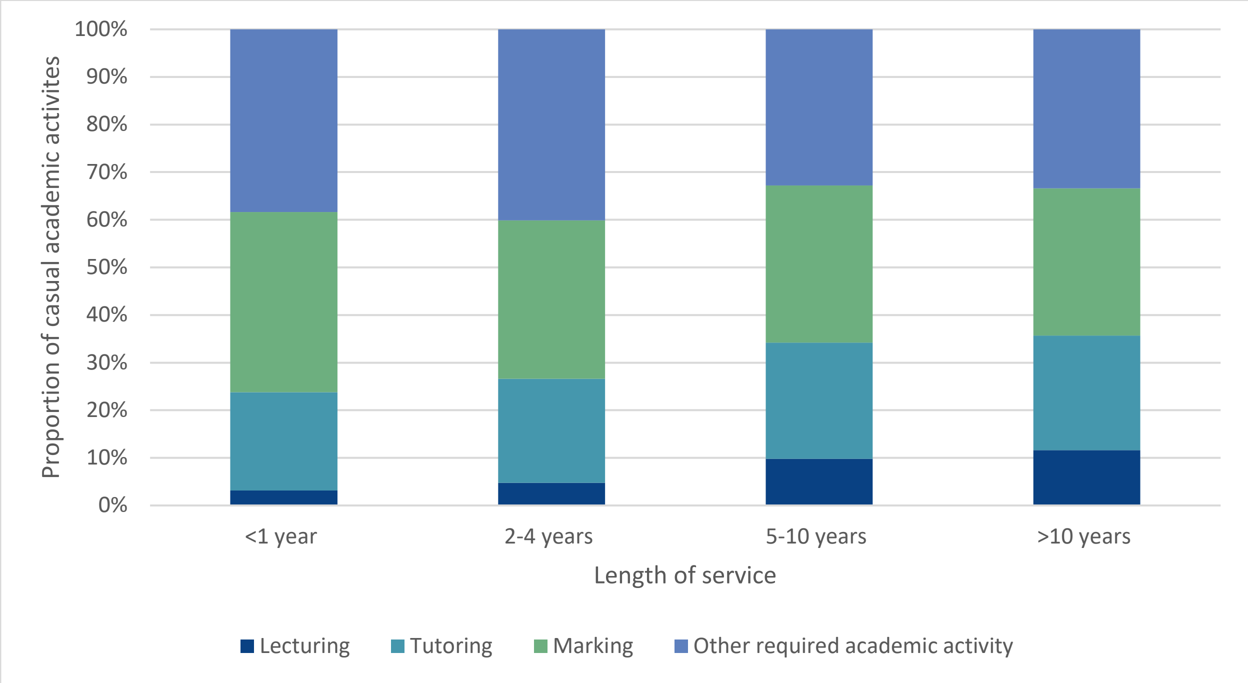

Figure 3: Activities by staff by engagement length at University Z (note staff can be in more than one column)

Figure 4 shows that at University Z, those with a longer engagement period worked more hours on average during 2021.

