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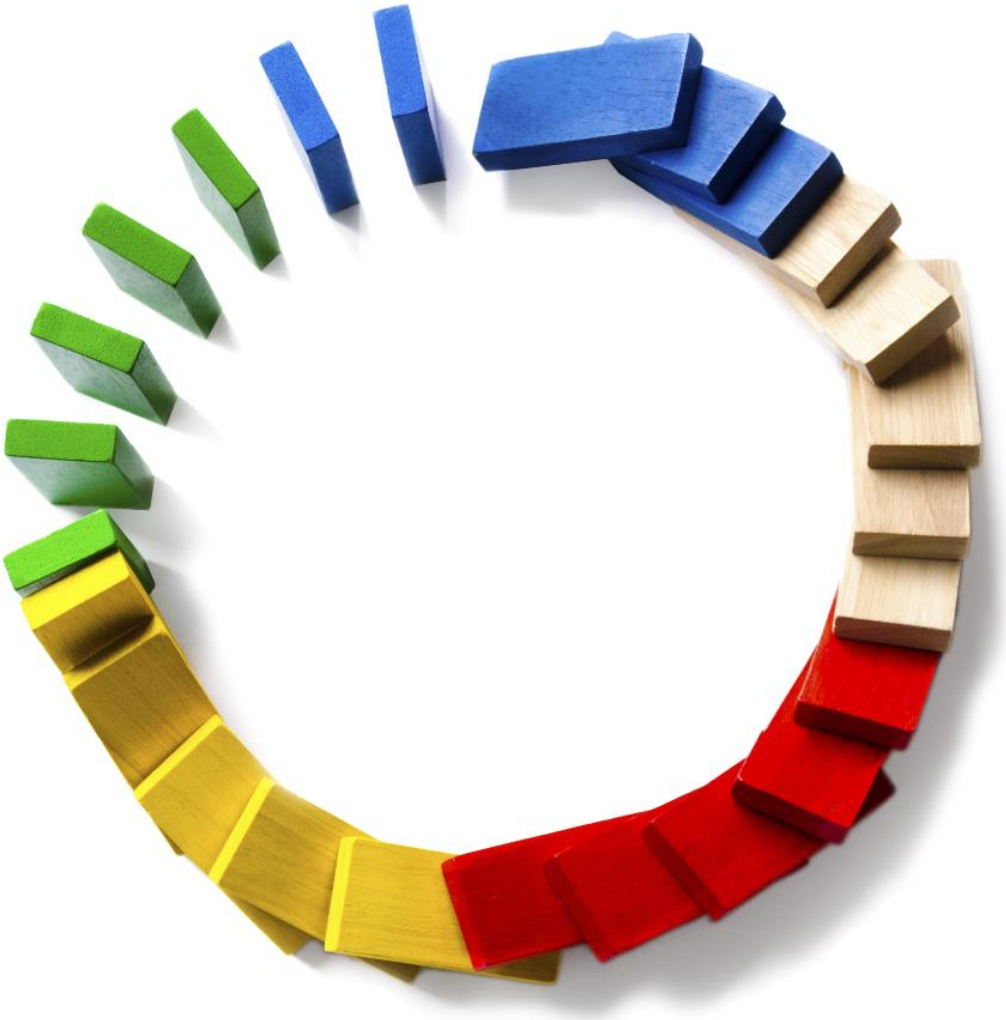

Transparency in Higher Education Expenditure

Australian Government Department of Education and Training

January 2019

Deloitte Access Economics

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Acronyms

Acronym	Full name
ABC	Activity Based Costing
ACU	Australian Catholic University
CGS	Commonwealth Grant Scheme
CSP	Commonwealth Supported Place
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation
EFTSL	Equivalent Full Time Student Load
FOE	Field of Education
FTE	Full-Time Equivalent
HDR	Higher Degree Research
IQR	Interquartile Range
MSI	Margin for Sustainability and Investment
SCA	Student Contribution Amount
TCW	Transparent Costing Worksheet
TRAC	Transparent Approach to Costing
UA	Universities Australia

Field of education abbreviations

Abbreviation	Full name
MathSci	Mathematical Sciences
MedicalSci	Medical Science
OthNat-PhysSci	Other Natural and Physical Sciences
InfoTech	Information Technology
Eng&Related	Engineering and Related Technologies
Archi&Build	Architecutre and Building
Environment	Environmental Studies
OthAg&Enviro	Other Agriculture, Environmental and Related Studies
MedicalStudies	Medical Studies
Nursing	Nursing
Dental	Dental Studies
Veterinary	Veterinary Studies
OthHealth	Other Health
Education	Education
Mgmt&Comm	Management and Commerce
ForeignLang	Foreign Languages and Translating
Psych	Psychology
OtherSoc&Cult	Other Society and Culture
Comms&Media	Communiation and Media Studies
OthCreative	Other Creative Arts
FoodHosp&Person	Food, Hospitality and Personal Services
MixedField	Mixed Field Programmes

Executive summary

Universities are complex institutions with a range of missions and environments. The *Higher Education Support Act 2003* creates the legislative framework for government support for higher education in order to support the "distinctive purpose of universities, which are:

(i) the education of persons, enabling them to take a leadership role in the intellectual, cultural, economic and social development of their communities; and
(ii) the creation and advancement of knowledge; and
(iii) the application of knowledge and discoveries to the betterment of communities in Australia and internationally."[1]

Governments supports teaching and scholarship activities at Australian universities through the provision of funding. There is a collective interest in transparency regarding the use of these funds and the allocation of resources across the various activities that universities engage in. Understanding the extent to which funding is used across different activities and fields of education is a key enabler of effective decision-making both within universities, and across the individuals, organisations and the Governments which fund them.

For the Australian Government, the funding of teaching and scholarship via the Commonwealth Grant Scheme (CGS) is provided on the basis of funding clusters and student contribution bands, designed to allocate aggregate base funding amounts to universities in a way that appropriately reflects their respective mix of disciplines.

This model, notionally intended to capture relative average costs across disciplines, has been periodically informed by research into the costs of teaching and scholarship at universities. The most recent comprehensive analysis was undertaken in 2016 by Deloitte Access Economics (related to activity in the 2015 calendar year) and followed a similar exercise undertaken in 2011 (related to 2010 calendar year activity and also by Deloitte Access Economics).

In this context, the Australian Department of Education and Training (the Department) is seeking to establish an annual data collection relating to costs of teaching and scholarship at Australian universities, which will ultimately involve participation by all Australian public universities. Deloitte Access Economics has been commissioned to undertake this collection in 2018, 2019 and 2020. This report presents the results derived from the first year of that process, relating to university activity in the 2017 calendar year.

Approach to the data collection

Building on the 2016 data collection,[2] the approach developed for this study was guided by two key objectives, namely:

- Accurately measuring the costs of teaching and scholarship[3] by field and level of education.
- Supporting the continued transition to a more comprehensive, systematic and streamlined data collection process over time.

To support the achievement of these objectives, the collection process, data template (or Transparent Costing Worksheet (TCW)) and an associated set of comprehensive guidelines were developed in close collaboration with the university sector and the Department. This included

[1] Higher Education Support Act 2003, s2(1)(b).
[2] Unlike the 2016 study, this report does not seek to provide estimates of the reasonable costs of teaching and scholarship by field of education or to use a regression framework to identify the size of particular cost drivers. Importantly, this means that the cost estimates reflect the actual costs of teaching and scholarship for the universities concerned. This report does not explicitly analyse notions of efficiency or quality.
[3] For simplicity, the 'cost of teaching and scholarship' is often referred to as the 'cost of teaching' throughout this report.

endorsement of the template and guidelines by a Universities Australia (UA) Reference Group (consisting of university representatives, representatives from UA, the Department, and Deloitte Access Economics) and a whole-of-sector one-day forum organised by UA to introduce and discuss the exercise with universities.

The final approach sought to establish a dataset which, to the greatest extent possible, was:

- Reliable – such that a suitable level of assurance can be established regarding the underlying data.
- Comparable – across universities, given differences in university context, and over time.
- Attributable – ensuring costs are captured only to the extent that they are incurred as a result of a defined and in-scope activity.
- Actual – in that the economic rather than the accounting measure of cost is of primary interest.

Emphasis was also placed on minimising the burden placed on universities in completing the data collection. The resulting refinements to the process from the 2016 exercise included:

- Minor adjustments to the field of education categories contained in the data collection (22 fields compared to 19 in the 2016 study).
- Removing the collection of full-time equivalent (FTE) employment data from the 2018 collection.
- The addition of two 'below the line' cost items (in-kind and partnership costs), which would not necessarily appear in a university's financial reporting, but nonetheless represent costs attributable to delivery by that institution.
- The restructuring of the sub-categories contained within budgetary unit level and centralised non staff costs, to better align with internal university structures and minimise unnecessary reporting burdens for universities.

Universities were presented a draft version of the cost collection template at a UA convened forum on 2 July 2018, and were provided with the final costing template on 13 August 2018, for completion by 21 September 2018. Following submission of the template, the data was moderated and synthesised by the Deloitte Access Economics team, with follow-up discussions initiated where outliers or other uncertainties were identified.

All 25 universities selected to participate in the 2018 data collection returned a full dataset. This sample included the 17 universities that participated in the 2016 study. The inclusion of the eight additional universities for 2018 increased the coverage of the sample to 65% of enrolments by EFTSL (equivalent full-time student load). The additional eight universities were specifically chosen to ensure that the sample included a university from every state and territory and achieved a minimum of 50% of the sector's EFTSL across the following dimensions:

- Regional universities;
- Dual sector universities;
- Smaller universities (fewer than 15,000 domestic enrolments);
- Study level (sub-bachelor, bachelor and postgraduate); and
- University affiliation.[4]

As such, the sample can be considered to provide a robust foundation for analysing the level of and variation in costs across the sector.

During the data collection window, Deloitte Access Economics consulted with participating universities to discuss the costing approaches being taken and to ensure that the template was completed appropriately and as consistently as possible across institutions. Universities were also able to provide a Supporting Statement alongside the collection template, outlining the methodology applied, any unique contextual considerations and relevant concerns. This process of

[4] Affiliations include: Group of Eight (Go8), Innovative Universities Australia (IRU), Australian University Technology Network (ATN), and Regional Universities Network (RUN), noting that some universities have no formal affiliations (i.e. Nil group).

consultation, as was the case in the 2016 exercise, reiterated both the complexity and diversity of costing approaches and organisational practices across the sector. Key findings from this process were that:

- Universities varied in the sophistication of their cost data collection and reporting abilities. Several utilise activity-based costing (ABC) models and software platforms, which are capable of reporting costs at a unit of study level. Others rely on more aggregated financial information, which is then allocated to more granular activities and functions. Despite these differences, similar assumptions and drivers tended to be applied in allocating costs across field of educations. Most universities recognised there was scope for improving the accuracy of their cost allocation process over time and many were actively taking steps to do so.
- There continue to be challenges for many universities in separating the costs of teaching and scholarship from research activities. This is because resources are often shared between different activities and collecting data on how those resources are shared poses practical difficulties. This is particularly the case for staff time, although the use of regular staff time surveys can help provide a more accurate measure of staff time across different activities.
- The reporting of data based on fields of education is not commonplace for universities and does not reflect universities' underlying operating structures, which are organised around faculties and schools. While universities have relatively refined data on, for example, teaching costs at the faculty or school level, mapping this to individual fields of education often requires several additional assumptions. To the extent that individual course costs vary and universities provide different mixes of courses within a field of education, variation in course composition will impact cost relativities between universities.
- The separation of costs between different levels of study within a field of education was challenging for a number of universities, and several were unable to differentiate costs at a school or faculty level by level of education. In these cases, costs were allocated across levels proportionally using EFTSL numbers, such that each level had the same average unit cost.
- Universities incur once-off or irregular costs, for example as a result of faculty restructures, redundancies and the cost of creating new faculties or offerings, meaning that the results from any one year may not reflect genuine ongoing costs. It is anticipated that the continued periodic collection of this data will provide a mechanism for controlling for this over time.
- Results can be highly sensitive to minor changes in costing methodology in instances of low EFTSL delivery within a field of education. For this reason, field and level cost observations with a student load of less than five EFTSL were omitted from the reporting.[5]

The data collection and statistical methods applied in this study were specifically designed to mitigate these limitations wherever possible – noting that in most cases they were limitations that had been encountered in a similar form in prior years – and to improve the robustness and comparability of the results over time.

It should be recognised that the results of this study seek to capture the actual costs of teaching and scholarship for Australian public universities in 2017. They do not seek to capture the costs of teaching and scholarship required to meet specific quality benchmarks or to assess the relative efficiency of universities in delivering teaching and scholarship. These are nonetheless important policy questions – which were raised by a number of universities throughout consultations with the sector – that could be explored in future work.

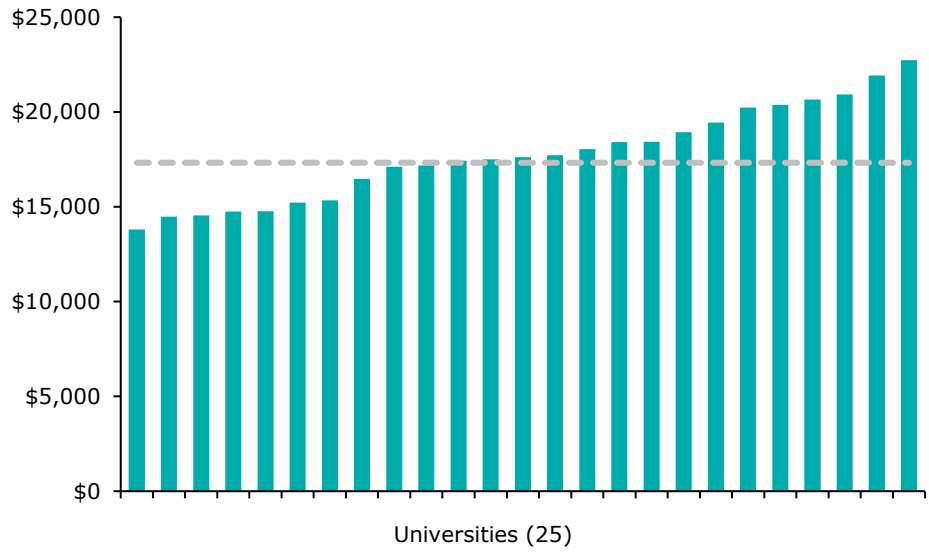
The cost of teaching and scholarship in higher education in Australia

Across all levels, the average cost of bachelor teaching per EFTSL across the 25 universities sampled as part of this study was $17,300 in 2017. Chart i below shows the distribution of the

[5] In addition to this outliers were removed where costs per EFTSL were greater than $100,000 and an EFTSL count was less than 10, when costs per EFTSL were greater than $300,000, or in instances where participating universities explicitly indicated that costs for a field-level combination should not be relied upon.

estimated average cost per EFTSL across universities in the sample, which ranged from $13,800 (20% below average) to $22,700 (31% above average).

Chart i: Average bachelor unit costs per EFTSL by university



The variation in average costs reflects a range of contextual factors (such as differences arising from geography, scale, student mix, subject focus, and research intensity),[6] as well as institution-specific commercial strategies.

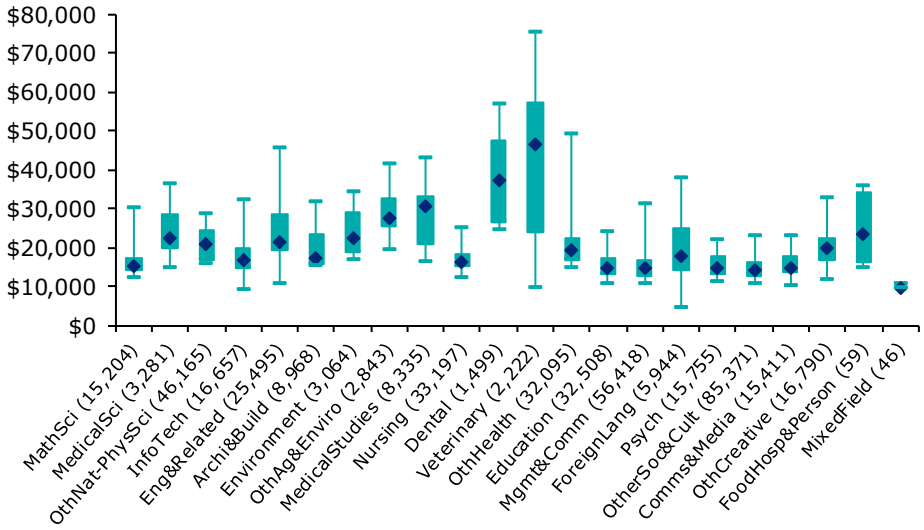
By field of education, average costs at the bachelor level range from $9,600 per EFTSL in Mixed Field Programmes to $46,800 in Veterinary Studies (Chart ii). However, noting that there were relatively few EFTSL (46) in Mixed Field Programmes, the next lowest cost per EFTSL was $14,200 for Other Society and Culture.

Two other health science fields – Dental Studies ($37,400) and Medical Studies ($30,500) – along with Other Agriculture and Environmental Studies ($27,700) are the next most costly, on average, at the bachelor level. Ten fields exhibit average costs per EFTSL at the bachelor level of between $14,000 and $18,000 while a further seven exhibit average costs of between $19,000 and $24,000.

Variation in cost at the bachelor level occurs not only across fields of education, but also across different universities delivering in the same field. Fields with higher average cost per EFTSL, such as Veterinary Studies and Dental Studies, tend to exhibit the widest variation in cost between universities.

[6] Greater research intensity or focus within a field or institution may simultaneously drive higher costs in teaching, due to more senior professional staff with both teaching and research roles.

Chart ii: Distribution of unit costs by field for bachelor studies



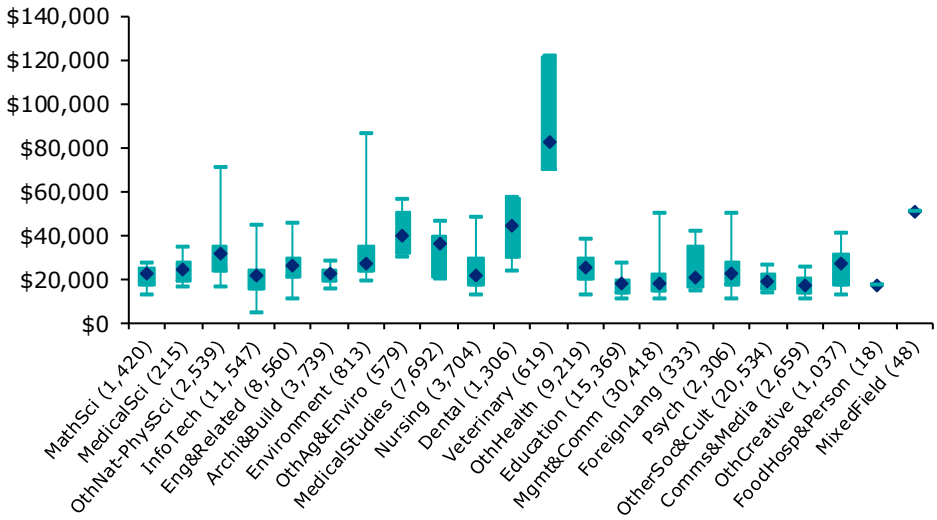
Note: 439 cost observations across 25 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum. Total EFTSL counts are in parentheses after field labels.

Similar results by field of education are observed regarding costs per EFTSL at the postgraduate level (Chart iii). The health sciences fields – Veterinary Studies ($82,600), Dental Studies ($44,500) and Other Agricultural and Environmental studies ($39,800) – exhibit the highest average cost per EFTSL at the postgraduate level, while Communications and Media ($16,900), Education ($17,500), and Management and Commerce ($18,300) recorded the lowest average cost per EFTSL.[7]

On average, the cost of postgraduate study per EFTSL is 28% ($4,900) higher than at the bachelor level. This may reflect differences in the way these qualifications are taught including potentially smaller class sizes, more senior teaching staff and different forms of instruction, among other reasons, such as the mix of fields taught (again noting that these potential explanators are not examined in detail in this report or its associated analysis). Variation in costs within fields also tends to be greater at the postgraduate level than for bachelor level studies, with the greatest variation observed in Environmental Science and Other Natural and Physical Sciences.

[7] A relatively high cost per EFTSL ($50,300) was observed for Mixed Field Programmes, while a low cost per EFTSL ($17,200) was observed for Food, Hospitality and Personal Services but these programs were only delivered to 48 and 18 EFTSL respectively.