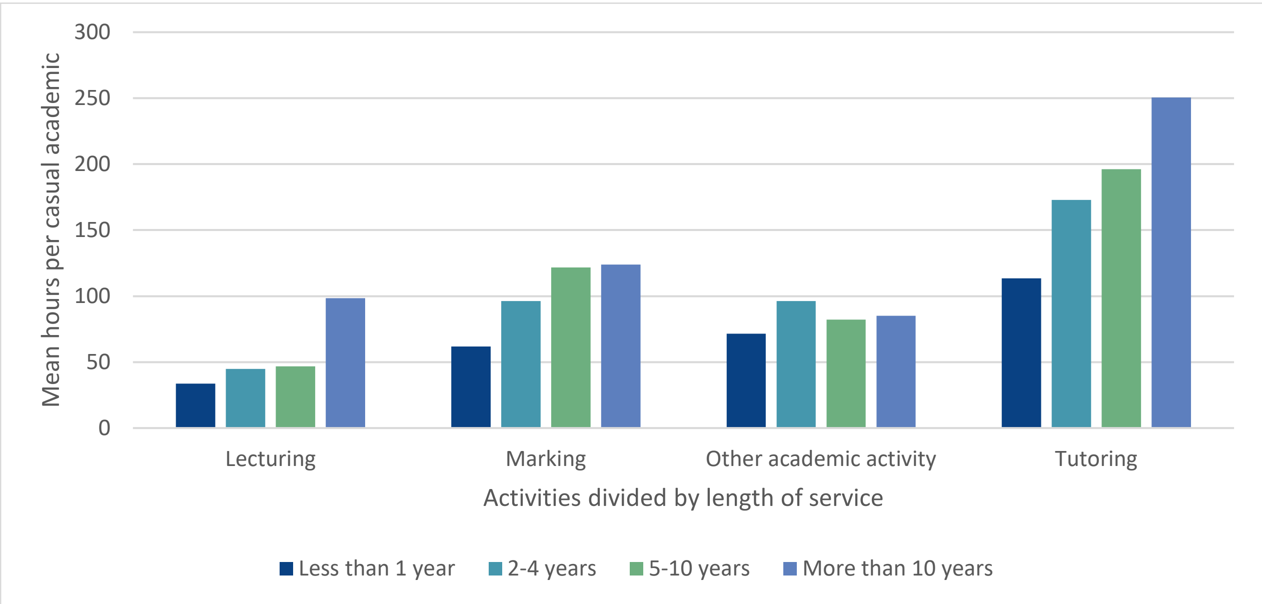

Figure 4: Average hours per casual employee at University Z

As Figure 5 illustrates, there was a similar pattern at University Y.

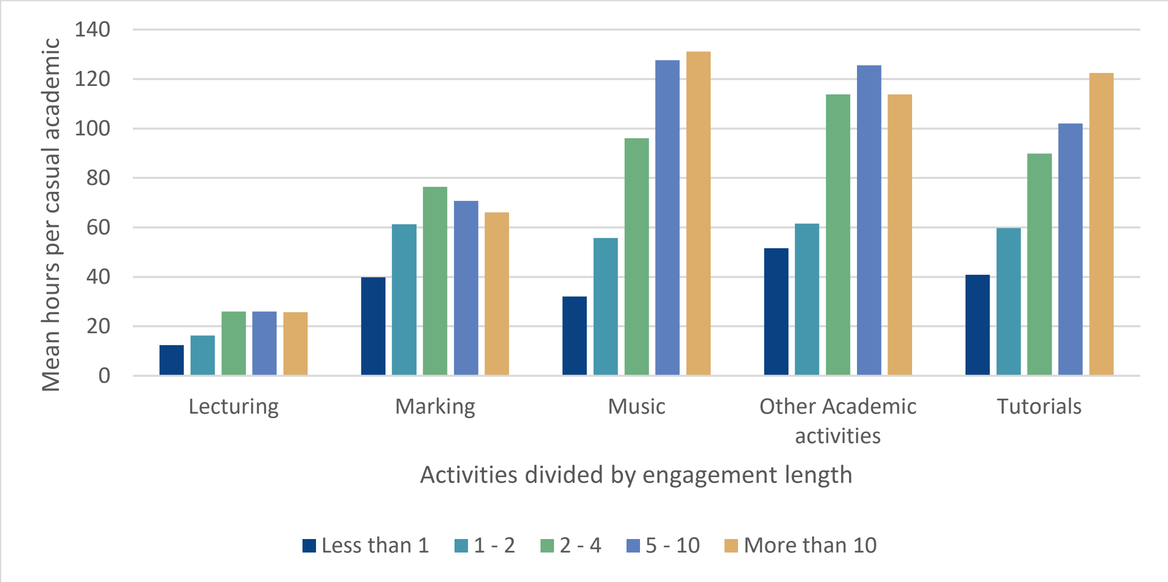

Figure 5: Average hours per casual employee at University Y

7. ARE THERE DIFFERENT 'TYPICAL' PROFILES OF CASUAL ACADEMICS?

To gather insight into patterns of casual academic employment in Australian higher education, data from three universities was analysed using an Agglomerative Hierarchical Clustering (AHC) approach. Further details outlining the approach are in Appendix 2.

University X

For University X, there were 2,516 individual casual academics who worked a combined 688,830 hours or around 382 FTE based on a 37.5-hour week for 48 weeks. On average each employee worked around 0.1 FTE over the year, although the actual number of hours varies considerably. Around 30 per cent of academic casual employees at University X had a doctorate, which was broadly consistent across faculties.

The AHC analysis suggests that the casual academic employees at University X in 2021 can be grouped into four distinct clusters based on the variables outlined in Appendix 1.

An employee's age did not relate in a significant way to any of the other variables in the clusters. That is, all clusters showed a spread of age groups and being older was not necessarily associated with a longer time of employment as a casual staff member, especially as the majority of casual employees had been employed less than five years as per Table 3.

Table 3: 2021 Casual academic staff length of service at University X

Length of Service	Unique Headcount
< 1 Year	1,435
> 10 Years	71
2 - 4 Years	758
5 - 10 Years and more than 10	252
Grand Total:	2,516

The academic casual staff at University X can be categorized into four significant clusters based on their characteristics. Cluster 1, here termed 'Short tenure casual academics,' comprises academics from STEM, Management and Commerce, Law and Legal Studies disciplines, almost all with less than one year of employment at the University, primarily undertaking marking and tutoring roles. This cluster accounts for an FTE of 106. Cluster 2, who were 'Casual markers employed less than 4 years,' consists of academics who mainly undertake marking tasks across various faculties. The vast majority of this cluster has been employed for less than four years at the University, with an FTE of 86. Cluster 3, labelled 'Architecture and Building Tutors employed less than four years,' includes academics in Building, Design, Architecture, and some Social Sciences-related areas who have been at the University for 0-4 years. They primarily engage in tutoring but also undertake some marking and research assistant (RA) work. This cluster has an FTE of 100. Finally, Cluster 4, termed 'Long tenure casuals in Management and Commerce and Arts,' comprises academics from Business Economics and the Social Sciences disciplines with longer tenures at the University, accounting for an FTE of 62.

University Y

For University Y, there were 1,928 individual casual academics who worked a combined 202,048 hours or around 112 FTE based on a 37.5-hour week for 48 weeks. On average each employee worked around 0.1 FTE over the year, although the actual number of hours varies considerably.

The AHC analysis suggests that the casual academic employees at University Y can be grouped into three distinct clusters based on the variables outlined in Appendix 1 for individuals who had similar characteristics. Cluster 1, termed here 'Education and Creative Arts tutors and 'other' activities less than four years,' comprises academics mainly in Education, Creative Arts, and Engineering and Related Technologies, most of whom have been employed between 1 and 4 years. This cluster accounts for an FTE of 62. Cluster 2, labelled here 'Marking and tutoring less than four years mainly in Health,' consists of academics in Health, with some in Arts, who primarily undertake tutoring with some associated marking activities. All members of this cluster have been employed for less than four years, with an FTE of 28. Cluster 3, known as 'Longer tenure Arts and Management and Commerce academics,' includes academics in Arts and Management and Commerce disciplines who are undertaking tutoring, lecturing, and other academic activities. Almost all members of this cluster have been employed between 5 and 10 years, with an FTE of 19.

University Z

For University Z, there were 1,882 individual casual academics who worked a combined 440,181 hours or around 233 FTE based on a 37.5-hour week for 48 weeks. On average, each employee worked around 0.1 FTE over the year, although the actual number of hours varies considerably.

The AHC analysis suggests that the casual academic employees at University Z in 2021 can be grouped into four distinct clusters. Cluster 1, termed 'Marking in Health, Arts and Management and Commerce less than ten years,' comprises academics undertaking marking tasks in Health, Arts, and Management and Commerce disciplines, who were employed between 1 and 10 years, with a roughly equal distribution for length of tenure. This cluster accounts for an FTE of 50. Cluster 2, labelled here 'Research assistants, less than ten years,' consists of academics, almost all in STEM fields, undertaking Research Assistant work and other academic activities. They have been employed from 1 to 10 years, with a roughly equal distribution for length of tenure, and account for an FTE of 51. Cluster 3, termed 'Very long tenure Management and Commerce, Arts and Health academics,' includes academics mainly in Management and Commerce, Arts, and Health disciplines, performing all academic activities. Almost all members of this cluster have been employed for over ten years, with an FTE of 49. Cluster 4, termed 'Longer tenure tutors in Management and Commerce, Arts and Health,' comprises academics tutoring in Management and Commerce, Arts, and Health fields. They have been employed for less than ten years, with an even spread of tenure, accounting for an FTE of 46.