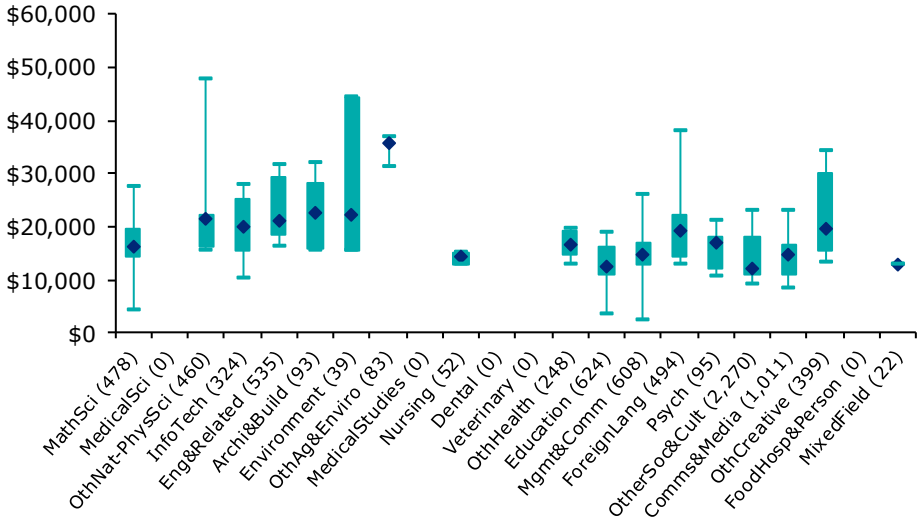
Chart iii: Distribution of unit costs by field for postgraduate studies



Note: 350 cost observations across 24 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum. Total EFTSL counts are in parentheses after field labels.

In contrast to the postgraduate level, studies at the sub-bachelor level tend to exhibit on average lower costs per EFTSL (8% or $1,400 lower) than at the bachelor level. At the sub-bachelor level, while there is less variation in average costs per EFTSL across fields compared to postgraduate and bachelor level studies, there is nonetheless comparable variation within fields (Chart iv).

Chart iv: Distribution of units costs by field for sub-bachelor studies



Note: 144 cost observations across 20 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum. Total EFTSL counts are in parentheses after field labels.

How these findings compare to previous studies

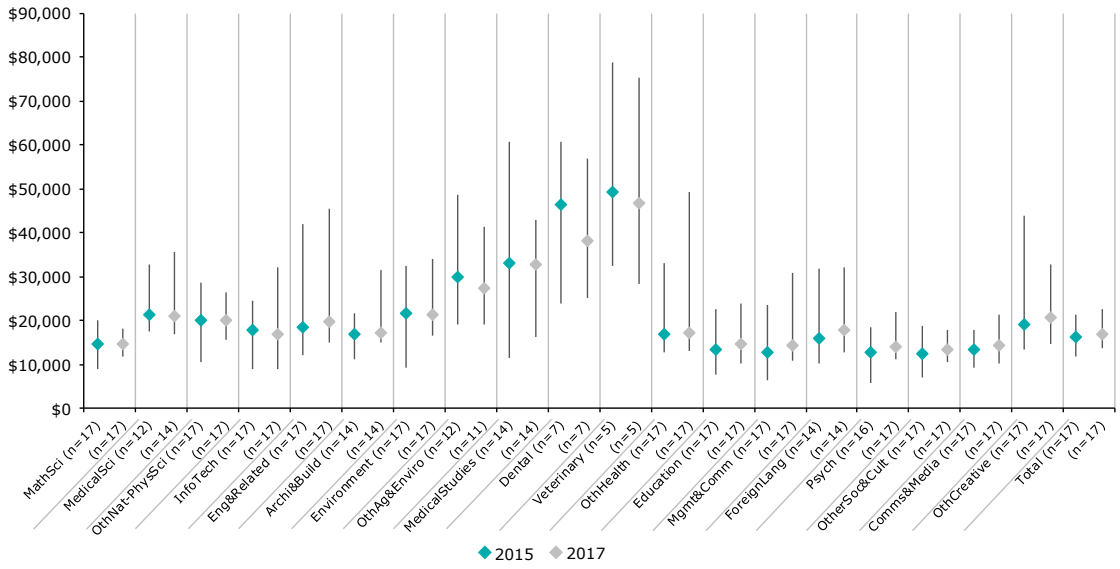
Of the 25 universities included in this study, 17 participated in the 2016 exercise. Examining the results of the common sample of universities between the two studies provides an indication of how the cost of teaching changed between 2015 and 2017, on average and across fields.

As outlined above, a small number of modifications were made to the data collection methodology and process between the two studies. These are not deemed to materially influence the ability to compare results between the studies.

Nevertheless, comparability can be influenced by factors such as one-off costs, changes to university structures (within a given university) and ongoing policy and strategic changes in the sector. These factors are not readily controlled for in an exercise such as this.

These points noted, an analysis of costs over time reveals that, on average, costs per EFTSL for bachelor studies among the common sample universities increased in 11 of 19 fields of education, and decreased in eight (Chart v). The largest proportional increases tend to be in fields with lower costs per EFTSL, such as Management and Commerce (+13%), Foreign Languages (+13%), and Other Society and Culture (+10%). The largest proportional decreases occurred in Dental Studies (-18%), Other Agricultural and Environmental Studies (-9%), and Information Technology (-5%).

Chart v: Comparing unit costs between 2016 and 2018 studies for bachelor, common sample



Note: For comparability, only the 17 universities common to both studies are included. Markers are at mean.

The figures in Table i show that the average cost per EFTSL of bachelor level study rose from $16,200 in 2015 to $16,900 in 2017 among the common sample universities, an increase of 4.6% (as shown in Table ii). Average unit costs for the full sample of 25 universities was higher at $17,300 (noting that the full sample includes universities in the common sample). Growth in postgraduate costs grew at a faster rate over the last two years of 6.4% for the common sample.

Table i: Average unit cost per EFTSL

		2010	2015	2017	
	FOE mix	8 universities	17 universities	Full sample (25)	Common sample (17)
Bachelor	*Actual*	$15,100	$16,200	$17,300	$16,900
	Whole sector	$15,000	$16,000	$17,200	$16,800
Postgraduate	*Actual*	$17,400	$20,500	$22,200	$21,800
	Whole sector	$17,000	$20,100	$21,600	$21,400
Total	*Actual*	$15,500	$17,000	$18,400	$18,100
	Whole sector	$15,400	$16,800	$18,200	$17,800

Table ii: Growth over time in average unit cost per EFTSL

		2010 - 2015	2015 - 2017	
	FOE mix	17 universities	Full sample (25)	Common sample (17)
Bachelor (CAGR)	*Actual*	7.6% (1.5%)	6.9% (3.4%)	4.6% (2.2%)
	Whole sector	6.7% (1.3%)	7.1% (3.5%)	5.1% (2.5%)
Postgraduate (CAGR)	*Actual*	18.1% (3.4%)	8.2% (4.0%)	6.4% (3.1%)
	Whole sector	18.1% (3.4%)	7.8% (3.8%)	6.6% (3.2%)
Total (CAGR)	*Actual*	10.1% (1.9%)	7.9% (3.9%)	5.9% (2.9%)
	Whole sector	9.5% (1.8%)	7.9% (3.9%)	6.0% (3.0%)

Note: Results in parentheses reflect compound annual growth rates over the relevant period. 'Actual' FOE mix refers to unit costs based on the actual mix of enrolments in the specified sample, 'whole sector' refers to the unit costs re-weighted by the mix of enrolments across all universities.

Table iii benchmarks the changes in teaching cost per EFTSL since 2015 to changes in expenditure by the sector since 2015 for the common sample, all universities sampled in 2018 and all public universities. Over this period, EFTSL grew by between 3.0% and 4.7% across the different groups of universities and expenditure per EFTSL grew by 6.7% for all universities and by 8.2% for the common sample. Given that overall teaching costs per EFTSL for all levels in the common sample grew by 5.9%, this suggests that changes in teaching and scholarship costs have grown broadly in line albeit slightly less than changes in overall expenditure.

While the growth in costs per EFTSL for the common sample provides a valid comparison over time for a common sample of universities, it is not strictly a measure of cost per EFTSL for the sector over time. It is possible that growth in costs per EFTSL may differ for universities not in the common sample. However, the figures in Table iii suggest that changes in continuing expenditure per EFTSL have not differed vastly between the common sample and the sector as a whole. This indicates that the growth in costs for the common sample is likely to be a reasonable, if imperfect, proxy for changes in costs for all universities.

Table iii: Change in costs between 2015 and 2017

% growth 2015 to 2017	Common sample (17 universities)	Full sample (25 universities)	All universities
Cost per EFTSL - all levels	5.9%	7.9%	
Cost per EFTSL - bachelor	4.6%	6.9%	
Cost per EFTSL - postgraduate	6.4%	8.2%	
Total EFTSL	4.4%	3.0%	4.7%
Continuing expenditure per EFTSL	8.2%	7.4%	6.7%
Base funding (CGS+SCA per EFTSL)	3.4%	3.3%	

Source: Deloitte Access Economics, Department of Education and Training.

The results of Table ii and Table iii indicate that between 2015 and 2017, total teaching costs for the common sample grew by 3.0% annually or just below the 4.0% annual increase in total university costs per EFTSL. By comparison, and acknowledging the smaller sample and its lack of commonality, teaching costs are estimated to have grown by 1.9% per EFTSL over the period from 2010-2015 while total university costs per EFTSL are estimated to have grown by approximately 3%.

A number of possible explanations for the increase in growth in teaching costs were explored. The growth in EFTSL was found to be relatively consistent between 2010 and 2017, suggesting that growth in student numbers was not a key driver of the increased growth in teaching costs. While there has been growth in teaching only staff (in FTE terms), this has occurred consistently since 2009 and is hence not isolated to this most recent period. The number of research only FTEs (who make up 13.6% of total FTEs) has stabilised since 2015, but only grew by 1.6% between 2010 and 2015 and hence is unlikely to explain all of the increased growth in costs between 2015 and 2017.

While there is evidence that staff costs grew particularly strongly between 2015 and 2017 relative to non-staff costs, further consultation with universities indicated that some administrative staff costs in 2015 were included under central costs and as a result of restructuring the data collection template were now being included within staff costs.

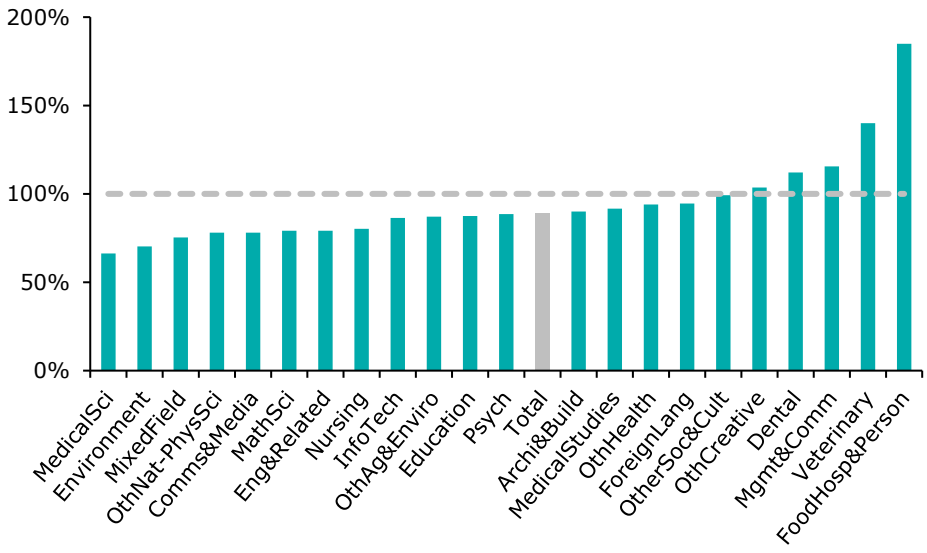
Thus, there was no definitive explanation for the increased growth in teaching costs relative to the 2010 to 2015 period. As noted by Deloitte Access Economics (2016), the sample in 2010 exercise differed from that in 2015 and thus differences in growth trajectories over the two reference periods may reflect differences in the sample of universities. It is also possible that universities have chosen to increase their growth in expenditure on teaching over the last two years at a rate that remains broadly in line with overall growth in expenditure.

Costs and funding

The cost of delivering teaching and scholarship for bachelor studies was 89% of the average base funding across the 25 universities sampled (Chart vi). A number of fields had an average cost greater than average funding included Food, Hospitality and Personal Services (185%), Veterinary Studies (140%), Management and Commerce (116%), Dental Studies (112%) and Creative Arts – Other (104%).

Fields such as Food, Hospitality and Personal Services, Veterinary Studies and Dental Studies were delivered at a relatively small scale and by only a few universities. Among larger fields, Management and Commerce and Creative Arts – Other receive a relatively low amount of base funding per EFTSL.

Chart vi: Average unit costs as a proportion of base funding for bachelor, full sample



Among universities that participated in the 2016 study (i.e. comparing a common sample), this value was 87% in 2017, compared to 85% in 2015, representing a modest increase in the proportion of average costs relative to average funding (Table iv). This is consistent with costs per EFTSL growing more quickly than base funding per EFTSL (see Table iii).

Table iv: Teaching costs relative to CSP funding for bachelor studies

Year	Common sample	Full sample
2015	85%	85%
2017	87%	89%

Note: Figures can be interpreted as the average unit cost per EFTSL as a proportion of average Commonwealth Supported Place (CSP) funding which includes the Commonwealth contribution amounts and Student Contribution amounts.

Concluding remarks

The results presented in this report not only provide a critical new reference point for policymakers in considering current higher education funding arrangements, but also represent a fundamental next step in the progression towards a more robust, reliable and comparable collection of Australian university cost data over time.

The refinements to the approach introduced for this study, while maintaining comparability with the 2016 exercise, have led to improved understanding and greater accuracy in several areas.

- The inclusion of in-kind costs in the data collection as a 'below the line' item was intended to capture costs associated with providing facilities or services in kind to other organisations or individuals, but which may not otherwise be recorded as an expense in financial reporting. Three universities reported in-kind costs across 15 fields of education, resulting in an average increase of $73 (or 0.40%) in average cost per EFTSL. It should be noted that many universities encountered difficulties in both identifying in-kind exchanges and being able to apply a monetary amount to estimate these costs. A number of universities also noted they did not believe they had significant in-kind costs.

- The inclusion of certain partnership costs as an additional 'below the line' item was made in order to capture the costs to third party organisations, which would not otherwise be captured in financial reporting, due to revenue-sharing agreements or otherwise. This only related to EFTSL attributable and responsible to the university. Additional partnership costs were reported by five universities and resulted in a $77 (or 0.42%) increase in average cost per EFTSL.

These in-kind and partnership costs suggest an increase in the total cost per EFTSL across all levels from $18,400 in Table i to $18,500.

At the outset of this exercise, it was identified that greater clarity was required regarding the treatment of capital costs. While the consensus accounting approach to capturing capital costs is to include current expenses relating to depreciation, amortisation, repairs and maintenance, it has been suggested that this understates true costs. It is argued that capital replacement costs are increasing over time, meaning that depreciation based on historical asset values understates future capital costs. At the time of finalisation of the data collection guidelines there was insufficient basis presented to deviate from the historical approach to measuring capital costs.

However, in order to canvass the issue and to understand the potential data upon which future exercises might draw, participating universities were consulted on this question during the data collection process. It was found that there was not a clear consensus across universities, both with respect to the appropriateness of including projected future capital costs in current cost estimates, and, secondly, with respect to the ability to accurately measure and attribute these costs.

Despite the absence of consensus across the sector there remains scope to further consider this issue in subsequent data collection processes, building on the information provided by universities in 2018.

A number of universities noted that the costing template used in the 2018 study represented a significant improvement on that used in the 2016 study. Nevertheless, looking forward, ongoing refinements to the data collection approach and tools will play an important role in improving the robustness of the evidence. Based on consultations with universities, the following were suggested as potential refinements to consider for future data collection rounds:

- Removing the separate line item for the cost of placements;
- Removing the requirement to estimate casual academic staff costs;
- Including a list of 6 digit codes in the Transparent Costing Worksheet (TCW):
- Giving further consideration to the inclusion of 'in-kind' costs; and
- Providing further clarity of the treatment of third party and partnership costs in the Transparent Costing Worksheet.

It should be noted that there are important trade-offs involved in contemplating the implementation of such changes. In particular, maintaining consistency and comparability in the template over time is a key objective of the exercise (though the changes suggested above are relatively minor). The decision to implement any changes in future exercises would need to be considered in collaboration with the Department and the Universities Australia Reference Group.

In addition to suggesting changes to the template itself, universities also reflected on the data collection process itself. In particular, a number of universities raised concerns about the relatively short period provided to complete the costing template in 2018 and noted that the timing conflicted with the annual budget cycle. They noted that changing the timing to June as planned for the 2019 and 2020 exercises would be more conducive to university budget processes and allow for further refinements to their cost allocation methodology.

1 Background

In order to support the extensive public and private benefits that universities generate, the Australian Government provides significant financial support and funding to the sector and users. This support is provided through a variety of forms ranging from specific grants for research or infrastructure through to Commonwealth Grant Scheme (CGS) funding for Commonwealth supported students. Universities also receive revenue from a range of private sources.

Universities use this revenue to support a range of outcomes, which may differ according the specific strategy of each institution, but broadly include teaching and scholarship, research and community engagement.

Given the range of outcomes and funding sources received by universities, understanding the level of expenditure on teaching and scholarship, and how this varies by discipline, is important to the ongoing monitoring and, as appropriate, refinement of policy settings. Such information can also be instructive to the sector's other stakeholders.

In this context, Deloitte Access Economics has been engaged by the Australian Government Department of Education and Training (the Department) to collect and analyse data on the cost of delivering higher education – the costs of teaching and scholarship – at Australia's public universities.

This exercise extends on a 2016 study – undertaken by Deloitte Access Economics – which collected data related to activity in the 2015 calendar year from a sample of universities. A study with similar intent was also undertaken in 2011. The current collection addresses identified areas of improvement and refinement, lengthens the timeframe to three years to promote comparability over time, and extends the exercise to achieve full coverage of all public universities (by the end of the three year period).

This chapter:

- Provides more context on the objectives of the Transparency in Higher Education expenditure project (Section 1.1);
- Describes the changes in methodology from the 2016 study, including the process and decision-making behind each change (Section 1.2);
- Summarises the process and planning for sampling universities in 2018 and over the next two years of the project (Section 1.3);
- Explores recent trends in the delivery of higher education (Section 1.4); and
- Outlines the remaining report structure (Section 1.5).

1.1 Purpose and objectives

The overarching outcome of this exercise is to build and develop the evidence-base on the cost of providing higher education to better inform student decision-making and future decisions regarding the policy architecture for higher education in Australia.

In order to achieve this overarching outcome, the Department has set two key objectives for this exercise:

1. Accurately measure the costs of teaching and scholarship[8] by field and level of education.
2. Supporting a continued transition to a more comprehensive, systematic and streamlined data collection process over the three years (2018 to 2020) and beyond.

[8] For simplicity, references to teaching and scholarship costs, and teaching costs are treated synonymously in this report.

This exercise extends the findings and thinking from the previous 2016 study to provide a more detailed picture of changes in costs over time and greater coverage of the sector, with the project expected to cover all public universities by 2020.

Noting that the ongoing nature of the collection will better equip it to capture year-to-year variability in institutions' activities and costs, maintaining consistency will be essential to support the comparability of costs over time. The imperative to retain consistency is pursued in the context of the learnings and refinements that conducting the exercise year after year generates. The practical challenges associated with implementing identified improvements while preserving comparability are discussed at various points throughout this report.

More broadly, a number of principles have informed the process and methodology underpinning the cost collection. The final approach sought to establish a dataset which, to the greatest extent possible, was:

1. Reliable – such that a suitable level of assurance can be established regarding the underlying data;
2. Comparable – across universities, given differences in university context, and over time;
3. Attributable – ensuring costs are captured only to the extent that they are incurred as a result of a defined and in-scope activity; and,
4. Actual – in that the economic rather than the accounting measure of cost is of primary interest to the exercise.

1.2 Changes to the exercise in 2018

A number of key changes to the process and template for collecting data from universities have been implemented for the 2018 collection. These changes were developed in collaboration with the sector (see Box 1.1 below on university engagement) and with the overarching aim of strengthening adherence to the four principles outlined immediately above. The key changes, and their basis, are described in Table 1.1 belowTable 1.1.

Consultation and feedback from a number of universities indicated that the process of completing the template was considerably simpler compared to the 2016 exercise, although further feedback on potential simplification in subsequent years was also provided by universities and is summarised in Chapter 4. The main data collection template is provided in Appendix A and the accompanying data collection guidelines are provided in Appendix B of this report.