8. ANALYSIS OF CASUALS WITH A VERY HIGH TEACHING LOAD AND RELATED ACADEMIC DUTIES

This section explores cases where casuals had a very high teaching and teaching related load in 2021. It looks in detail at two universities, X and Z, examining the frequency of academic casuals where the number of paid hours was at or above the maximum number of hours which may be allocated for teaching and teaching related duties to Teaching Only academics in the workload clauses of their EBA. The analysis may have some limitations as we have assumed that much of the work done under "other academic activity" would be considered 'teaching related' under these enterprise agreements. Nonetheless, it is a helpful indicator to examine recent patterns of casual employment as it provides a conservative baseline.

University X

Based on the EBA in force in 2021 for University X the maximum number of hours that work can be allocated for a full-time academic employee is 1,656 per annum. For academic staff at University X, there is a mandate that 30 per cent of time must be allocated to the following activities:

- Engagement
- Research and/or
- Student support and development, scholarly teaching and the scholarship of teaching, design and development of learning and assessment.

From this mandate, it might be reasonably assumed that a maximum teaching load is around 1,159 hours per annum. However, the EBA also stipulates that no academic should teach more than 24 weeks in a 12-month period. Achieving 1,159 hours over 24 weeks implies that an academic at University X would need to teach 48 hours per week. Given the legal upper limit of working hours is 38 hours per week, we can reasonably assume that a maximum teaching load at University X would be around 912 hours. Table 4 shows the number of casual academics who were paid for more than that maximum.

Table 4: Casuals at University X paid for more than 912 hours of teaching in 2021

Casuals	Number	% of total
Total number of individuals teaching over 912 hrs teaching	122	5.0
Those having a PhD	56	2.2
Those who have worked for more than five years at the university	52	2.0
Those in Management and Commerce	46	1.8
Those in Arts	12	0.4

University Z

Based on the EBA in force in 2021 and noting that duties and workloads must be consistent with the Minimum Standards of Academic Levels (MSALs), the default workload allocations for each job family are as follows:

- Teaching and Research Academic Teaching
  - 40 per cent Teaching
  - 40 per cent Research
  - 20 per cent Service
- Teaching and Leadership Academic
  - 30 per cent Leadership and Service
  - 70 per cent Teaching
- Leadership Technical/Industry/Commercial Academic
  - No default allocation but must have at least 40 per cent dedicated to teaching or research duties
- Scholarly teaching fellows
  - May have an 80 per cent teaching load

Maximum workload allocation is set at a nominal limit of 1,575 hours per annum. Based on this on the different job families, a very high teaching and related duties allocation would be around 70 per cent of a full-time load. This would be about 1,100 hours per annum. Table 5 shows the number of casual academics who were paid for more than that maximum.

Table 5: Casuals at University Z paid for more than 1,100 hours of teaching in 2021

Casuals	Number	% of total casuals
Total number of individuals over 1,100 hours teaching	42	2.2
Those who have worked for more than five years at the university	37	1.9
Those in Management and Commerce	16	0.8
Those in Arts	13	0.6

9. CONCLUDING COMMENTS

While this study provides interesting insight into the age and qualifications of casual academics in Australian universities, as well as the nature and frequency of the hours they work, it has some limitations.

- Firstly, as payrolls pay by the hour, we are unable to tell how many specific tasks are performed when the rate for an activity is paid for in multiples of hours as specified in EBAs, for example, lecturing.
- Secondly, it is likely that in practice, work undertaken under “other required academic activity” covers a very broad range of tasks some of which do not relate to teaching or students.
- All universities in the sample were located in capital cities with a supply of qualified labour and so the outcomes and conclusions may be different for regional universities.

At the same time, the study's findings give rise to further questions:

- Longer serving casuals working longer hours tend to be clustered in the disciplines of Arts and Business/Economics; is this replicated nation-wide, as is likely given the consistency across the five sample universities?
- If so, is there something about the way in which these disciplines are funded, structured or taught that results in the need for an experienced casual workforce? This raises the question of whether different arrangements need to be made for these disciplines.
- This analysis suggests that it is likely, as observed at a local level in many institutions, that PhD or Masters students undertake much of the casual academic work. The cluster analysis suggests that this might vary by discipline; how significant is this variation across the sector?
- The analysis may also give pause to the assumption that a significant portion of the casual academic workforce are professionals whose main employment is in industry.

What the data does show is that the nature of the casual academic workforce in Australia is far more nuanced than a single narrative of long hours, underpayment and exploitation and that a more sophisticated approach to its analysis and hence, improvement is necessary to fully understand the different dimensions of casual work. Hopefully, this is the first of many such attempts.

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11. APPENDIX 1: VARIABLES SPECIFICATIONS – CASUAL EMPLOYEES IN AUSTRALIAN UNIVERSITIES

The data relates to the 2021 year, with the following variables:

1 TOTAL CASUAL HOURS WORKED
Total casual hours worked by each payroll code for the relevant types of casual academic work

2 TOTAL NUMBER OF INDIVIDUALS PERFORMING EACH TYPE OF CASUAL WORK
The number of individuals (not FTE) paid under each payroll code during 2021.

3 TOTAL NUMBER OF CASUALLY EMPLOYED INDIVIDUALS
The total number of individuals who have been paid as academic casuals during 2021.

4 AGE COHORT FOR EACH TYPE OF WORK
Data grouped by age of the total individuals who have been paid in the given year sorted according to HES data collection requirements:

- *<25*
- *25-29*
- *30-34*
- *35-39*
- *40-44*
- *45-49*
- *50-54*
- *55-59*
- *60-64*
- *65+*

5 LENGTH TIME EACH INDIVIDUAL HAS WORKED
The length of time that each individual has been on the payroll grouped by span of years:

- *< 1 year*
- *2- 4 years*
- *5 – 10 years*
- *> 10 years*

7 FACULTY/SCHOOL/DEPARTMENT WHERE CASUAL WORK UNDERTAKEN. Using a concordance table, individuals were assigned to one of the following broad academic discipline areas:

- ARCHITECTURE AND BUILDING
- ARTS
- CREATIVE ARTS
- Cross Faculty and DVC PVC
- EDUCATION
- ENGINEERING AND RELATED TECHNOLOGIES
- HEALTH
- INFORMATION TECHNOLOGY
- LAW
- MANAGEMENT AND COMMERCE
- NATURAL AND PHYSICAL SCIENCES

List of casual academic work types (taken from *the Higher Education Industry—Academic Staff—Award 2020 - MA000006*)

1	**Lecturing**
1a	Basic lecture (1 hour of delivery and 2 hours associated working time)
1b	Developed lecture (1 hour of delivery and 3 hours associated working time)
1c	Specialised lecture (1 hour of delivery and 4 hours associated working time)
1d	Repeat lecture (1 hour of delivery and 1 hour associated working time)
2	**Tutoring**
2a	Tutorial (1 hour of delivery and 2 hours associated working time)
2b	Repeat tutorial (1 hour of delivery and 1 hour associated working time)
2c	Tutorial (1 hour of delivery and 2 hours associated working time) (where academic holds a relevant doctoral qualification)
2d	Repeat tutorial (1 hour of delivery and 1 hour associated working time) (where academic holds a relevant doctoral qualification)
3	**Musical accompanying**
3a	Musical accompanying (1 hour of delivery and 1 hour preparation time)
3b	Musical accompanying (1 hour of delivery and 1 hour preparation time) (where the academic holds a relevant doctoral qualification)
4	**Undergraduate clinical nurse education**
4a	Little preparation required (1 hour of delivery and 0.5 hours associated working time)
4b	Normal preparation time (1 hour of delivery and 1 hour associated working time)
4c	Little preparation is required (1 hour of delivery and 0.5 hours associated working time) (where the academic holds a relevant doctoral qualification)
4d	Normal preparation time (1 hour of delivery and 1 hour associated working time) (where academic holds a relevant doctoral qualification)
5	**Marking rate**
5a	Standard marking
5b	Standard marking (where the academic holds a relevant doctoral qualification)
5c	Marking as a supervising examiner, or marking requiring a significant exercise of academic judgment appropriate to an academic at level B status
6	**Other required academic activity**
6a	If the academic does not hold a relevant doctoral qualification or perform full subject coordination duties
6b	If the academic holds a relevant doctoral qualification or performs full subject coordination duties