Table 1.1: Key changes to the template for 2018

Separating 'Nursing' as a field of education	Previously, 4-digit fields 'Medical studies', 'Dental studies' and 'Veterinary Studies' were separated from the overarching 2-digit field 'Health'. These fields were identified as likely to have significantly different (and higher) costs to other health-related fields. For this exercise, the Department also requested the separation of 'Nursing' as an additional and stand-alone field of education.
Adding 'Food, Hospitality and Personal Services' and 'Mixed Field Programmes' as fields of education	While very few universities deliver EFTSL as part of higher education in these two fields of education, these two 2-digit fields were included in order to ensure 'completeness' of field categorisations, such that all potential fields could be included in a mapping to the costing template.
Removing staff FTE line items	Whereas the previous 2016 study had a wider, more exploratory scope of analysis, this study is primarily concerned with the accurate estimation of costs. Accordingly, potential cost drivers (such as staff FTE) and their corresponding data collection were not required for the analysis in this exercise. A number of universities also reported a high degree of burden in calculating FTE figures at a detailed level, and that often a simplifying assumption was used to calculate FTE from cost figures, which resulted in a one-to-one relationship between costs and FTE. For these reasons the requirement to calculate FTE was removed from the 2018 data collection process.
Adding 'below the line' in-kind and partnership costs	A number of universities in the Universities Australia technical working group (see Box 1.1 below) raised two issues regarding the costs of teaching that would not appear in their financial reporting or accounts, but importantly reflect the cost of delivery. First, in some instances, the delivery of teaching by a third party (e.g. hospital doctor) was not paid for using financial remuneration, but through the sharing or provision of another resource (e.g. providing library resources to hospital staff). The associated costs for receiving those teaching services are known as 'in-kind' costs. While these in-kind costs may not necessarily appear in financial statements or reporting, or involve direct payments, estimates of their value (where material) can be included for consideration in a 'below the line' item, which indicates they are estimates of costs that do not appear in financial reporting. Similarly, some partnership arrangements between third party providers and universities may rely on revenue-sharing agreements. In instances, where the cost of third-party delivery is not a financial payment by the university and instead a diversion of revenue to the partner, these diverted revenues can be used as an estimate of the cost of teaching (in lieu of actual costs borne by the partner institution).[9]

[9] Notably, this only applies for EFTSL that are attributed to the host university institution.

	If the cost of partnership agreements is a financial cost or payment to the university, then these are included above the line.
Restructuring non-staff and centralised costs	The structure and format of non-staff and centralised costs were modified to create more meaningful categories for universities and also to simplify the process. This included the aggregation of 'cost of materials, utilities and equipment' and 'expenses that relate to labs/practicum/field work', and the separate identification of placement costs. An additional whole-of-university non-teaching, non-scholarship cost item was also included to reconcile total figures to statutory reporting.

Box 1.1: University sector engagement

The development of the Transparent Costing Worksheet and associated data collection guidelines for this exercise involved significant engagement and collaboration with the sector, including key university stakeholders and the peak body Universities Australia (UA), as well as the Department.

Alongside ongoing communications, this sector engagement included a UA Reference Group (consisting of university representatives, representatives from UA, the Department, and Deloitte Access Economics), a Technical Working Group, and a whole-of-sector UA one-day forum to present and discuss issues and concerns related to this exercise. The Technical Working Group provided a forum for discussing and resolving issues associated with the definition, specification and measurement of certain activities and costs; while the Reference Group served as the ultimate forum for strategic decision making.

All universities were issued with a detailed set of data collection guidelines to ensure that the Transparent Costing Worksheet was filled out consistently. Consultations were also held with all universities to ensure a common approach was undertaken to capturing the costs of teaching and scholarship across the sector.

1.3 University sample

While the initial 17 universities that participated in the 2016 study were broadly representative of the sector and covered over half of all enrolments, the selection and inclusion of an additional eight universities for the 2018 study was designed to target a more diverse range of universities.

In particular, greater representation was targeted from:

- Dual sector universities;
- ATN and IRU affiliated universities;
- Smaller universities (fewer than 15,000 domestic enrolments); and
- Universities located outside of the largest east coast states (NSW, Victoria and Queensland).

This criteria led to the total of 25 universities included in this study (see Table 1.2), as well as the indicative and planned introduction of an additional seven universities in 2019, before the full sample of 37 public universities is captured in 2020.

Importantly, the 2018 study achieves at a minimum, a 50% coverage across the key university characteristics: regional, dual sector, smaller size, affiliation, and primary state or territory location (Table 1.3). Notably, this includes a university from every state and territory, and a more diverse sample compared to the 2016 sample.

The 2018 sample also covers:

- 65% of all in-scope EFTSL from the 37 universities (Table 1.3);
- Over half of all EFTSL delivered across each of the three levels of education: sub-bachelor, bachelor, and postgraduate (Chart 1.1); and
- Over half of all EFTSL delivered across each of the 22 key fields of education, excluding Mixed Field Programmes[10] (Chart 1.2).

Table 1.2: Planned participation by universities

2016 ***Previous study and this study***	**2018** ***New to this study***	**2019**	**2020**
1. Australian Catholic University	18. Charles Darwin University	26. Central Queensland University	33. La Trobe University
2. Charles Sturt University	19. Curtin University	27. Edith Cowan University	34. Macquarie University
3. Deakin University	20. Federation University Australia	28. Murdoch University	35. The University of New South Wales
4. Griffith University	21. Flinders University	29. RMIT University	36. University of Technology Sydney
5. James Cook University	22. University of Canberra	30. Swinburne University of Technology	37. Western Sydney University
6. Monash University	23. University of South Australia	31. The Australian National University	
7. Queensland University of Technology	24. University of Tasmania	32. The University of Adelaide	
8. Southern Cross University	25. The University of Western Australia		
9. The University of Melbourne			
10. The University of New England			
11. The University of Newcastle			
12. The University of Queensland			
13. The University of Wollongong			
14. University of Southern Queensland			
15. University of Sydney			
16. University of the Sunshine Coast			
17. Victoria University			

[10] Notably, Mixed Field Programmes represent a very small proportion of EFTSL in higher education and are foundation programs delivered by few institutions.

Table 1.3: Proportion of population captured by key university characteristics

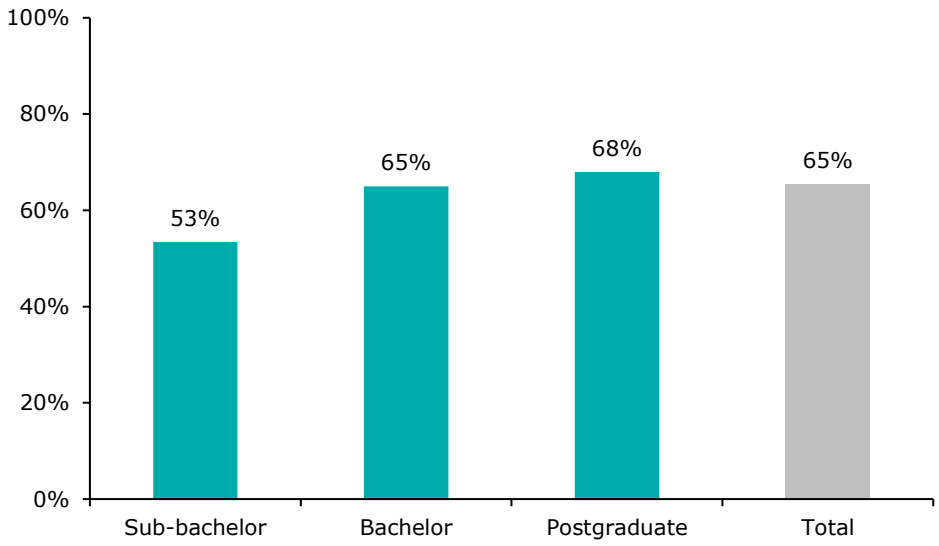
	2016 study (17)	2018 sample (25)	2019 sample (32)	Total sample (37)	Total population count
Regional[11]	56%	89%	100%	100%	9
Dual sector[12]	17%	50%	100%	100%	6
Smaller size	33%	83%	100%	100%	6
Affiliation					
Go8	50%	63%	88%	100%	8
IRU	29%	57%	71%	100%	7
ATN	0%	50%	75%	100%	4
RUN	67%	83%	100%	100%	6
Nil	58%	75%	92%	100%	12
State					
New South Wales	60%	60%	60%	100%	10
Victoria	50%	63%	88%	100%	8
Queensland	86%	86%	100%	100%	7
Northern Territory	0%	100%	100%	100%	1
Western Australia	0%	50%	100%	100%	4
South Australia	0%	67%	100%	100%	3
ACT	0%	50%	100%	100%	2
Tasmania	0%	100%	100%	100%	1
Multi-state	100%	100%	100%	100%	1

Note: Each cell percentage represents the proportion of universities with that characteristic captured by the sample. Smaller universities defined as fewer than 15,000 domestic enrolments. Parentheses in titles refer to the number of universities in the sample.

[11] Regional universities include: Charles Darwin University (2018 sample), Charles Sturt University (2016/18), Federation University Australia (2018), James Cook University (2016/18), Southern Cross University (2016/18), The University of New England (2016/18), University of Southern Queensland (2016/18), University of Tasmania (2018), Central Queensland University.

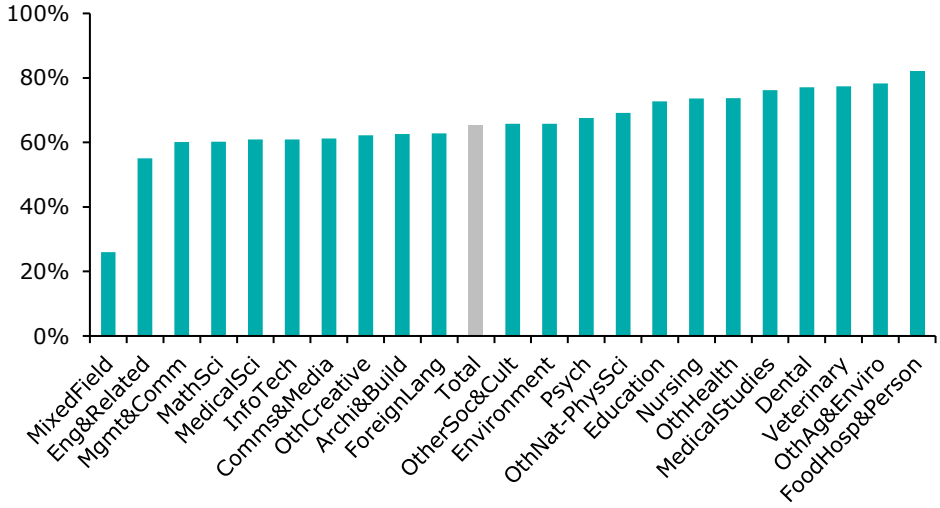
[12] Dual sector universities include: Charles Darwin University (2018 sample), Victoria University (2016/18), Federation University Australia (2018), Central Queensland University, RMIT University, Swinburne University of Australia.

Chart 1.1: EFTSL coverage of the 2018 sample by level (2017 EFTSL)



Source: Cth DET data. Note: Total EFTSL including domestic and international.

Chart 1.2: EFTSL coverage of the 2018 sample by field (2017 EFTSL)



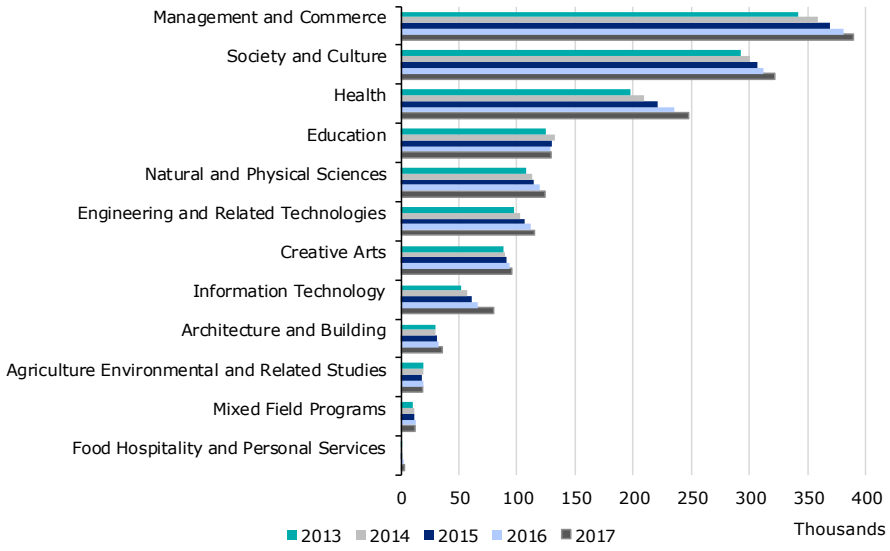
Source: Cth DET data. Note: Total EFTSL including domestic and international, and all levels of education.

1.4 Trends in higher education delivery

Demand for Australian higher education has been steadily increasing over recent years. Chart 1.3 describes the growth in student enrolments across the sector by broad (2-digit) fields of education. Notably, Information Technology grew by 53% over 2013-17, and Health by 25%. Agriculture, Environmental and Related Studies is the only field to have contracted over this period (-5%).

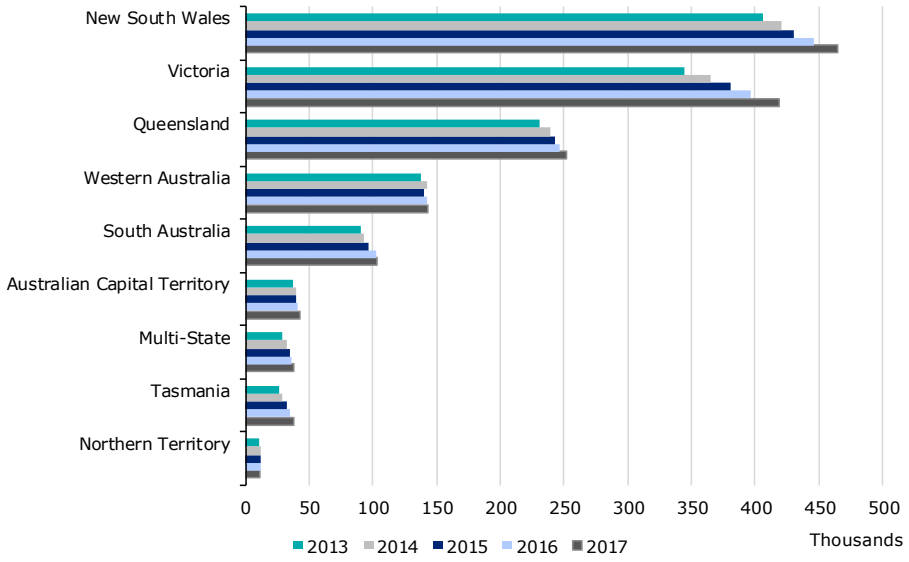
Over the same period, each state and territory has experienced positive growth, with enrolments in Tasmania growing by 41% and Victoria by 21%. The slowest were in Western Australia (4%), Northern Territory (6%) and Queensland (9%). Notably, since 2014 enrolments in Western Australia have only grown at around 1% year-on-year (Chart 1.4).

Chart 1.3: Student enrolments over time by field of education



Source: Cth DET data. Note: Total enrolments including domestic and international students, and all levels of education.

Chart 1.4: Student enrolments over time by state



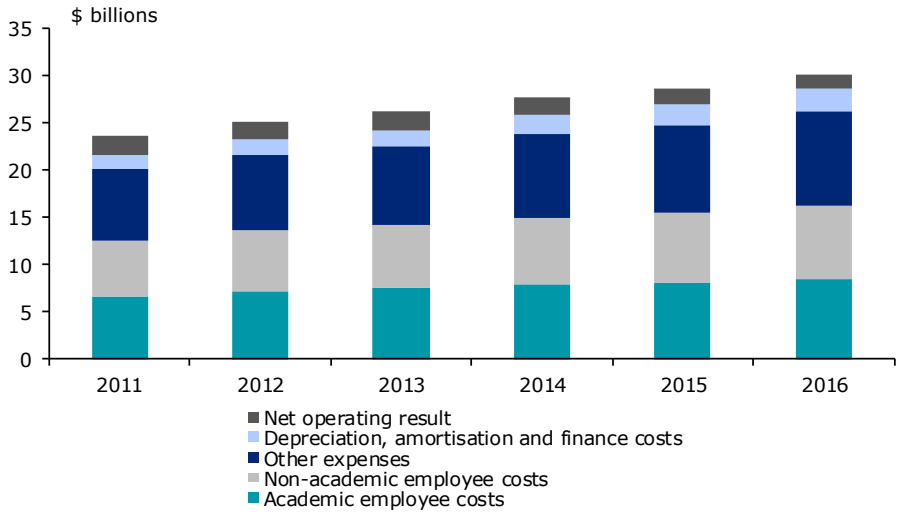
Source: Cth DET data. Note: Total enrolments including domestic and international students, and all levels of education

Sector-wide changes in aggregate financial measures (i.e. revenue and expenses) provide an instructive point of reference on the growth in costs for the university sector in recent years.

Total university expenses have increased on average by 5.7% each year over 2011-16 (Chart 1.5). The largest growth in expenses related to depreciation, amortisation and finance costs (8.2% year-on-year average), while net operating results have contracted by 4.1%, on average, for a total decline of 20% from 2011-16.

Labour costs contributed to 57% of total expenses (30% academic, 27% non-academic) in 2016, which has been relatively stable since 2011 (when it was 58% of total expenses).

Chart 1.5: Total expenses and net operating result for Australian public universities (2011-16)

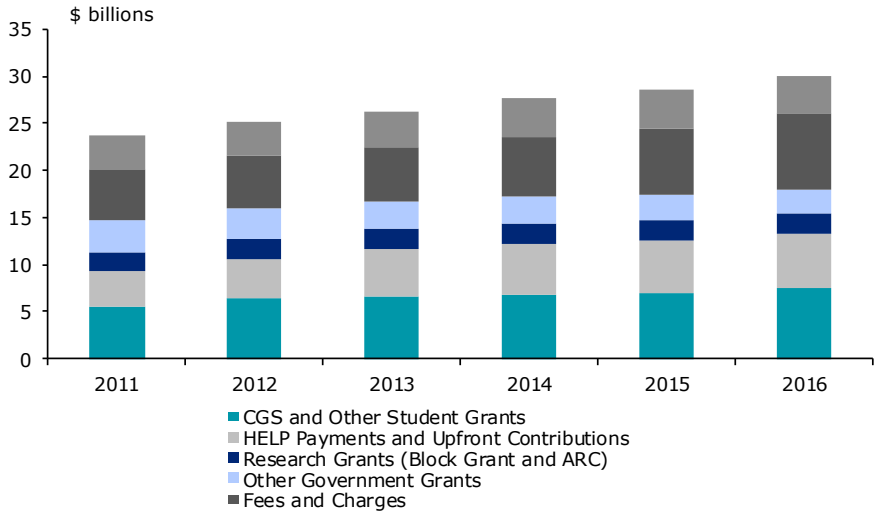


Source: Cth DET data

Over the same period, average revenue growth has been 5.0%, with the revenue sources experiencing the strongest growth being HELP payments and upfront contributions (8.7%) and fees and charges (8.0%). CGS and Other Student Grants grew by 6.5% a year on average over this period while Other Government Grants contracted on average by 5.1% each year over this time (Chart 1.6).

HELP payments[13] and upfront contributions increased from 16% of total revenues to 19% over 2011-13, but have since stabilised at 19% each year since. Fees and charges have consistently increased from 23% of revenue in 2011 to 26% in 2016.

Chart 1.6: Total revenue for Australian public universities (2011-16)

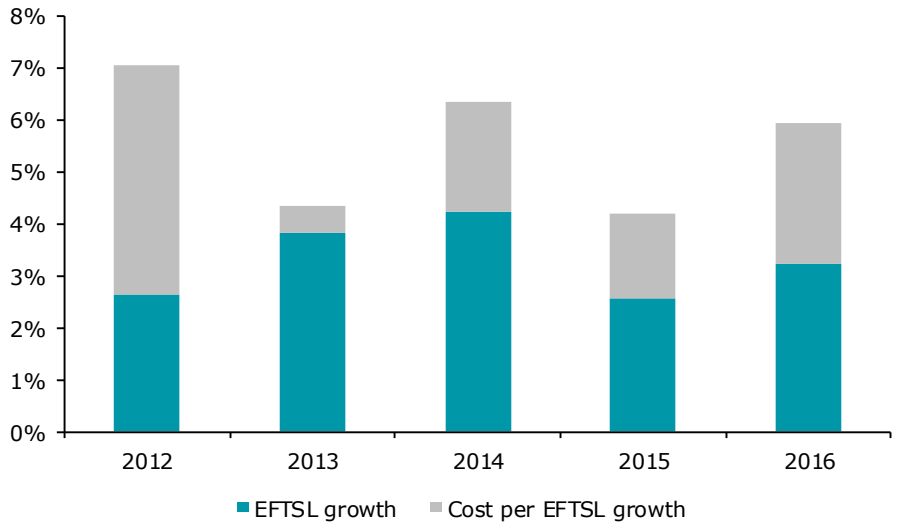


Source: Cth DET data

[13] Higher Education Loan Program (HELP) refers to a number of Commonwealth loan policies to support student contributions, as well as fees and other selected expenses related to study.

Growth in total costs can be decomposed between growth in total EFTSL (i.e. increases in student volumes) and growth in unit costs (i.e. increases in average cost per EFTSL). Chart 1.7 shows this decomposition and the variance the increasing unit costs have year-on-year. Since 2013, EFTSL growth has been the more significant driver of cost growth relative to increases in cost per EFTSL.

Chart 1.7: Cost growth decomposed by growth in EFTSL and growth in unit costs (2012-16)



Source: Cth DET data. Note: Total EFTSL including domestic and international, and all levels of education

These trends highlight the association between student enrolments and growth in costs in the sector as a whole and provide useful background for assessing changes in the costs of teaching and scholarship over time, which is examined in the following chapter.

1.5 Report structure

The remainder of the report is organised as follows:

- Chapter 2 – Reports the core quantitative analysis and key results, in terms of the costs of teaching and scholarship, including the distribution and variation across fields, levels and university contexts. This chapter also includes a comparison of costs between this study and the previous 2016 study, and analysis of 'below the line' costs.
- Chapter 3 – Presents a discussion of the key considerations, limitations and reflections regarding all aspects of the exercise, particularly on interpreting the results and the implications of any methodological decisions, as well as reflections from participant universities.
- Chapter 4 – Explores potential areas for improvement of this exercise in the future, including in the planned 2019 and 2020 iterations. This discussion also includes reflections and feedback from participant universities.

Appendix A also includes specific details on the structure of the costing template used for universities to submit their data.

2 Cost of teaching and scholarship

This chapter details the core quantitative analysis and results of the data collection on the cost of delivery of teaching and scholarship at Australian universities. This analysis extends upon the 2016 study by including:

- A larger sample of universities (25 compared to 17);
- A slightly more granular disaggregation of disciplines (22 compared to 19 in the 2016 study); and
- An approach for capturing the costs of teaching and scholarship that both allows for consistent comparisons with the 2016 study, and allows for supplementary analysis of some cost components that were either not captured or not captured consistently in the 2016 exercise including in-kind costs, third party and partnership costs and capital costs.

This chapter presents a series of results regarding the distribution and variability of costs – at the university, field and level of education level. Specific cost line items are analysed, and some exploration of systematic cost variations among key contextual factors or drivers is undertaken. However, unlike the 2016 report, this report does not seek to provide estimates of the reasonable costs of teaching and scholarship by field of education, or to use a regression framework to identify the size of particular cost drivers. The findings of the 2016 report in relation to these areas is summarised in Box 2.3 below.

In addition to collecting data from the sample of universities, an extensive consultation process was undertaken to: ensure that costs were allocated using a consistent methodology; validate the accuracy of the data provided; and understand potential reasons for variation within the sector.

A very small selection of field-level observations were excluded as outliers. This process is summarised in Section 2.2.

While the results of this 2018 study can be reasonably compared with those from the 2016 study, the sample is slightly different to 2016, hence results are presented with both a common sample across the two studies and the full 2018 sample. This is discussed further in Section 2.4. Importantly, the results in this report provide the base for this three-year exercise in understanding the costs involved in providing higher education.

The remainder of this chapter is structured as follows:

- Section 2.1 describes the distribution of costs within a university, including the total average cost.
- Section 2.2 presents the key cost distributions by field and level of education.
- Section 2.3 contrasts average costs with base funding levels.
- Section 2.4 compares the results of the previous section to those in the 2016 study, noting some caveats on comparability.
- Section 2.5 examines the addition of 'below the line' costs, which were introduced in this study to more fully capture the true economic costs of teaching and scholarship.
- Section 2.6 provides consideration of some of the contextual factors that may influence cost, informed by the 2016 study of cost drivers and consultation with the sector.

2.1 Distribution of types of costs

Total costs attributable to teaching

Australian public universities generate a range of outputs, including not only teaching and scholarship, but research, commercial activities and community outreach. Understanding the relative share of expenditure on teaching and scholarship relative to other activities is useful in

understanding the extent to which these activities consume university resources as well as the degree of variation across the sector.

As shown in Chart 2.1 below, on average, 53% of all university costs in 2017 were attributable to teaching and scholarship activities, as opposed to other university functions. Yet there remains considerable variation across universities. While 16 of the 25 universities had between 50-70% of total costs attributable to teaching, this figure ranged widely from 33% to 84% of total costs.

This reflects that, although universities have common functions and businesses operations, there is still significant variation in the share of resources dedicated to teaching and scholarship relative to other activities.

The average proportions of teaching cost by university affiliation highlight this point. Chart 2.2 shows a significantly lower average share of total expenses attributed to teaching for Group of Eight universities (42% compared to an average of 53%), which is likely to reflect their relative research-intensity and hence allocation of a greater share of expenses to research activities.

Other university groups have less varied average ratios of teaching to total cost, with the exception of the Regional Universities Network, which had a relatively high proportion of total costs allocated to teaching (72%).

Chart 2.1: Proportion of total costs attributable to teaching

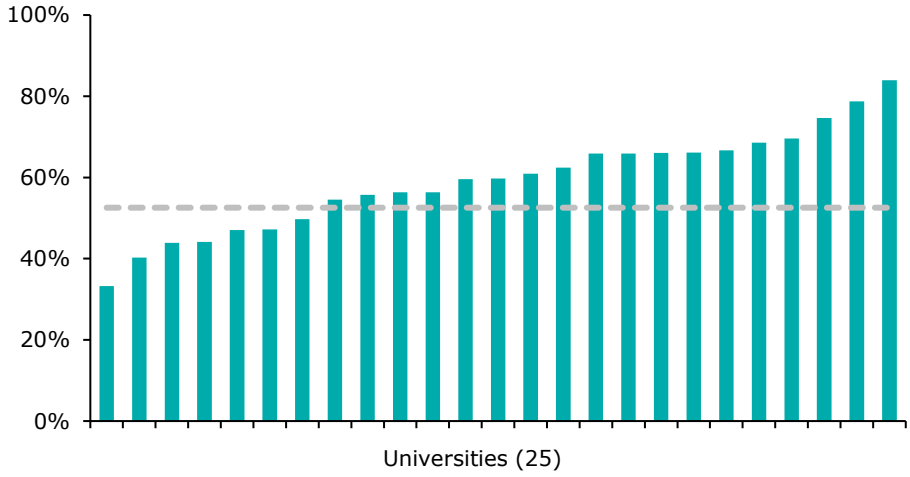
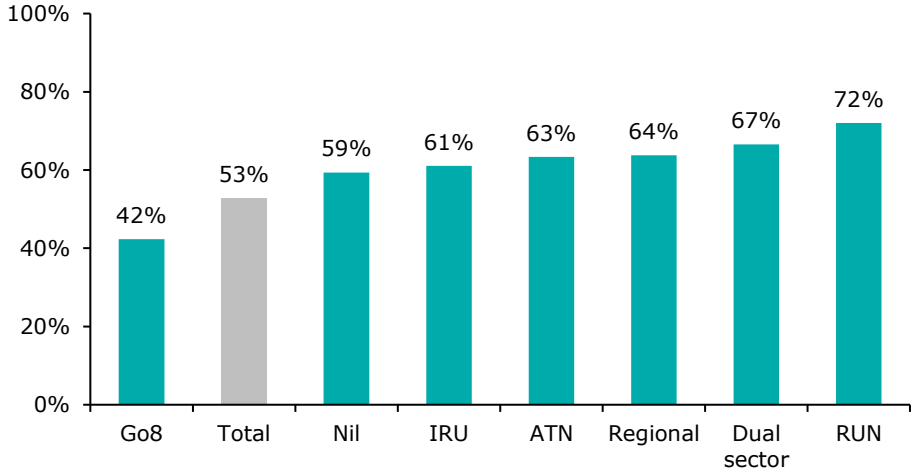


Chart 2.2: Proportion of costs attributable to teaching by university affiliation



Teaching costs attributable to staff

As a service industry, typically delivered face-to-face by highly skilled professionals, universities are highly labour intensive, and hence labour costs are likely to represent a significant contribution to total teaching costs.

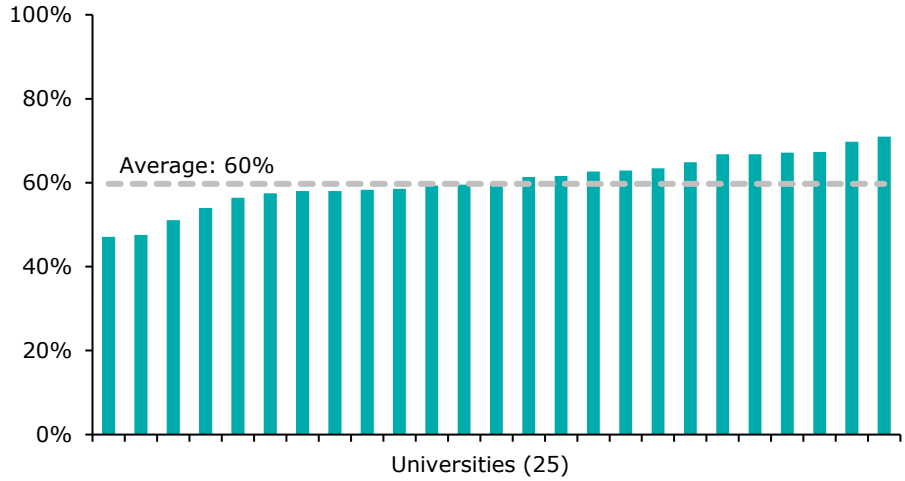
On average, 60% of teaching costs were attributable to staff,[14] with 22 of 25 universities (88%) having staff teaching costs between 50-70% of all teaching costs (Chart 2.3).

These proportions ranged from 47% to 71% of total teaching costs, which may represent variations in:

- Scale, where size allows for fewer staff per enrolment;
- Teaching and classroom practices, where some universities will adopt more intensive student-staff ratios;
- Discipline focus, where some disciplines require smaller class sizes or more intensive teaching;
- Differences in staff per student ratios across different levels of education, and corresponding variations in focus across levels; and
- Differences in mode of delivery with different modes of delivery potentially utilising a different mix of labour and capital inputs.

Notably, for 23 of 25 universities (92%), staffing costs accounted for greater than half of teaching costs, which emphasises the relative importance of labour costs, and subsequently, the impact that variations in the measurement and attribution of labour costs can have on the results of this exercise. These considerations are discussed in more detail in Section 3.2.

Chart 2.3: Proportion of teaching costs attributable to staff (versus non-staff)



Average unit teaching costs

The key outputs of this exercise relate to unit teaching costs, namely average costs per EFTSL, and the variation in these unit costs by field and level of education.

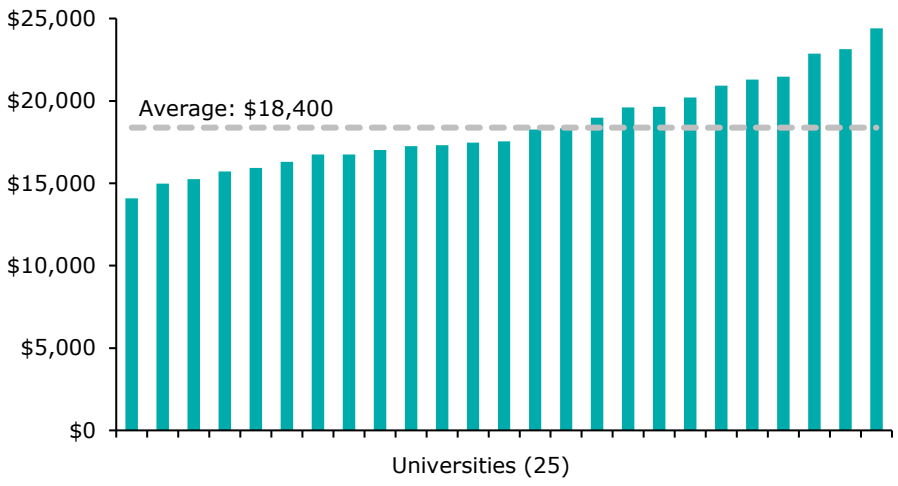
While the average unit cost is $18,400, Chart 2.4 shows that the average unit cost at each institution can vary, ranging from $14,100 (24% below average) to $24,400 (32% above average).

This variation represents, in part, the varied focus and contextual factors of universities across the sector. The following sections examine the degree of variation in unit costs across qualification levels and fields of education. Other drivers of variation are also examined, including:

[14] It should be noted that the true share of teaching costs attributable to higher education staff may be marginally higher as universities were asked to attribute teaching costs to third party providers under 'non-staff expenses'. Thus staff expenses (as described in this report) only represent costs associated with staff under the employment of the relevant university.

- Economies of scale, which is a well-recognised driver of cost, and may also reflect market demand, teaching requirements, geographical differences or 'thin markets'; and
- Contextual factors such as systematic differences in activities and costs between metropolitan and regional campuses/delivery.

Chart 2.4: Average unit costs by university (all fields and levels)



Note: This includes all data observations.

2.2 Costs by field and level of education

This section presents the costs of teaching and scholarship by field and level of education. Before discussing the results in detail, the first part of this section describes the sample size of each field and level of education and discusses the approach taken to addressing outliers.

Sample size for each field and level of education

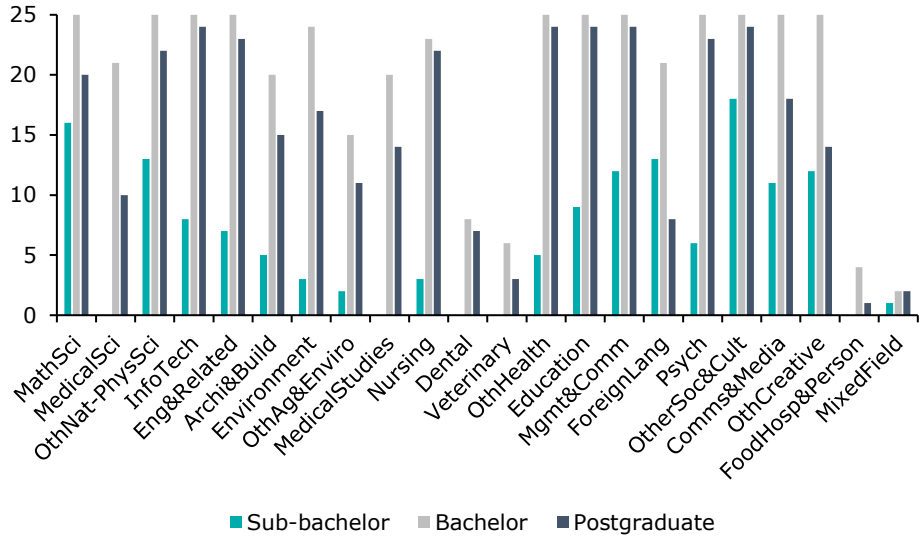
While universities offer a diverse and wide selection of disciplines and qualification types, some field and level combinations are significantly more common (e.g. Management and Commerce bachelor degrees are delivered at all 25 universities in the sample), while others are much less prominent, typically due to their specialist nature (e.g. Dental Studies, 8 of 25 universities). Chart 2.5 provides the sample size counts for each field-level combination.

In instances where a greater number of universities offer a specific field and level combination, there is greater confidence and robustness in the measurement of average costs. For costs with fewer respondents, while there is sufficient confidence in the individual data provided by each institution, there is greater uncertainty whether the results are reflective of the sector as a whole, or instead reflect university-specific factors.

To this point, sampling for sub-bachelor programs is systematically lower than bachelor and postgraduate, which is likely an accurate reflection of delivery in the sector, given the fewer number of products offered and lower enrolment numbers in total. Similarly, there are fewer observations for Food, Hospitality and Personal Services and Mixed Field Programmes, as these fields are typically a greater focus for vocational education providers.

The analysis in this report excludes a number of university results for field-level combinations that were deemed to be outliers to the extent that they are unlikely to reflect the true cost of delivery. The approach to identifying outliers is set out in Box 2.1 below, while Box 2.2 discusses how to interpret the 'Box and Whisker' plots used in subsequent sections of this chapter.

Chart 2.5: Sample of cost observations by field and level of education



Note: Maximum total count is 25. Excluding outliers with fewer than 5 EFTSL.

Chart 2.6: Count of outlier cost observations removed by field and level of education

Note: Outliers identified as cost observations delivered to fewer than 5 EFTSL.

Box 2.1: Data moderation process and exclusion of outliers

A moderation exercise was undertaken for each university upon receipt of the data. The goal of this exercise was to identify:

- any data entries that indicated an error had been made;
- any outliers across FOEs or universities that should be further investigated; and
- broad indicators of the results (such as relativities across FOEs, and spreads within FOEs) that may guide the analysis of the data.

The data was assessed for errors using standard data validation techniques. This included identifying any instances of negative costs or cost shares implied by the data, cost shares exceeding 100%, or salary costs exceeding threshold bounds. Where such issues were identified, universities were followed up with to resolve the issue. The information provided in the qualitative submissions was also reviewed and used to inform the moderation process.

Ultimately, following conversations and validation with participants, some costs observations remained outliers. In most cases, these were due to field and level observations with very low EFTSL counts resulting in both instances of relatively high and low cost per EFTSL.

Overall, average costs for all fields of education remained materially unchanged as a result of excluding outliers since excluded observations (both high and low) tended to be those with very small EFTSL. However, for field-level combinations where only a small number of university observations are available including outliers can result in a relatively large (and likely unrealistic) spread of costs per EFTSL and can result in averages that may not reflect the typical cost of delivery. The impact of excluded outliers on average costs by field of education is insignificant for most courses at the bachelor level but is a significant issue for courses at the sub-bachelor level where sector EFTSL by field is especially low.

To account for these effects, the average and distribution of results by field of education are presented after excluding outliers. This approach was consistent with the approach taken in the 2016 exercise. The following criteria were used to identify outliers, namely observations with:

- EFTSL counts of less than five;
- Costs per EFTSL of greater than $100,000 and an EFTSL count of less than 10;
- Costs per EFTSL greater than $300,000 (no observations this year were over this threshold); and
- Instances where participating universities have noted that costs for a field level combination are not representative and do not capture true costs for that field and level combination.

Observations that fell into any of the above categories were excluded in calculating the average and distribution of costs by field of education and level.

Box 2.2: Interpreting 'box and whisker' plots

Box and whisker plots are commonly used in statistical analysis to show both central points (i.e. medians or means) and the distribution, dispersion or variance of values. They usefully provide further detail on the range of values for groups of data and provide the reader with a sense of confidence or certainty regarding the representativeness of a central point.

For the purposes of this report:

- The central markers are measured at the mean of the distribution.
- The box includes half of all observations from the 25th to 75th percentile of the distribution.
- The whiskers cover the remaining half of all observations, from the minimum point to the 25th percentile (the lower edge of the box), and from the 75th percentile (the upper edge of the box) to the maximum value.

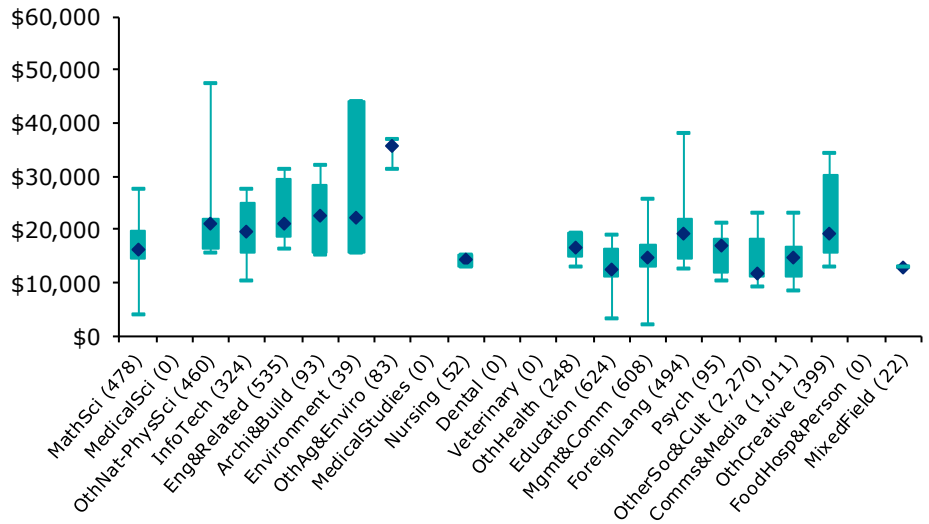
Field variation across sub-bachelor study

Different disciplines will likely have varying costs of delivery, as a reflection of differences in pedagogy, practical requirements and contextual settings.