12. APPENDIX 2: AGGLOMERATIVE HIERARCHICAL CLUSTERING (AHC)

An analysis was undertaken of the relationship between hours worked/FTE for different academic casual duties (tutoring, lecturing, marking etc.) as they relate to specific characteristics of the employee carrying out the work (age grouping, time employed at the university, faculty location and whether or not they have a doctorate).

The data was analysed using an Agglomerative Hierarchical Clustering (AHC) method to establish classifications (clusters) of related characteristics in the sample. This is a robust method to statistically group characteristics and show common themes across institutions for which types of casual staff are contracted to perform what type of work. In effect, this is a means to get insight into the profile of different kinds of casual employees at Universities X, Y and Z in 2021. The results of the cluster analysis are described below, with the specific steps used to undertake the analysis as follows:

1. Sample universities provided granular data from the payroll system on hours worked by all casual academic staff during 2021: The key variables provided were (1) staff member age group, (2) length of service at the institution, (3) owning department of contract, (4) type of work done, and (5) hours billed for that work activity.
2. To complete the cluster analysis, hierarchical clustering analysis on the data was used as most of the variables in the data were of categorical type. This was performed in R, using the "cluster" library (https://cran.r-project.org/web/packages/cluster/index.html)
3. An Agglomerative Clustering approach was used on the data to build clusters from all individual observations.
4. Before performing the analysis, tests were run on the data to find the agglomerative coefficient for four different types of clustering algorithms. The agglomerative coefficient measures the strength of the clustering structure of the data concerning the clustering algorithm. The tests run were for the *unweighted pair-group arithmetic mean* method (UPGMA), the single linkage method, the complete linkage method, and Ward's method. Ward's method scored a coefficient of 0.99, which is nearly the maximum possible score, so this was chosen.
5. The clustering data was further tested using both the within-cluster sums of squares and average silhouette methods to determine the statistically optimal number of clusters. Both methods indicated that either three or four clusters would likely be most appropriate.
6. Ward's method was used to produce a visual representation of the clusters (a cluster dendrogram) and after examining the results, the researchers' judgement aligned with the statistical results, and clusters were chosen to represent the major different groups of casual employees based on the characteristics outlined about in point 1.

13. APPENDIX 3: NUMBER OF ENROLLED PHD STUDENTS IN 2021

FOE6	Uni X	Uni Y	Uni Z	Uni CC	Uni EE
010000 Natural and Physical Sciences		2			
010100 Mathematical Sciences	28	1			38
010101 Mathematics		1	22		
010103 Statistics			11		
010300 Physics and Astronomy		3			81
010301 Physics	60		56		
010500 Chemical Sciences		3	66		59
010599 Chemical Sciences not elsewhere classified	107				
010700 Earth Sciences			30		30
010799 Earth Sciences not elsewhere classified			33		6
010900 Biological Sciences	66	6	77		167
010913 Human Biology	72				18
010999 Biological Sciences not elsewhere classified	4		10		
019900 Other Natural and Physical Sciences				256	3
019901 Medical Science		53	49	34	
019905 Food Science and Biotechnology	41				
019907 Pharmacology					8
019999 Natural and Physical Sciences not elsewhere classified					9
020100 Computer Science	157		82		113
020199 Computer Science not elsewhere classified		8			
029900 Other Information Technology				60	
029901 Security Science		15			
029999 Information Technology not elsewhere classified		25			
030300 Process and Resources Engineering					114
030301 Chemical Engineering	63	9			4
030305 Materials Engineering		3			
030399 Process and Resources Engineering not elsewhere classified		13			
030701 Mechanical Engineering	173	11			88
030900 Civil Engineering		11		214	54
030901 Construction Engineering	135				
031100 Geomatic Engineering	35				
031300 Electrical and Electronic Engineering and Technology	184	11	66		
031301 Electrical Engineering					52
031303 Electronic Engineering					4
031305 Computer Engineering		3			1
031501 Aerospace Engineering	88				