Chart 2.7 presents the distribution of unit costs by field of education for sub-bachelor programs. Compared to estimates for bachelor and postgraduate, these costs have a relatively wide distribution of values. This is likely to be driven in large part by the small sample sizes in many fields of education with many universities noting that it was often difficult to disentangle costs for sub-bachelor students within an FOE from costs for bachelor level students.

Notably, there are a number of very high cost observations (over $40,000), including Other Natural and Physical Sciences and Environmental Science. Nonetheless average costs ranged between $10,000 to $25,000 per EFTSL for most fields except Other Agricultural, Environmental and Related Studies which had relatively few total EFTSL (39 EFTSL).

Chart 2.7: Average unit costs by field for sub-bachelor



Note: 144 cost observations across 20 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum.

Field variation across bachelor study

Chart 2.8 shows the average unit costs by field for bachelor studies. Unsurprisingly, the health science fields (Veterinary Studies, Dental Studies, and Medical Studies) comprise the three most costly fields, on average. Qualifications in these fields are known to involve intensive teaching delivery, higher capital and material costs, and placement costs.

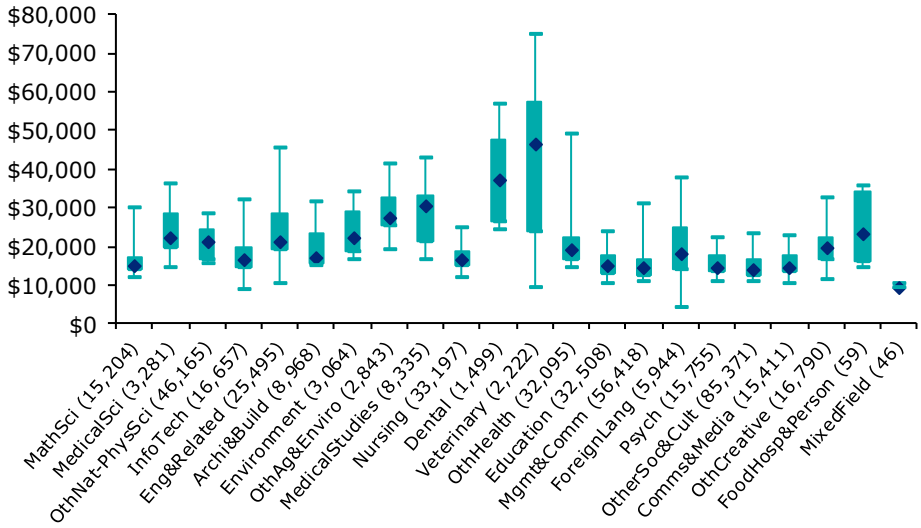
Other Agriculture and Environmental Studies is the next highest unit cost field, which is likely a reflection of higher capital costs, as well as potentially greater delivery in regional areas, with smaller scale and more student support requirements. Moreover, Chart 2.9 suggests three broad groupings of costs:

- Lower cost fields (10 fields) from $14,000 to $18,000, which appear to be more traditional 'classroom-based' fields;[15]
- Mid-range cost fields (7 fields) from $19,000 to $24,000, which appear to include qualification that may require greater material, practicum or applied components; and
- Higher cost fields (4 fields) from $27,000 to $43,000, as previously discussed.

Chart 2.8 presents the full distribution of unit costs by field of education for bachelor degrees. Notwithstanding differences in scale, the distribution of the 'boxes' are noticeably narrower than for sub-bachelor programs, which suggest greater similarity in the costs of delivery across institutions.

A number of fields such as Psychology, Nursing, and Communication and Media, among others, have very narrow estimates, which may also reflect a more standard approach to the delivery of teaching for qualifications in these fields. Higher cost fields typically also have greater dispersion in costs, for example Dental Studies and Veterinary Studies.

Chart 2.8: Distribution of unit costs by field for bachelor



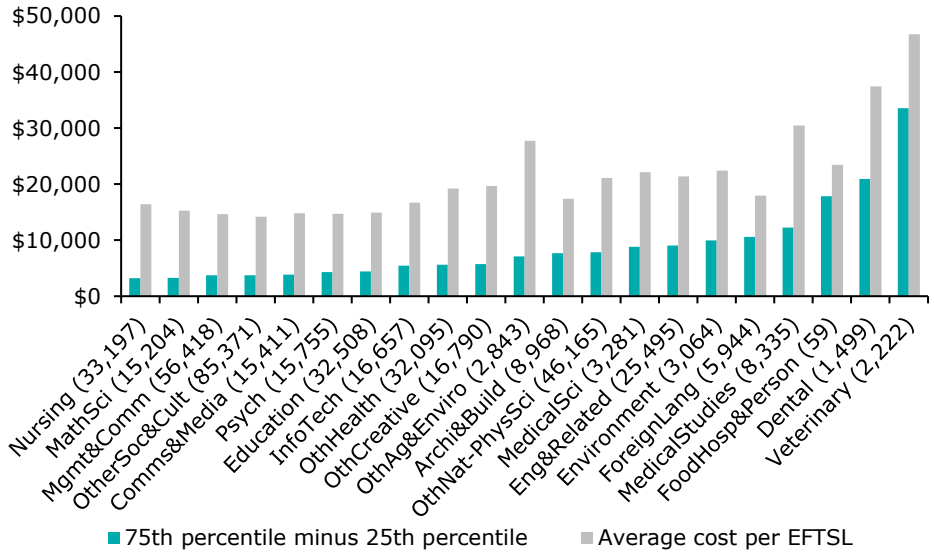
Note: 439 cost observations across 25 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum.

Within each field of education, there are varying levels of deviation or spread of costs across institutions. Chart 2.9 shows the difference in average unit costs between the 25th and 75th percentiles (a standard measure of deviation or dispersion). On average, this range is around $7,300.

[15] This excludes Mixed Field Programmes which was observed with very low unit costs (around $9,600), however, this was delivered by few universities and only for 46 EFTSL in total.

Notably, this variation is greatest among higher cost fields: Veterinary Studies has a variation of around $33,600, compared to around $3,200 for Nursing.[16] Large variations in cost may reflect a variety of drivers, including variations in ability to scale, standardisation of delivery, quality, product and investment lifecycles, among others.

Chart 2.9: Average unit cost and dispersion by field for bachelor



Note: 439 cost observations across 25 universities. Excludes Mixed Field Programmes due to insufficient observations.

Field variation across postgraduate study

Chart 2.10 presents the distribution of unit costs by field of education for postgraduate coursework degrees (excluding higher degree research students). As for bachelor degrees, the distribution of costs are relatively narrow compared to sub-bachelor and higher cost disciplines tend to typically have wider distributions compared to lower cost fields.

However, the full range of estimated costs are significantly wider than the estimates for bachelor degrees. In particular, there appear to be a number of university observations with relatively high average costs (compared to their peer institutions), and in many instances the maximum value (the top whisker) is substantially larger than the 75th percentile (the upper box).

For example, for Environmental Studies, approximately half of all universities have costs between $25,000 and $37,000, and more than three quarters have costs between $19,000 and $35,000 (a range of $16,000), while the highest cost university has a unit cost of $86,500, which is almost 200% larger than the average.

Consultations with universities and their accompanying statements provide some rationale for higher unit costs, and include:

- The introduction of a new school or course program to the university, where the costs of delivery are expected to moderate in future years, alongside reduced upfront costs and increasing scale;
- Higher costs associated with advanced and modern facilities and equipment required to deliver a quality program; and
- Low enrolments and/or class sizes, among others.

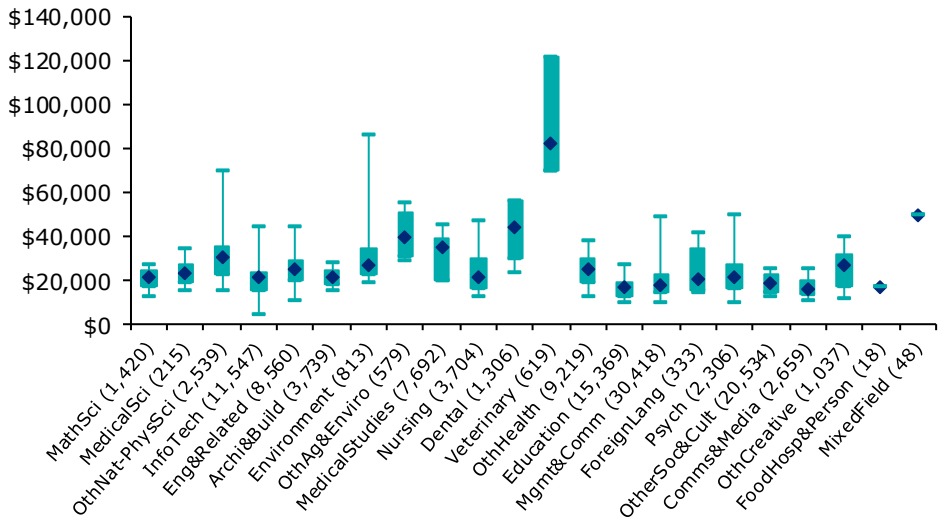
Similarly, the rationale for lower than average unit costs include:

[16] This variation is substantially larger than the variation in average costs. For example, the variation in average costs between these two fields is around 300%, while the variation in dispersion is around 1000%.

- Larger share of delivery online, reducing the amount of staff hours;
- Courses with relatively inexpensive teaching formats; and
- Large enrolments and/or class sizes, among others.

Notably, the above rationale are generally applicably to all levels of education.

Chart 2.10: Average unit costs by field for postgraduate



Note: 350 cost observations across 24 universities. Outliers excluded. Marker at mean, box width between 25th and 75th percentile, and tails at minimum and maximum.

Variation between levels

Consultations with universities suggested some systematic variation in costs by levels of education. Chart 2.11 shows a higher cost for postgraduate studies of 28%, or around $4,900 higher, on average compared to bachelor studies across fields. This may reflect more specialised and intensive qualifications, smaller class sizes, more senior teaching staff, among other reasons.

Similarly, there is a lower cost for sub-bachelor studies of -8%, or around $1,400 lower, on average compared to bachelor studies across fields. This variation may be driven by systematic differences in the delivery of higher or lower cost fields (which earlier analysis suggests).

Notably, eight of 25 universities indicated they were unable to systematically attribute costs between levels of education for a given faculty or school. In other words, these universities had generally equivalent costs for each of three levels in a given faculty or school. In many of these cases, universities simply used EFTSL to separate costs within faculties or schools and across levels, such that costs per EFTSL were equivalent for all levels of study. Thus, any difference within a field of education was driven solely by the different mix of faculties or schools within an FOE.

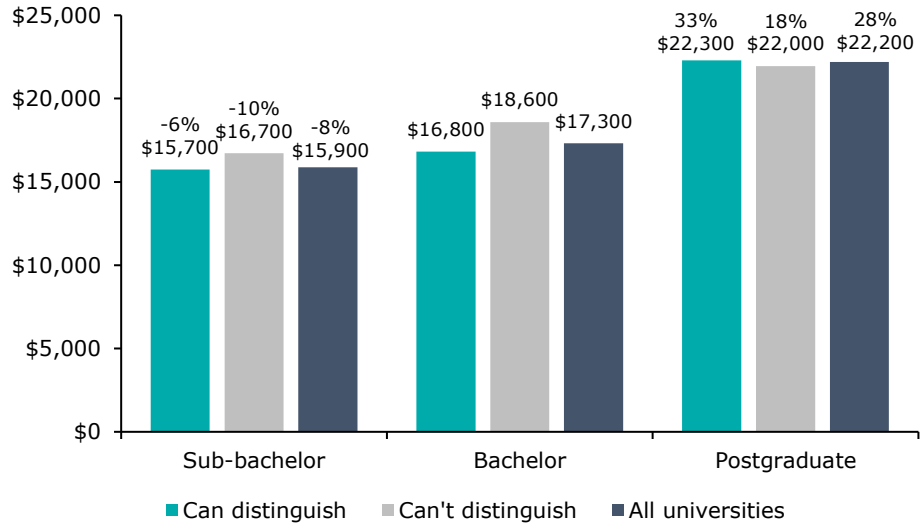
These limitations were raised in consultations and accompanying statements by universities and should be considered when comparing unit cost calculations between levels for a given field. Where a university has assumed a constant unit cost, this will lead to convergence in costs between levels, but in other instances, where a university has used a cost allocation methodology that captures variation in costs between levels, variation may be higher.

Chart 2.11 describes the variation in costs between those universities that could, and those that could not typically distinguish between costs at different levels of education. The variation in average cost between these groups for postgraduate studies is relatively small (around $200), while the variation is larger for sub-bachelor and bachelor studies (around $1,400 and $2,000 respectively).

Notably, the difference in average unit costs between sub-bachelor and bachelor study is similar for those that can and those that indicated they could not distinguish between levels of education within a faculty or school. This may be contrary to expectations given these universities were able to more accurately identify variation between levels of education. However, there was a larger difference between postgraduate and bachelor level costs for those universities who indicated they were able to distinguish differences in costs by level of education at a faculty or school level than those that could not.

Overall, the evidence suggests that there was a reasonable degree of variation between costs by level even for universities who indicated they were unable to distinguish differences in costs at a school or Faculty level. While some of this difference reflected a difference in the enrolment mix in terms of FOE for different levels of study, these universities still often had differences in costs by level within an FOE, reflecting the fact that FOEs often capture enrolments in more than one school or Faculty.

Chart 2.11: Average unit costs by level of education



Note: 'Can distinguish' includes 17 universities, 'Can't distinguish' includes 8 universities. Outliers excluded.

2.3 Comparing costs to base funding levels

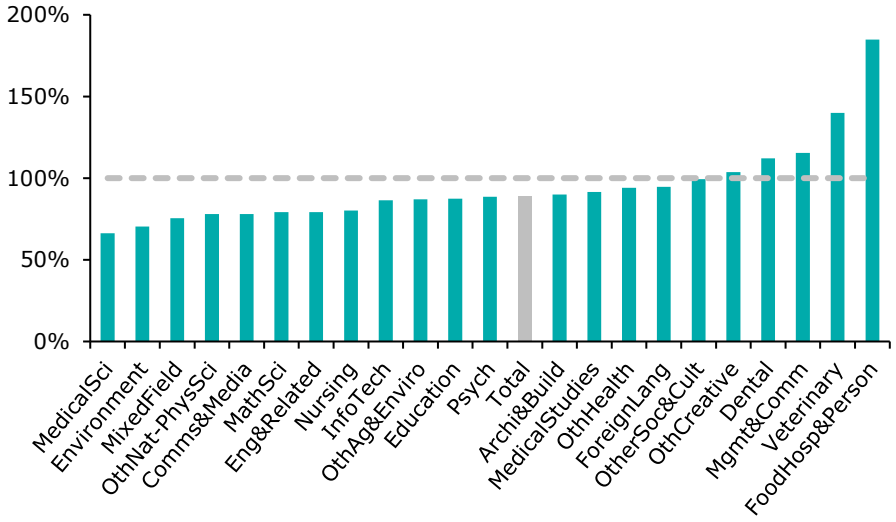
As a broad measure of funding adequacy at the field level, previous studies have examined the relativities between average unit costs and average base funding according to CGS classifications.

Importantly, caution should be taken in drawing inferences regarding the sufficiency of CGS funding from these results. While not specifically stated in the Higher Education Support Act 2003, there is a general view that CGS funding is intended to cover some level of base research activity (which was excluded from the definition of teaching and scholarship costs used in this study), and the cost of such research may vary as a proportion of teaching costs.

On average, the cost of delivering teaching and scholarship for bachelor studies was 89% of the average base funding across all 25 institutions (Chart 2.12). A number of fields had an average cost greater than average funding. These included Food, Hospitality and Personal Services (185%), Veterinary Studies (140%), Management and Commerce (116%), Dental Studies (112%) and Creative Arts – Other (104%).

Fields such as Food, Hospitality and Personal Services, Veterinary Studies and Dental Studies were delivered at a relatively small scale and by only a few universities. Among larger fields, Management and Commerce and Creative Arts – Other receive a relatively low amount of base funding per EFTSL.

Chart 2.12: Average unit costs as a proportion of base funding for bachelor (full sample)



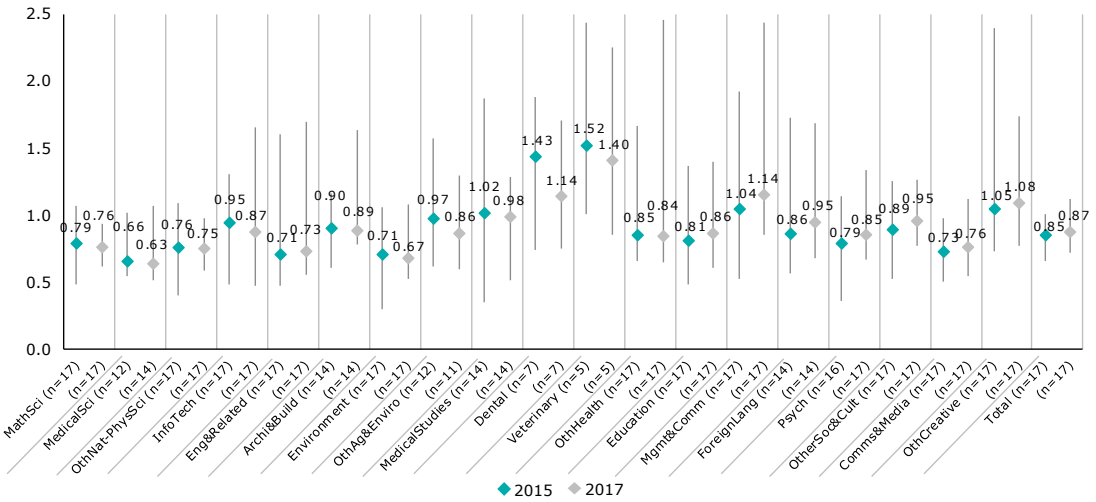
Common sample

Among universities that participated in the 2016 study (i.e. comparing a common sample), the average proportion of bachelor teaching costs relative to base funding was 87% in 2017, compared to 85% in 2015, which represents a small increase in this value (Chart 2.13).

For the common sample, among the 19 fields that are directly comparable, eight experienced decreasing cost-to-funding ratios, eight increased and three were relatively stable (within one percentile point). Four fields experienced movements greater than 10 percentile points.[17]

- Management and Commerce increased from 104% to 114% (increase of 10 percentage points);
- Dental Studies decreased from 143% to 114% (decrease of 29 percentage points); and
- Veterinary Studies decreased from 152% to 140% (decrease of 12 percentage points); and
- Agriculture, Environmental and Related Studies – Other decreased from 97% to 86% (decrease of 11 percentage points).

Chart 2.13: Distribution of the average unit costs to base funding ratio in comparison to the 2016 study for bachelor, common sample



Note: Marker at average value, lines represent range from minimum to maximum. Notably, these results only include universities that participated in both the 2016 study and this exercise.

[17] Noting that these figures vary to the full sample discussed earlier.

2.4 Comparing costs to the 2016 study

The average cost across all fields and levels of education in 2017 was $18,100 (for universities common to the 2016 study), which is 5.9% or around $1,100 higher than the average cost of $17,000 in 2015.

In the case of bachelor degree students, the average cost per EFTSL rose from $16,200 in 2015 to $16,900 in 2017, a 4.6% increase for the common sample.

Only three fields experienced decreasing unit costs over this time: Medical Sciences, Dental Studies and Other Agriculture and Environmental Studies. Notably, the largest unit cost increases in percentage terms were mostly in relatively low cost fields.

Chart 2.15, Chart 2.16, and Chart 2.17 describe the changes in averages and distribution of average unit costs across each field and level of education, among universities common to both studies. At a high level, many of the central points and ranges of dispersion are relatively similar across years.

Chart 2.14: Comparing average costs between 2016 and 2018 studies by field (all levels), common sample

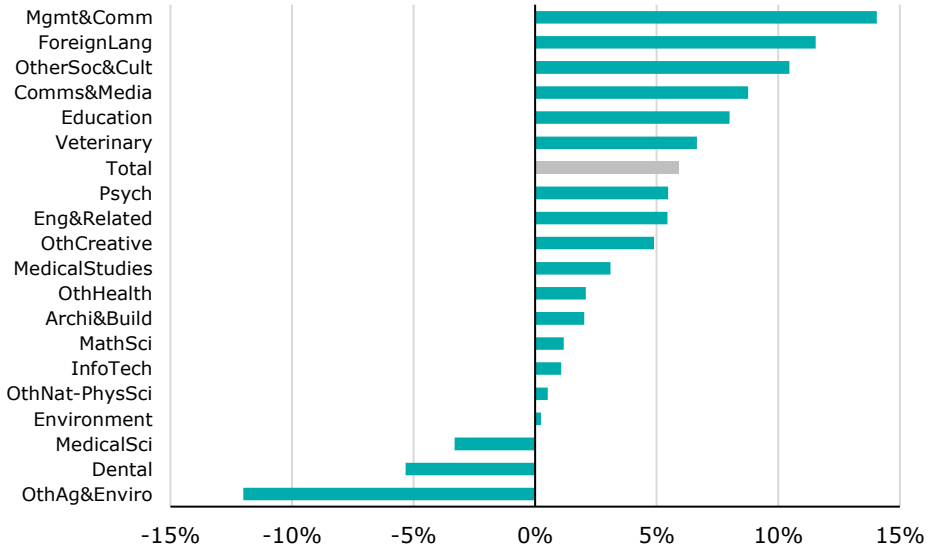
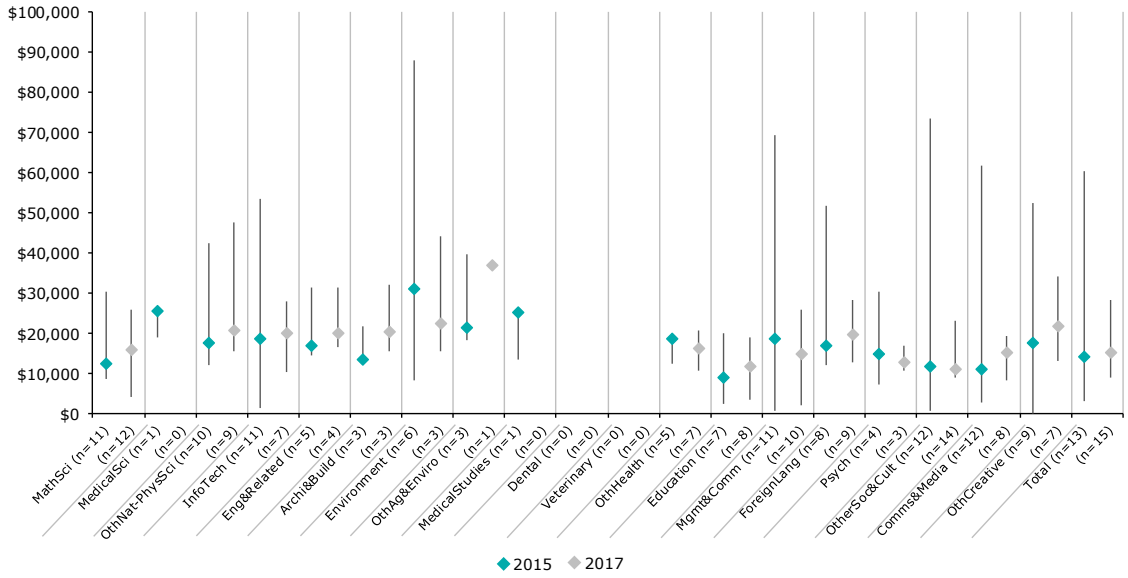
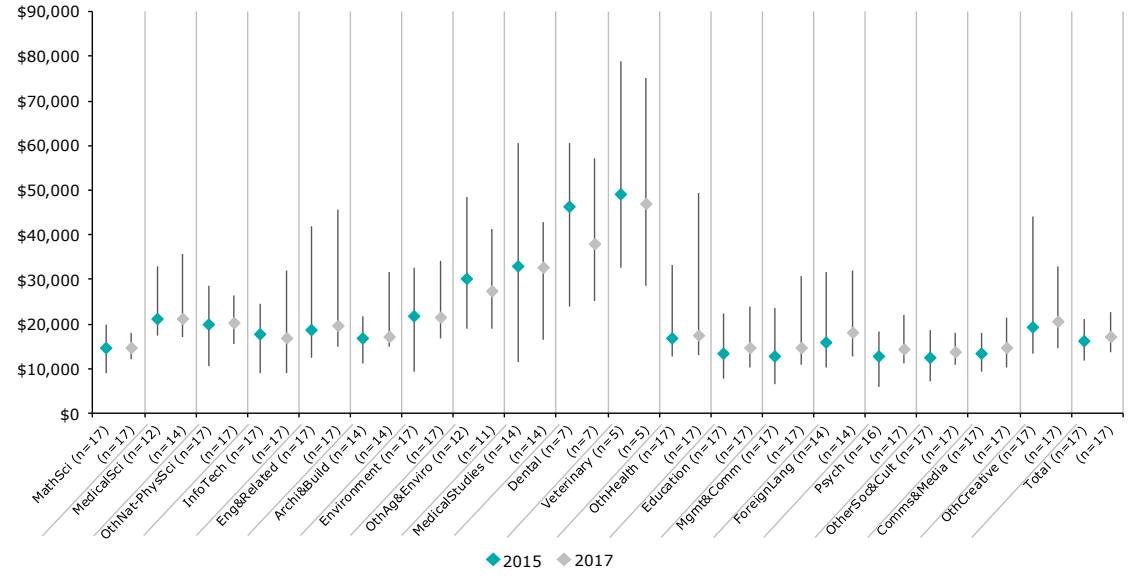


Chart 2.15: Comparing costs between 2016 and 2018 studies for sub-bachelor, common sample



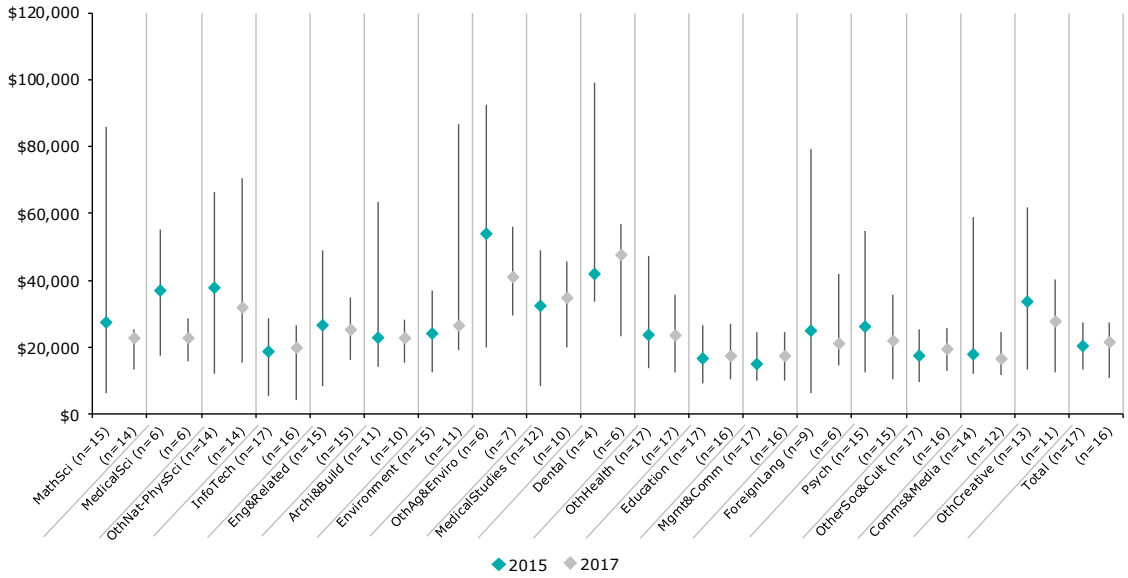
Note: For comparability, only the 17 universities common to both studies are included. Markers are at mean.

Chart 2.16: Comparing costs between 2016 and 2018 studies for bachelor, common sample



Note: For comparability, only the 17 universities common to both studies are included. Markers are at mean.

Chart 2.17: Comparing costs between 2016 and 2018 studies for postgraduate, common sample



Note: For comparability, only the 17 universities common to both studies are included. Markers are at mean. Veterinary science has been excluded from the above chart.

The figures in Table 2.1 show that the average cost per EFTSL of bachelor level study rose from $16,200 in 2015 to $16,900 in 2017 for the same sample of universities, an increase of 4.6% as shown in Table 2.2. Average unit costs for the full sample of 25 universities was slightly higher at $17,300 but broadly similar (given that the full sample includes the universities in the common sample). Growth in postgraduate cost grew at a faster rate over the last two years of 6.4% for the common sample.

The previous 2011 and 2016 reports estimated a 'field weighted mean' cost per EFTSL by weighting average cost per EFTSL for each field of education by total EFTSL enrolled at public universities. This approach was adopted in 2011 to estimate the cost per EFTSL given the relatively small sample. The sample of universities in the current study is largely representative of the whole university sector, but field weighted means referred to as 'whole sector means' have been presented alongside sample means to allow comparability with past reports.

Table 2.1: Average unit cost per EFTSL

		2010	**2015**	**2017**	
	FOE mix	8 universities	17 universities	Full sample (25)	Common sample (17)
Bachelor	*Actual*	$15,100	$16,200	$17,300	$16,900
	Whole sector	$15,000	$16,000	$17,200	$16,800
Postgraduate	*Actual*	$17,400	$20,500	$22,200	$21,800
	Whole sector	$17,000	$20,100	$21,600	$21,400
Total	*Actual*	$15,500	$17,000	$18,400	$18,100
	Whole sector	$15,400	$16,800	$18,200	$17,800

Note: 'Actual' FOE mix refers to unit costs based on the actual mix of enrolments in the specified sample, 'whole sector' refers to the unit costs re-weighted by the mix of enrolments across all universities.

Table 2.2: Growth over time in average unit cost per EFTSL

		2010 - 2015	2015 - 2017	
	FOE mix	17 universities	Full sample (25)	Common sample (17)
Bachelor (CAGR)	*Actual*	7.6% (1.5%)	6.9% (3.4%)	4.6% (2.2%)
	Whole sector	6.7% (1.3%)	7.1% (3.5%)	5.1% (2.5%)
Postgraduate (CAGR)	*Actual*	18.1% (3.4%)	8.2% (4.0%)	6.4% (3.1%)
	Whole sector	18.1% (3.4%)	7.8% (3.8%)	6.6% (3.2%)
Total (CAGR)	*Actual*	10.1% (1.9%)	7.9% (3.9%)	5.9% (2.9%)
	Whole sector	9.5% (1.8%)	7.9% (3.9%)	6.0% (3.0%)

Note: Results in parentheses reflect compound annual growth rates over the relevant period. 'Whole sector' refers to the field weighted mean cost per EFTSL reported in the 2011 and 2016 reports. In order to account for the relatively small samples in these studies the average cost per EFTSL for each field of education was weighted by total EFTSL enrolled at public universities. 'Actual' FOE mix refers to unit costs based on the actual mix of enrolments in the specified sample.
Source: Deloitte Access Economics and Department of Education and Training.

Table 2.3 benchmarks the changes in teaching costs per EFTSL since 2015 to changes in expenditure by the sector since 2015 for the common sample, all universities sampled in 2018, and all public universities based on university financial data reported to the Department of Education and Training. In total, continuing expenditure rose by between 10.6% to 13.0% across these groups. Labour expenditure grew at a similar rate given that labour is a key input to operating costs for universities.

However, over this period, EFTSL also rose by between 3.0% and 4.7% (largely driven by growth in non-Commonwealth supported students) so that continuing expenditure per EFTSL rose by 6.7% for all universities and by 8.2% for the common sample. Given that overall teaching costs per EFTSL for all levels in the common sample grew by 5.9%, this suggests that changes in teaching and scholarship costs have grown broadly in line albeit slightly less than changes in overall expenditure.

Growth in teaching costs for the common sample has exceeded growth in base funding levels per EFTSL over the last two years, with base funding per EFTSL growing by 3.4% on average. This difference is the main driver of the increase from 2015 to 2017 in the average proportion of bachelor teaching costs relative to base funding (see Section 2.3).

Importantly, while the growth in costs per EFTSL for the common sample provides a valid comparison over time for a common sample of universities, it is not strictly a measure of cost per EFTSL for the sector over time. It is possible that growth in cost per EFTSL may differ for universities not in the common sample. The figures in Chart 2.3 suggest that changes in continuing expenditure per EFTSL have not differed vastly for the sector as a whole relative to the common sample. This indicates that the growth in costs for the common sample is likely to be a reasonable proxy for changes in costs over time for the sample as a whole.

Table 2.3: Change in costs between 2015 and 2017

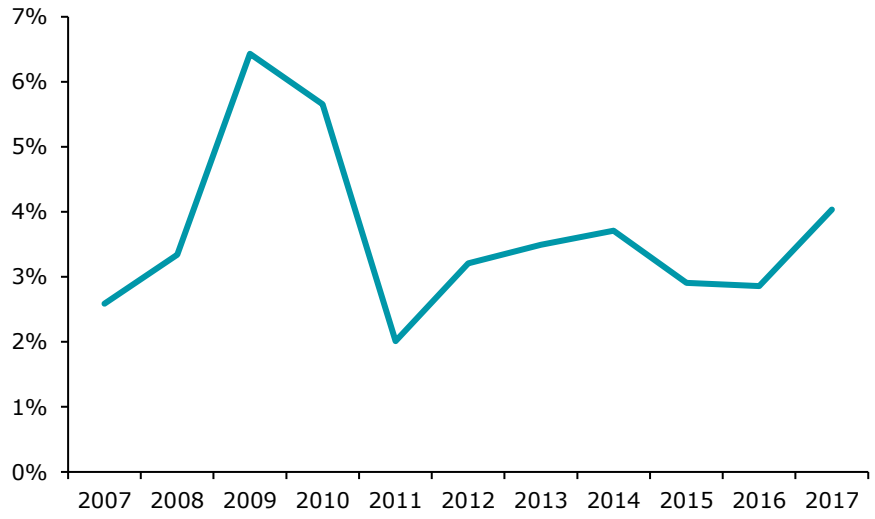
% growth 2015 to 2017	Common sample (17 universities)	Full sample (25 universities)	All universities
Teaching cost per EFTSL - all levels	5.9%	7.9%	
Teaching cost per EFTSL - bachelor	4.6%	6.9%	
Teaching cost per EFTSL - postgraduate	6.4%	8.2%	
Total EFTSL	4.4%	3.0%	4.7%
Continuing expenditure per EFTSL	8.2%	7.4%	6.7%
Base funding (CGS+SCA per EFTSL)	3.4%	3.3%	

Source: Deloitte Access Economics and Department of Education and Training.

The results presented in Table 2.2 indicate that between 2015 and 2017, total teaching costs for the common sample grew by 3.1% annually or just below the 4% increase in total university costs per EFTSL for the common sample. By comparison, over the period from 2010-2015, teaching costs grew by 1.9% per EFTSL while total university costs per EFTSL grew by approximately 3%. These figures suggest that teaching costs between 2015 and 2017 have grown at a rate that is closer to the rate of growth in overall university expenses than between 2010 to 2015.

A number of possible factors were explored that might have driven growth in teaching costs over the last two years. It was possible that the growth in staff costs may have been the result of a lagged response to faster growth in student load over recent years. However, Chart 2.18 highlights that EFTSL growth has remained relatively steady since 2011, and remains well below the 2009 peak.

Chart 2.18: EFTSL growth, common sample, 2007 to 2017



Note: EFTSL data for all students (domestic and overseas). Excludes postgraduate research, enabling and non-award courses.
Source: Department of Education and Training.

To further examine potential reasons for the increased growth in teaching costs since 2015, more detailed analysis of individual cost line items was undertaken. Table 2.4 compares the growth in

cost per EFTSL since 2015 for key line items included in the Transparent Costing Worksheet. Among the common sample of universities, staff costs attributable to teaching and scholarship grew by 10.1% per EFTSL, driven by increases in academic staff costs. There was a degree of variation in individual results across universities, with five institutions reporting growth in teaching and scholarship staff costs of greater than 20%.

Non-staff costs attributable to teaching and scholarship grew at a comparatively slower rate, increasing by 1.4% over the same period. Eight universities reported a decline in non-staff costs attributable to teaching and scholarship.

Table 2.4 also benchmarks the growth in reported teaching and scholarship costs against all university costs (including research). Although growth in total teaching and scholarship costs (6.3%) is in-line with growth in all university costs (teaching, scholarship and research, 8.2%), universities have reported proportionally high growth in staff-related teaching and scholarship costs compared to non-staff costs.

Table 2.4: Change in costs per EFTSL between 2015 and 2017, common sample, by line item

	Teaching and scholarship costs	**All costs (teaching, scholarship, research)**
Staff costs	10.1%	6.7%
Academic staff	13.9%	
Casual academic staff	8.5%	
Non-academic staff	7.5%	
Non-staff costs	0.5%	10.1%
Depreciation, amortisation, repairs, maintenance, borrowing, bad debts	2.5%	
All other	-0.1%	
Total costs	5.9%	8.2%

Source: Deloitte Access Economics and Department of Education and Training.

A number of possible factors could explain the growth in staff-related teaching and scholarship costs between 2015 and 2017 (which have grown more quickly than staff costs for the sector overall). In total, the number of FTE employees in the sector grew by 4.5% across all institutions and 4.7% in the common sample – similar to the pace of growth in EFTSL presented in Table 2.3.[18] This suggests that staff to student ratios have remained relatively steady. The growth in number of FTE employees implies average wage growth across the sector between 2015 and 2017 of 5.7% for the common sample and 6.1% for the sector.

One possible explanation for growth in teaching and scholarship staff costs exceeding all staff costs is that growth in FTEs could have been stronger for staff whose primary focus was teaching. The Department of Education and Training publishes information on FTE numbers by in the sector through the *Selected Higher Education Statistics – 2017 Staff data* tables. However, given that 82.3% of FTEs are classified as either 'teaching and research' or 'other' (which would capture administrative staff), it is difficult to ascertain whether there has been an increase in teaching FTEs for these categories.

The data suggests has been a continuation of growth in teaching only FTEs which has occurred since 2009. However, the share of teaching only FTEs only rose from 3.1% to 3.8% over this period so cannot fully account for the 3.4% difference between teaching costs per EFTSL and total

[18] Department of Education and Training (2017), *Selected Higher Education Statistics – 2017 Staff data*.

costs per EFTSL for the common sample in Table 2.4. The number of research only FTEs (who make up 13.6% of total FTEs) has stabilised since 2015, after growing on average by 1.6% per annum between 2010 and 2015.

Thus there does appear to have been a small shift towards teaching only rather than research only positions between 2015 and 2017. This suggests that it is possible that growth in teaching staff costs could exceed the growth in total costs. However, given the share of teaching only positions in the sector rose by 0.7% of total FTEs, this alone is likely to account for a small part of the observed difference between growth in teaching and total staff costs.

To investigate this issue further, universities that reported growth in labour costs of more than 20% per EFTSL and negative growth in non-staff costs were contacted for clarification. Explanations provided by universities in response included:

- Changes to the costing model structure and methodology. For example, some staff costs relating to shared services such as finance, human resources and IT systems were previously listed under 'other central costs' which were classified as non-staff costs. The removal of a separate component for non-staff costs in 2017 resulted in a reallocation of these costs towards staff.
- One university noting that high growth in total expenditure combined with a significant decline in research expenditure has resulted in a larger proportion of overheads being allocated to teaching activates in 2017 compared to 2015.
- Academic workload and support staff focus being increasingly directed towards teaching.
- 2017 data including the effects of recently completed EBA negotiations (which involved a marked increase in superannuation entitlements for short-term contract staff).

These observations indicate both the reasons for high staff cost growth at specific institutions, and also more broadly that some expenses previously captured as non-staff costs are now being correctly captured as staff costs. Importantly, the latter does not impact estimates of teaching and scholarship costs in total.

There was no single definitive explanation identified for the increased growth in teaching costs relative to the 2010 to 2015 period. As noted by Deloitte Access Economics (2016), the sample in the 2010 exercise differed from that in 2015 and thus differences in reported growth trajectories may reflect the differences in the sample of universities captured. It is also not unreasonable to expect that universities have chosen to increase their expenditure on teaching overall the last two years at a rate that remains broadly in line with overall growth in expenditure.

2.5 Examining costs 'below the line'

As part of the consultation process undertaken at the outset of this study involving the university sector (see Box 1.1), two areas were identified where the true cost of teaching and scholarship may not be captured by standard financial or statutory reporting, and therefore were not captured in the previous study's costing template structure.

To recognise these potentially material costs, two additional line items were included in the updated costing template, namely 'in-kind' costs, and 'additional partnership' costs. These items were included 'below the line', to reflect that they would not be expected to reconcile to statutory reporting, and would likely need to be estimated rather than calculated from an institution's financial reporting.

Notably, the baseline analysis in this report does not include either of these costs items to ensure consistency with the previous exercise and given that relatively few institutions reported these costs. They are not included in the comparison to base funding levels in Section 2.3.