FOE6	Uni X	Uni Y	Uni Z	Uni CC	Uni EE
039901 Environmental Engineering	22	4			
039999 Engineering and Related Technologies not elsewhere classified		3			
040101 Architecture	91				26
040300 Building	50				
050100 Agriculture					97
050300 Horticulture and Viticulture					15
050700 Fisheries Studies					1
050900 Environmental Studies		16		51	17
050999 Environmental Studies not elsewhere classified			19		
060100 Medical Studies				75	323
060101 General Medicine			22		
060103 Surgery					13
060199 Medical Studies not elsewhere classified			27		
060300 Nursing	8	59		45	19
060501 Pharmacy				4	
060700 Dental Studies				5	
060701 Dentistry					21
061101 Veterinary Science					62
061300 Public Health		20	4		39
061301 Occupational Health and Safety		14			
061399 Public Health not elsewhere classified		1			
061501 Radiography	7				
061700 Rehabilitation Therapies			10		
061703 Occupational Therapy		3			
061705 Chiropractic and Osteopathy			4		
061707 Speech Pathology		3			
061799 Rehabilitation Therapies not elsewhere classified		1			
061905 Traditional Chinese Medicine	22				
069901 Nutrition and Dietetics		9			
069903 Human Movement		41		93	
069905 Paramedical Studies		3			
069999 Health not elsewhere classified		5		17	
070000 Education		2			
070100 Teacher Education	51				
070101 Teacher Education: Early Childhood			3		
070300 Curriculum and Education Studies			64		
079900 Other Education				61	34
079999 Education not elsewhere classified		85		12	

FOE6	Uni X	Uni Y	Uni Z	Uni CC	Uni EE
080000 Management and Commerce		1			
080100 Accounting					4
080101 Accounting	53		26		
080300 Business and Management	65				51
080301 Business Management	42		62		
080399 Business and Management not elsewhere classified					2
080500 Sales and Marketing				36	9
080505 Marketing			21		
081100 Banking, Finance and Related Fields					13
081101 Banking and Finance	71		50		
089900 Other Management and Commerce				89	
089901 Purchasing, Warehousing and Distribution	25				
089999 Management and Commerce not elsewhere classified		60		51	
090100 Political Science and Policy Studies					16
090300 Studies in Human Society	160		124		2
090301 Sociology					97
090303 Anthropology			2		
090305 History			7		
090311 Indigenous Studies		1	9		
090399 Studies in Human Society not elsewhere classified		2			
090500 Human Welfare Studies and Services				26	
090513 Counselling		1			
090599 Human Welfare Studies and Services not elsewhere classified				4	
090700 Behavioural Science			33		
090701 Psychology	17	19	147	118	71
090900 Law	17		28	16	40
091100 Justice and Law Enforcement				55	
091105 Police Studies			15		
091500 Language and Literature		1	2		33
091501 English Language			2		
091521 Linguistics			75		
091700 Philosophy and Religious Studies					2
091701 Philosophy			22		
091900 Economics and Econometrics					23
091901 Economics			33		1
099900 Other Society and Culture		22		149	
099903 Criminology		9			
099905 Security Services		1			

FOE6	Uni X	Uni Y	Uni Z	Uni CC	Uni EE
100100 Performing Arts		28			25
100101 Music				54	
100103 Drama and Theatre Studies		5			
100300 Visual Arts and Crafts		19		36	
100301 Fine Arts	81				
100500 Graphic and Design Studies	39				
100501 Graphic Arts and Design Studies	61				
100700 Communication and Media Studies	161	20	64		18
100701 Audio Visual Studies				13	
100705 Written Communication		6			
109900 Other Creative Arts				36	
109999 Creative Arts not elsewhere classified		4			

THE UNIVERSITY OF
MELBOURNE

Melbourne Centre for the Study of Higher Education
Level 1, Elisabeth Murdoch Building, Spencer Road
The University of Melbourne
Victoria 3010 Australia
melbourne-cshe@unimelb.edu.au

melbourne-cshe.unimelb.edu.au