Overall, below the line items had a relatively small impact on total teaching and scholarship costs. On average costs were 0.82% higher as a result of including these two items (Table 2.5). Reported costs against these items were provided by only eight universities (three for in-kind, and five for partnership costs). It should be noted that some universities indicated difficulty in accurately

identifying and measuring these costs to a level of confidence where they could be reliably included in the template. This was particularly the case for 'in-kind' costs.

Table 2.5: Total average impact of 'below the line' costs on teaching and scholarship costs

	Impact on cost per EFTSL	*% impact on total teaching and scholarship costs*
In-kind costs	+$73	+0.40%
Third party and partnership costs	+$77	+0.42%
Total below the line costs	+$151	+0.82%

In-kind costs

In-kind costs reflect non-monetary exchange of good and services in return for teaching and scholarship services, which if not for the existing 'quid pro quo' nature, a university would face a financial cost. These arrangements may, for example, involve the shared use of another institution's staff or resources for the purposes of teaching and scholarship, in exchange for the use of buildings or facilities.

Three universities reported in-kind costs across 15 fields of education (Table 2.6), resulting in an average increase of $73 (or 0.40%) in cost per EFTSL.

The impact on cost per EFTSL is less than 1% across 14 of the 15 reported fields. The Medical Studies field is the clear exception, in which in-kind costs were equivalent to a $1,373 (or 4.1%) increase in cost per EFTSL.

Table 2.6: Impact of in-kind costs on total teaching and scholarship costs

Field of education	*Impact on total cost*	*Impact on cost per EFTSL*	*% impact on total teaching and scholarship costs per EFTSL*
MathSci	+$130,000	+$8	+0.05%
MedicalSci	+$156,825	+$45	+0.20%
OthNat-PhysSci	+$238,752	+$5	+0.02%
InfoTech	+$91,600	+$3	+0.02%
Eng&Related	+$1,250,900	+$36	+0.16%
Archi&Build	+$35,000	+$3	+0.01%
Environment			
OthAg&Enviro	+$2,500	+$1	+0.00%
MedicalStudies	+$22,010,856	+$1,373	+4.14%
Nursing	+$3,457,133	+$93	+0.55%
Dental	+$381,345	+$136	+0.33%
Veterinary			
OthHealth	+$3,779,680	+$91	+0.44%
Education	+$2,778,400	+$57	+0.36%
Mgmt&Comm	+$209,747	+$2	+0.01%
ForeignLang			
Psych	+$1,079,984	+$59	+0.38%
OtherSoc&Cult	+$5,514,617	+$51	+0.34%
Comms&Media			
OthCreative			
FoodHosp&Person			
MixedField			
Total	**+$41,117,338**	**+$73**	**+0.40%**

Additional partnership costs

In some instances, universities may arrange for a third-party organisation to deliver teaching for EFTSL that is attributable to, and reported by the university. Costs incurred directly as a result of third party delivery arrangements (such as administrative costs) have previously, and continue to be included appropriately 'above the line'. However, some universities identified particular arrangements, whereby the full cost of teaching related to EFTSL attributable to the home institution would not be captured in statutory reporting, or the existing template.

An example provided by some universities was in instances where the third party collects some or all student fees. In these cases, costs incurred in teaching these students would not be fully reflected in continuing expenses for the home institution for the relevant EFTSL.

A major drawback to including these additional third party costs is that they are unlikely to be observed by the home university. As such, universities were asked to use forgone revenue as a proxy for these costs which may overstate costs if partners make an average operating surplus on teaching these students.

In line with this definition, reported additional partnership costs in 2017 resulted in an on average $77 (or 0.42%) increase in cost per EFTSL. The largest impacts were on Information Technology ($310 increase per EFTSL or 1.66%) and Management and Commerce ($174 or 1.1%).

Table 2.7: Impact of additional partnership costs on total teaching and scholarship costs

Field of education	*Impact on total cost*	*Impact on cost per EFTSL*	*% impact on total teaching and scholarship costs per EFTSL*
MathSci	+$1,342,135	+$78	+0.49%
MedicalSci			
OthNat-PhysSci	+$272,831	+$6	+0.03%
InfoTech	+$8,918,164	+$310	+1.66%
Eng&Related	+$41,820	+$1	+0.01%
Archi&Build	+$954,845	+$74	+0.39%
Environment	+$6,766	+$2	+0.01%
OthAg&Enviro			
MedicalStudies	+$5,732	+$0.4	+0.001%
Nursing	+$1,160,977	+$31	+0.18%
Dental			
Veterinary			
OthHealth	+$1,043,326	+$25	+0.12%
Education	+$5,150,287	+$106	+0.67%
Mgmt&Comm	+$15,354,869	+$174	+1.10%
ForeignLang	+$139,086	+$20	+0.11%
Psych	+$165,317	+$9	+0.06%
OtherSoc&Cult	+$6,114,790	+$56	+0.37%
Comms&Media	+$2,015,817	+$105	+0.69%
OthCreative	+$787,514	+$43	+0.21%
FoodHosp&Person			
MixedField			
Total	+$43,474,276	+$77	+0.42%

2.6 Consideration of contextual factors

This section examines the extent to which variation in costs across universities is correlated with specific contextual factors. In particular, it explores the degree to which cost varies based on different EFTSL sizes, between metropolitan and regional universities and for research intensive universities.

It is important to note that although universities with certain characteristics (e.g. regional universities) may, on average, have different costs to the rest of the sector, this correlation could be driven by a range of factors other than purely input costs. For example, higher costs on average could be due to differences in staff student ratios, scale effects or the need to provide additional support for students.

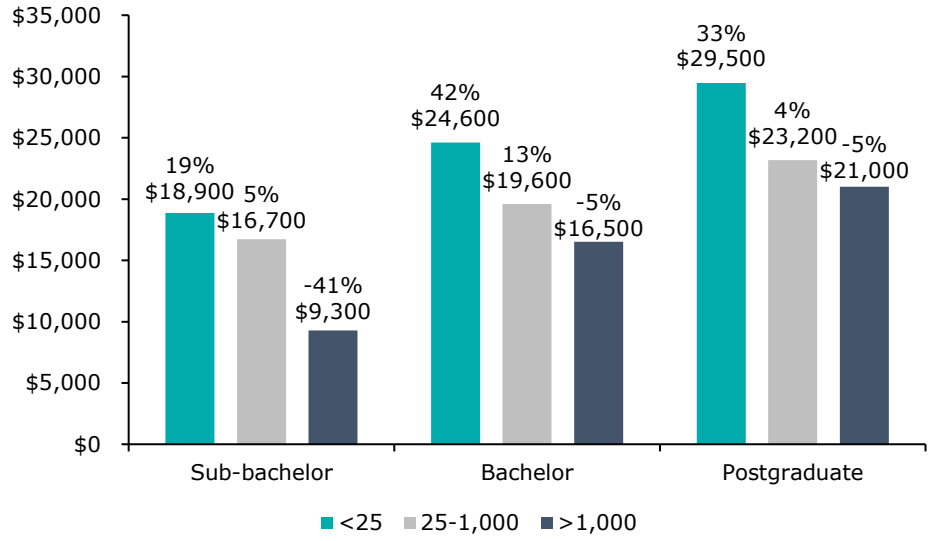
Variation by scale of delivery

The previous 2016 exercise included a detailed econometric analysis of the drivers of cost (see Box 2.3 below). A key finding from this analysis and report was the significance (statistically and

materially) of scale as a determinant of unit costs. This point was reiterated throughout the consultation process and by universities in their accompanying statements.

Chart 2.19 provides further evidence for the existence of 'economies of scale' in provision of higher education, whereby an increasing quantum of teaching delivery is associated with declining unit costs, and conversely, delivery at small-scale is correlated with higher average costs per EFTSL.

Chart 2.19: Unit costs and deviation from average using different EFTSL thresholds, by level



Note: % indicates deviation from average cost per EFTSL for the given level. Outliers excluded.

Box 2.3: Drivers of cost from *Cost of delivery of higher education (2016)*

The 2016 study had a broader scope that included the identification of the drivers of higher costs. Regression analysis was used to identify these cost drivers by (1) statistical significance and (2) magnitude of correlation. This type of analysis allows for the correlation effects to be disentangled among multiple competing drivers of a single outcome (in this instance, cost per EFTSL).

The key identified drivers that had a significant effect on costs:

- **Staff-student ratios** (teaching FTE/student EFTSL) which was correlated with higher costs, reflecting labour as a key factor in the cost of teaching. Notably, this driver was consistently the largest determinant of cost.
- **Scale** (total student EFTSL) was correlated with lower costs, indicating some scale efficiencies, although the statistical significance weakened after controlling for additional drivers (particularly as some of this effect is likely to be captured through staff-student ratios).
- **Regionality** (proportion of regional EFTSL) correlated with higher costs (even after controlling for scale), suggesting that in addition to thin market costs, regional provision involves greater costs.
- **Casualised workforce** (proportion of casual FTE) correlated with lower costs, which may reflect more adaptive workforces.

Other cost drivers were considered but were generally not found to be statistically significant drivers of cost after controlling for other factors :

- **External delivery** (proportion of external mode EFTSL) was correlated with lower costs, which may reflect efficiencies in online and off-campus delivery but was not statistically significant.

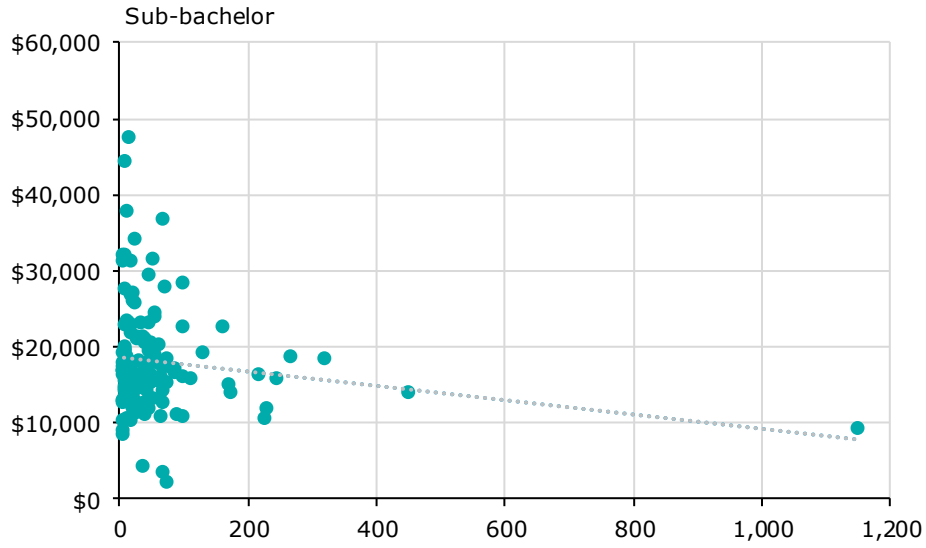
- **International students** (proportion of EFTSL that comprised overseas students) was correlated with higher costs, however this effect was not statistically significant.
- **Research intensity** (level of HDR research) correlated with higher costs, however this effect disappeared after controlling for fields of education. This may suggest that research intensities are partly reflecting systematic differences in costs across fields.

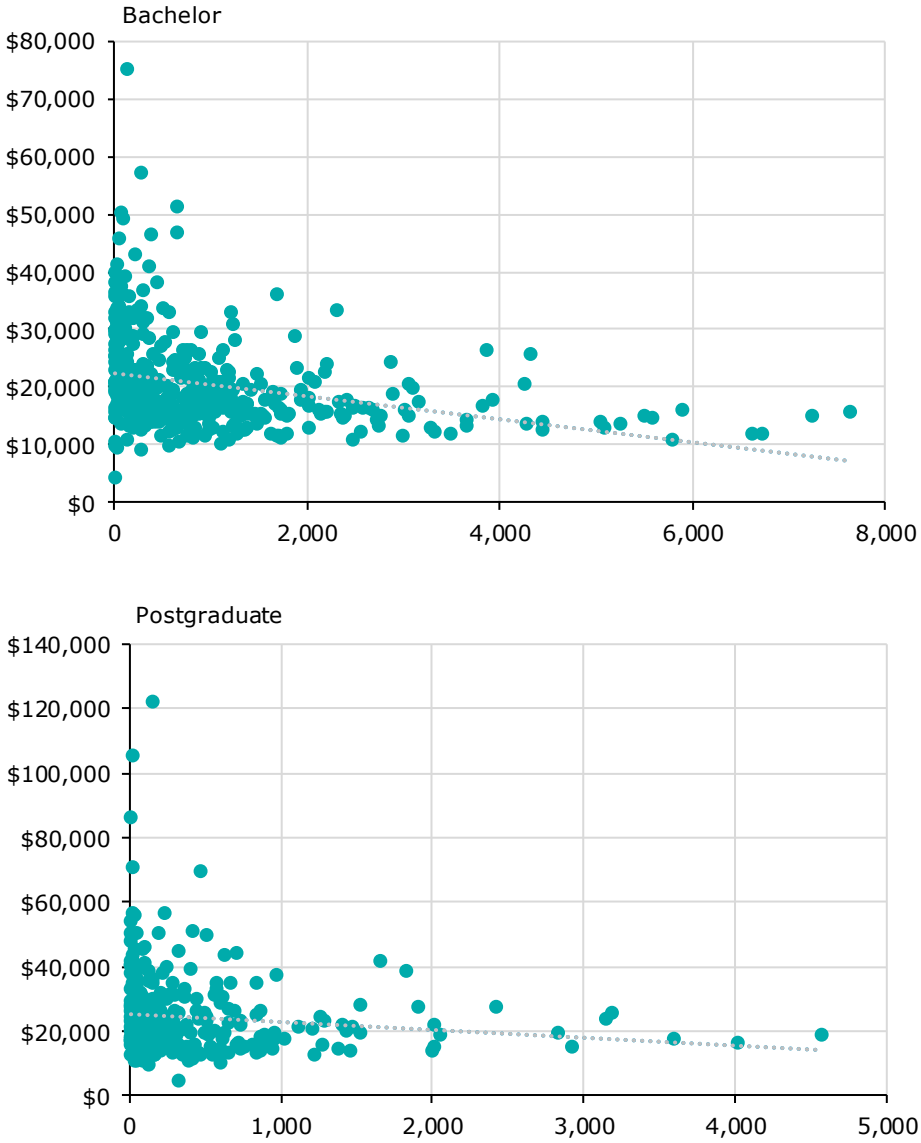
Notably, the key cost drivers remained generally statistically significant even after controlling for fields of education, which suggests these are common cost drivers, rather than reflections of idiosyncrasies among fields.

Furthermore, the analysis showed stronger field effects versus institution effects, which suggests that there are stronger variations in cost between disciplines than universities, which may be unsurprising given a regulated funding environment and wide scopes of delivery.

Chart 2.20 describes the negative correlation between scale and cost, whereby increasing total EFTSL is associated with decreasing unit costs for each level of education. Notably, the highest cost observations are all delivered in instances of smaller EFTSL.

Chart 2.20: Correlation between scale and unit costs





Note: Each marker represents a unique university field-level cost observation. Line of best fit included.

Variation between metropolitan and regional institutions and those with a greater degree of research focus

Universities that predominately operate in more regional settings often face distinctive local contexts, including:

- Less readily available scale economies due to thin markets and lower populations;
- A higher share of distance or online learning;
- Potentially lower per unit capital and/or labour costs; and
- A greater need for student support as many regional universities may cater to a more disadvantaged student cohort.

Overall, the cost per EFTSL for regional universities was found to be 5.5% higher than metropolitan universities after controlling for differences in the enrolment mix in terms of FOE and differences in the mix of enrolments across different levels of study between the two groups. However, results varied by level of study. Costs per EFTSL at regional universities were found to be 10.1% higher for bachelor degree students but 5.9% lower for postgraduate students than for metropolitan universities.

Universities with a greater focus on research activity may also have differential costs of teaching to other universities. This may arise due to more senior staff tending to be involved in joint teaching and research functions, the lack of efficiencies that may arise from employing teaching-only staff, as well as other higher cost resources (such as facilities or equipment) used for both teaching and research, which may be more prevalent when a university has a research-focus. Alternatively, it is possible that some institutions with a greater research focus may allocate a greater proportion of available resources to research relative to teaching.

After controlling for differences in student load by FOE and the proportion undertaking different levels of study across Group of Eight (Go8) and non-Go8 universities, cost per EFTSL was found to be 2.1% higher on average for Go8 universities. Go8 universities had a cost per EFTSL that was 2.8% higher on average for bachelor degree students and 0.8% higher for postgraduate students than other institutions. This suggests that there is a relatively small difference in average teaching costs between Go8 and non-Go8 universities.

3 Discussion and key limitations

This chapter complements the quantitative analysis in the previous chapter by highlighting a number of key considerations that are important in interpreting the results. The qualitative discussion and quantitative findings together comprise the totality of the evidence-base for readers. The chapter also outlines some important limitations and caveats of the analysis, and includes some broader reflections from universities on the data collection process. This discussion draws heavily on the consultation process with universities as well as the supporting statements provided by universities to accompany their data submission.

The remainder of this chapter is structured as follows:

- Section 3.1 presents the key considerations for interpreting the quantitative analysis, including the relevant limitations and instances where potential deviations from true costs are more likely to arise.
- Section 3.2 reflects on the apportioning of costs to major activities by universities, in particular, the approach universities have taken to identifying and separating teaching and scholarship costs from research.
- Section 3.3 discusses the treatment of capital costs and they have been included in this exercise.
- Section 3.4 provides some reflections on the use of top-down versus bottom-up methodologies, and the extent to which these methodological considerations may create biases in the results.
- Section 3.5 summarises some of the other issues raised by universities during this process.

3.1 Key considerations in interpreting the analysis

The key limitations in this analysis are described in Table 3.1. These limitations were recognised at the outset of this exercise and are ongoing challenges faced by that exercises of this nature. Importantly, strategies have been undertaken to minimise their impact over time, including working with universities to improve the accuracy of their cost allocation processes.

Table 3.1: Key limitations of the exercise

Limitation	Detail and implication
Accurately separating university functions to teaching, scholarship, research and other.	An ongoing challenge is the accurate attribution of costs between teaching and research functions and costs for universities, recognising that these are often interrelated. A number of universities identified difficulties in systematically and consistently identifying staff time (as an input to splitting FTE costs) related to research and scholarship, and employed a range of methods from broad based assumptions, workload models, detailed timesheets and activity based costing models. Due to differences in university processes and ability to apportion staff time, there was not a prescribed methodology, but rather a set of principles described for universities to employ.
Cost variation between levels within the same field.	A number of universities (eight of 25) noted that while they were able to isolate costs between different fields of education, they

Limitation	Detail and implication
	were not able to separate costs between levels – that is, costs specific to each level within a given faculty or school. In these instances, unit costs were identical within the same faculty or school and were often similar across levels within a field of education (depending on the mix of schools and faculties within a given field), and hence the results are likely to have a convergence in costs between levels. This is discussed in more detail in Section 2.2.
Identifying specific FOE costs within a given school or faculty or relevant business unit.	Some universities noted a level of convergence between certain fields of education, where they were unable to systematically separate costs specifically between those fields. This is particularly pertinent for universities that undertook a top-down approach using relatively large business units (e.g. a small number of faculties, compared to a larger number of schools). As costs may be allocated using only an EFTSL driver this can lead to the same unit costs being applied to several different fields. However, in many instances, universities stated that these fields do indeed have very similar costs of delivery of teaching. This issue is discussed in more detail in Section 3.4.
Differences in methodology across universities, including broad method and use of cost drivers.	While the collection exercise was governed by a standardised template and guidelines, there was nevertheless variation in the methodology used across universities. The level of sophistication and ability to identify appropriate cost drivers to allocate costs is likely to influence the overall accuracy of each university's cost observations.
Incorporation of quality.	In measuring the cost of delivery of teaching and scholarship, this exercise only considers quantity of teaching as the unit to distribute costs. This exercise does not capture variations in quality (however defined), where higher quality may be correlated with higher costs. Relatedly, this exercise also does not make adjustments for differences in student cohort mix, specifically differences in average student needs and levels of disadvantage. Some universities are likely to systematically enrol more students with greater need for student supports, which will in turn result in higher costs. As a result, there is likely to be a degree of variation in costs across the sector due to contextual factors and differences in quality across the sector and across FOEs.
Difficulties in specifying and isolating certain cost items.	Differences in internal processes and systems across universities meant that some universities were unable to identify specific costs that aligned with the line items specified as part of the costing template. The implication of this is that the examination of some specific line items may not be accurate in instances where a university

Limitation	Detail and implication
	was unable to separate costs appropriately (and where costs were instead included elsewhere in the template). While this does not impact the overall unit cost calculation, it does caveat any comparison of specific costs, e.g. when comparing specific line items of non-staff costs. For this reason, analysis of these items has not been a significant focus of this report.

3.2 Reflections on splitting teaching and research

The split of staff time between teaching and research activities[19] was an area where there was large variation in approaches across universities. While some universities had staff survey data that allowed a relatively detailed understanding of staff time, or used workload allocation models (which were used by the majority of universities), others made more high-level assumptions in the absence of similar data. In some cases, this was based on estimates at the whole-of-faculty level, while others based estimates on enterprise bargaining agreements that specify a division of time, and which may vary in accuracy across staff levels and disciplines. Four universities indicated that the split of staff time was largely based on enterprise bargaining agreements.

The allocation of academic time is a critical assumption in separating the costs of teaching and scholarship from research. Thus, differences in approaches to estimating this can affect individual university results. Nevertheless, the evidence provided in Chart 2.2 suggests that the share of teaching and scholarship expenses as a share of total expenditure is largely as expected. This share is lower for the research intensive Group of Eight universities, and higher for regional universities who are typically less research intensive and receive less fee income from international students.

3.3 Treatment and accounting for capital costs

The approach to capturing capital costs related to teaching and scholarship was raised by universities, both through the Universities Australia reference group and forum, and through individual consultations and supporting statements.

The approach used in the 2016 study to capture capital costs was to include the costs of depreciation, amortisation, repairs and maintenance, borrowing costs and bad debts associated with teaching and scholarship. This represents the standard accounting-based approach to capturing capital costs. Some universities raised concerns about this approach noting that:

- in some cases the application of accounting standards or treatments meant that reported depreciation levels were not consistent with what the university considered to be the true level of depreciation of its assets; and
- current reported levels of depreciation did not reflect the cost of replacing those assets due to functional obsolescence and changes in technology, which meant that future capital expenditure is likely to exceed current depreciation levels.

These issues were discussed in a 2007 OECD working paper entitled *On the Edge: Securing a Sustainable Future for Higher Education*. The report focuses on the concept of a "Full Economic Cost", which encompasses:

- consumption of assets (depreciation);
- renewing assets;
- financing (costs of capital); and

[19] For those academic staff classified as 'teaching and research' as well as non-academic staff tasked with supporting teaching and research academic staff.

- risk.

The report suggests that in order to be sustainable, universities must generate appropriate operating surpluses such that the full economic cost is recovered. The OECD report also argues that it is appropriate for universities to plan for an ongoing operating surplus, which it notes would normally be 3-4% of income to finance strategically planned investment, rather than the replacement of existing buildings:

"In any event, future investment needs should be determined by institutional strategic plans, not simply renewing historic infrastructure, some of which may be no longer required..."

The OECD report cites the UK example of the Transparent Approach to Costing (TRAC) methodology. TRAC was first implemented in the UK in 2000, following a national survey of university infrastructure. Since its introduction, the method to determine the cost of capital, and appropriate surplus, has developed over time. The current iteration of TRAC-UK establishes a so-called Margin for Sustainability and Investment (MSI). Importantly, this is institution-specific, rather than a sector-wide benchmark, as discussed in the TRAC guidance for 2016-17 returns:

"The MSI provides an institution-specific margin that is based on an average of past financial performance and forecast performance. This will reflect each institution's own financial strategy and is based on an agreed definition of the 'Earnings Before Interest, Taxation, Depreciation and Amortisation' (EBITDA)."

While relevant to a discussion of university finances more broadly, the adoption of an equivalent to the MSI in the Australian context should be the result of a specific and deliberate policy discussion that is outside the parameters of the current project. From the UK experience, establishing a process for an appropriate margin would require a significant amount of preparatory work, to understand current asset stocks and building maintenance backlogs, for example. In particular, the precise margin for sustainability is likely to vary across the sector reflecting each universities' strategic plans and position in the capital investment cycle.

To inform this discussion, and to understand the potential data that future research might draw from, a series of questions were posed to universities in the supporting statement to understand:

- Whether universities saw the recorded levels of depreciation and amortisation and repairs and maintenance in their financial statements as reflecting the true costs of these items;
- Whether universities had developed longer term capital expenditure plans;
- How they expected their capital expenditure profile to compare in the medium term relative to recent years; and
- The extent to which it would be feasible to allocate future capital expenditure associated with teaching and scholarship to individual FOEs.

This approach ensured that the costs of depreciation and amortisation, repairs and maintenance, borrowing costs and bad debts associated with teaching and scholarship continued to be captured in the main part of the Transparent Costing Worksheet in a way that was consistent with the 2016 exercise. At the same time the consultations and supporting statements were used to gather information on the extent to which these items were reflective of actual capital costs in the sector, and to understand the potential scope to adopt a different approach to capturing capital costs in future exercises. A summary of this information is provided below.

Depreciation

Half of the universities that responded to the question on depreciation and amortisation indicated that reported levels of depreciation and amortisation in their financial accounts did not reflect the true costs of depreciation for their university. However, the reasons for this varied considerably across universities.

Five universities noted that reported depreciation was underestimated as a result of the method used to calculate depreciation either because their institution calculated it based on the historical cost of assets (which was often around only half the current replacement value) or because very long asset lives were assumed for university buildings which were felt to be unrealistic. A small

number of universities noted that some of their buildings had already been fully depreciated and thus reported depreciation levels did not account for this.

A number of other universities who believed depreciation was accurately estimated in their financial report, nonetheless similarly indicated that it was an incomplete measure of capital costs. Often the reason for this was that depreciation levels differed from actual levels of capital expenditure currently, or capital expenditure levels expected in the future.

Conversely, some universities were of the view that reported depreciation levels for their institution were appropriate and provided a sensible basis for capturing capital expenditure. In some cases, depreciation exceeded current capital expenditure levels. One university noted that as a result of a decline in government funding of specific capital works, depreciation had significantly exceeded capital expenditure over the last three years.

Overall, the divergence in views suggests that the appropriateness of depreciation as a measure of capital costs at a given point in time is likely to vary based on the circumstances of individual universities, including where universities are positioned in the capital expenditure cycle, the nature of assets invested in, and the historical profile of investments made.

Repairs and maintenance

Over two-thirds of universities indicated that levels of repairs and maintenance were insufficient to maintain their assets in appropriate conditions. A number of universities noted that budgets for repairs and maintenance were determined based on whatever funds were left over after other initiatives had been funded, rather than in a systematic way. Many universities indicated they had been underinvesting in repairs and maintenance for some time and had generated a backlog worth in some cases hundreds of millions of dollars.

Only three universities who indicated they had a shortfall specifically quantified the degree of the shortfall. Two of these three universities indicated that expenditure on repairs and maintenance expenditure were currently only at 60% of required levels, while the other indicated that current expenditure was only at 85% of required levels.

These findings suggest that in most cases universities are underinvesting in repairs and maintenance relative to optimal levels.

Capital expenditure profiles and plans

Finally, in the consultations and supporting statement universities were asked to comment on whether they had a capital expenditure plan in place and whether they believed it would be possible to allocate expected future capital expenditure associated with teaching and scholarship by FOE.

In total, seven universities indicated they had a capital asset management plan in place. A number of other universities indicated their approach to capital expenditure was somewhat ad-hoc and depended on the availability of operating surpluses or their success in winning government grants. Of those that had a capital asset management plan, there were mixed views about the ability to reliably and accurately allocate this expected future expenditure by FOEs.

The vast majority of universities that provided information on their expected capital expenditure in the next five years relative to the previous five years expected future capital expenditure to grow. This suggests that levels of depreciation would be expected to grow in the future as more investment is completed, but also means that the difference between capital costs and depreciation may grow into the future.

It is clear that this experience is not uniform across the sector. Some universities saw future capital expenditure as being broadly similar to current levels while some universities expected capital expenditure over the next few years to fall. This diversity across the sector makes it difficult to rely on simple assumptions regarding expected capital expenditure alone in estimating true current-period university capital costs.

3.4 Top-down vs bottom-up methodology

There are a range of methodologies that universities may use to allocate costs. Some universities have detailed activity based costing (ABC) models available to estimate costs at a relatively granular level (often the unit of study) based on a range of drivers. The use of an ABC model is often referred to as a 'bottom-up' approach, although some costs may still be apportioned from a whole-of-university basis using a cost driver, known as a 'top-down' approach.

Other universities which do not have cost allocation models that reliably estimate costs at the unit of study level will rely predominately on a 'top-down methodology'. On this basis, bottom-up approaches will on average provide more differentiated cost information, and hence are typically considered to provide more accurate results by field and level of education.

Questions were raised during the UA forum on the 2nd of July by some universities about the reliability of comparing results across universities given potential variation in methodologies. Similar concerns were further raised by a number of universities in the consultation process and supporting statements.

In the course of the consultations, a number of universities did note that regardless of the overarching methodology employed, the accuracy of results was most dependent on the sophistication of the application of any methodology, and that, in principle, a top-down method could also be highly accurate if appropriate cost drivers were used.

Extent of variation in practice

In practice, universities will often use a mix of both top-down and bottom-up methodologies. This leads to some ambiguity in strictly defining the methodology employed, however, at a broad level there was an almost equal split across the two methods:

- Thirteen universities employed a bottom-up methodology with an activity-based costing model; while
- Twelve universities employed a top-down methodology, noting that three of the twelve had some bottom-up elements in their approach.

3.5 Other reflections from universities

Universities were generally highly engaged with the Transparency in Higher Education Expenditure project and were keen to do what they could to provide accurate data in the time available. Throughout the process, universities provided a range of reflections both in relation to:

- The purpose of the data collection process and how key data should be interpreted; and
- Some of the potential issues that might limit the ability to draw comparisons between universities.

These insights were useful in helping to highlight broader issues for the sector, and in helping to refine the analysis to explore reasons for differing results across the sector.

Reflections from universities on the data collection process and interpretation of key data

Universities expressed a range of views regarding the process and its broader objectives. The issues most frequently articulated by universities included:

- The decision to *exclude research from the analysis*, which many universities saw as being inherently included in the scope of CGS funding. Relatedly, many universities noted that teaching, research and community engagement were jointly produced, with inherent efficiencies in producing these activities jointly, such that an estimate of teaching and scholarship costs on a proportional basis would underestimate the costs of achieving this activity alone.

- The *provision of data on an FOE basis* was inconsistent with universities' underlying operating structures, as universities do not tend to budget on the basis of FOEs but rather on the basis of Faculties and Schools. While universities have relatively refined data on teaching costs at the faculty or school level, mapping this to individual FOEs proved difficult for some. Various

assumptions were made in conducting this mapping. Further, because universities provide courses, which are more granular than FOEs, there will be some variation in the offerings (that is, differences in the weightings of particular courses) included within an FOE across institutions. One university also noted that inter-disciplinary co-operation was widespread which limited the ability to accurately allocate costs at an FOE level and compare these to CGS and SCA funding rates.

As the sophistication of internal university models increases, and more institutions adopt activity-based (bottom-up) accounting methodologies, this issue will diminish over time although there will always be a degree of variation in course mix across universities.

- Universities also noted that costs for a given calendar year are a partial indicator given that there may be *substantial year-to-year variation* as a result of non-recurring events, such as faculty restructures, redundancies and the cost of creating new faculties. Approximately 45% of universities indicated there were one-off items that impacted costs for 2017 relative to previous years, although in some cases this related to capital rather than operating expenditures.

  The decision to undertake data collection process over (initially) a three year period will help minimise the potential impact of these non-recurring costs.

- A small number of universities noted that the *exclusion of the costs of teaching incurred by industry partners* (where no exchange was made in kind) meant that the study was not capturing the full costs of teaching. In particular, universities noted that some of the costs of teaching and scholarship associated with clinical placements that were incurred by industry partners could be material.

  – One university estimated the cost of supervisory time for its industry partners who hosted unpaid workplace learning to be 8.7% of its total teaching and scholarship costs. It used the comparative costs incurred when the university is required to pay for such placements to derive this figure. While it is unlikely this university is representative of the broader sector in relation to work integrated learning, this figure suggests that some costs may exist that are out of the scope of the current methodology.

- Finally, a number of universities raised concerns about plans to identify results for individual universities in the future. They noted that there would need to be guidance on interpreting the results, potentially through the inclusion visual aids to allow universities to explain why particular results differed from the sector average e.g. low EFTSL, unique characteristics of each university etc. In particular, some universities were keen for cost information to be included alongside quality measures, which has been noted as an area not within the scope of this study.

Challenges in validly comparing results across universities

In addition to the items noted above, many universities commented on the validity of comparing results across the sector.

Universities raised concerns around the extent to which differences in costs across the sector are likely to be driven by differences in methodologies and the sophistication of cost allocation models. As discussed previously, several universities are unable to differentiate between costs at different levels of study within an FOE. Questions were also raised about the potential for the results to be driven by different degrees of accuracy in allocating costs between teaching and research, including the separate identification of scholarship costs although approaches to estimating these components were discussed in the course of university consultations.

Questions were also raised regarding the extent to which differences in costs across the sector are likely to be driven by contextual factors at a university level, and by differences in strategic objectives across the sector. Factors that were noted by universities included:

- Scale;
- Capital footprint;

- Regional presence, which could raise the cost of certain types of delivery and may require universities to provide a range of support services e.g. childcare, student accommodation etc. that may be otherwise provided by the private sector in capital cities;
- The range of programs offered;
- The proportion of international students, which may help fund greater expenditure on teaching and scholarship but also create some international student specific teaching costs;
- The extent of research activity undertaken by a university, as some research intensive universities may more heavily cross-subsidise research;
- Program delivery modes;
- The proportion of part time students (part-time students may still incur similar fixed costs of enrolment to full-time students); and
- The level of disadvantage and past educational attainment in the student cohort.

These concerns relate less to whether or not the exercise is accurately capturing the costs of teaching and scholarship, and more to the extent to which any inferences in relation to efficiency can be drawn based on comparisons across individual universities. Put simply, contextual factors may mean that two equally efficient universities may have costs that vary from one another, both overall and at an FOE level. A more detailed discussion of contextual factors appears in Section 2.6.

4 Potential areas for improvement in 2019

As with any exercise that is staged over a three year period, it is important to reflect on how the process could potentially be improved in subsequent iterations. In the course of consultations with universities and in reviewing their supporting statements a number of potential areas for improvement were identified in the template and data collection process were identified.

Some of the key areas for improvement in subsequent years are discussed in further below. It should be noted that any changes to the process in subsequent years will need to be agreed to by the Universities Australia Reference Group and the Department.

4.1 Potential changes to the Transparent Costing Worksheet

A number of universities noted that the TCW used in the 2018 study represented a significant improvement on that used in the 2016 study. Nevertheless, a number of changes were suggested to the template by universities as outlined in Table 4.1 below.

Table 4.1: Suggested changes to the Transparent Costing Worksheet based on university feedback

Suggested change	Reason
Adding a universities HEIMS submission used to calculate the pre-filled EFTSL data to the Transparent Costing Worksheet	A number of universities had difficulties reconciling EFTSL data provided to the Department with internal data and wished to know the date at which they had provided EFTSL data to the Department given that these figures can fluctuate throughout the year. They suggested that including the data submitted as part of the Higher Education Information Management System (HEIMS) submission alongside the template would make it easier to reconcile the pre-filled EFTSL data with internal data sources.
Remove the separate line item for the cost of placements	As a result of feedback received at the Universities Australia forum about the value of a separate line item for 'labs, practicums and fieldwork' this line item was changes to focus on the 'cost of placements'. However, a number of universities suggested in practice it was difficult to identify the costs of placements and in cases where the cost of placements could not be easily identified in university accounting systems these costs were likely to be included under 'other non-staff expenses'. As such, any analysis of this line item may not capture the full costs of placements for all universities. Some universities suggested that this line item could be removed with the cost of placements included in other non-staff expenses.
Remove requirement to include casual academic staff costs	Some universities noted that they had difficulties in estimating costs for casual academic staff as no distinction between casual and permanent staff was made in internal cost allocation systems. As a result, these universities had to estimate casual academic staff costs separately and noted that there was a degree of imprecision in these estimates. Universities also noted that casual staff were either on contracts for teaching or research but not both. However, a decision to aggregate the wages and salaries of casual academic staff to total academic staff costs in future data exercises

	would limit the ability to analyse changes in casual academic staff costs over time which would need to be weighed against potential inaccuracies in the estimation of these costs.
Include a 6-digit FOE row in the TCW to allow look ups	The FOEs in the TCW are currently a mix of two digit, four digit and six digit categories. Some universities indicated that including a list of six digit FOEs within each of the FOE categories in the TCW would improve their ability to complete the data collection exercise.
Inclusion of 'in-kind' costs	As discussed in Section 2.5, a number of universities noted that they did not have 'in-kind' costs or were unable to quantify them in the time available. Given that a number of universities were unable to robustly quantify 'in-kind' costs, some consideration could be given to the value of including these costs in future iterations.

It should be noted that there are important trade-offs involved in implementing some of the changes suggested in Table 4.1. In particular, a number of universities have noted the value of keeping consistency in the template over time, although the changes suggested above are relatively minor. The decision to implement any changes in future exercises will need to be considered in conjunction with the Department and Universities Australia Reference Group.

There was also some confusion for universities in relation to approach to third party and partnership costs in the TCW. In particular, some universities initially included partnership costs included in their financial accounts below the line in the separate line item, which was intended to capture costs to the partner not included in a universities' financial accounts. While the process of consultations and subsequent follow-ups with universities ensured the costs were recorded consistently across the sector, greater clarity in the TCW could potentially assist universities in relation to third party and partnership costs.

4.2 Potential changes to the data collection process

In addition to suggesting changes to the TCW itself, universities also reflected on the data collection process itself. In particular, a number of universities raised concerns about the relatively short period to complete the TCW in 2019 and noted that the timing conflicted with the annual budget cycle. They noted that changing the timing to June as planned for the 2019 and 2020 exercises would be more conducive to university budget processes and provide more time if the TCW was provided to universities in February.

Appendix A: Transparent Costing Worksheet

[see over page]

Name of university:
Reporting data for the year ending: 2017

$ costs | % share | Formula | Pre filled | Not required

Resourcing

	FOE 01 Natural and Physical Sciences			FOE 02 Information Technology	FOE 03 Engineering and Related Technologie	FOE 04 Architecture and Building	FOE 05 Agriculture, Environmental and Related Studies		FOE 06 Health					FOE 07 Education	FOE 08 Management and Commerce	FOE 09 Society and Culture			FOE 10 Creative Arts		FOE 11 Food, Hospitality and	FOE 12 Mixed Field Programmes	Total
	FOE 0101 Mathematical Science	FOE 019901 Medical Science	Other				FOE 0509 Environmental Studies	Other	FOE 0601 Medical Studies	FOE 0603 Nursing	FOE 0607 Dental Studies	FOE 0611 Veterinary Studies	Other			FOE 091503 to 091519 Foreign Languages and	FOE 090701 Psychology	Other	FOE 1007 Communication and Media	Other			
Staff Costs - Employee benefits and on-costs (i.e. total wage bill)																							
Academic staff costs attributable to teaching and scholarship																							
Academic staff costs, Teaching only ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Academic staff costs, Teaching & Research ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Casual academic staff costs attributable to teaching and scholarship																							
Casual academic staff costs, Teaching only ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Casual academic staff costs, Teaching & Research ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Non-academic staff costs attributable to teaching and scholarship																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Academic staff costs ($) - teaching and scholarship	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Casual academic staff costs ($) - teaching and scholarship	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Non-academic staff costs ($) - teaching and scholarship	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total staff costs - employee benefits and on-costs (i.e. total wage bill) - teaching	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total staff costs - employee benefits and on-costs for staff excluding teaching and scholarship activities (e.g. research, community activities etc.) ($)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*$0*
Total staff costs - employee benefits and on-costs for all staff (i.e. total wage bill) ($)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
% of staff costs for teaching and scholarship	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Non-staff costs attributable to teaching and scholarship																							
Cost of materials, utilities, equipment ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Expenses that relate to placements ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Depreciation, amortisation, repairs, maintenance, borrowing, bad debts ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Other non-staff expenses ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total sub-bachelor teaching - non-staff costs ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total bachelor teaching - non-staff costs ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total coursework postgraduate teaching - non-staff costs ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total non-staff costs attributable to teaching and scholarship ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total non-staff costs excluding teaching and scholarship activities (e.g. research, community activities etc.) ($)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*$0*
Total non-staff costs for the whole institution ($)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
% of non-staff costs for teaching and scholarship	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total higher education expenses for whole institution (teaching and scholarship and all other activities)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Calculations

TOTAL TEACHING AND SCHOLARSHIP COSTS ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for SUB-BACHELOR STUDENTS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for BACHELOR STUDENTS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for COURSEWORK POSTGRADUATE STUDENTS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Additional items																							
In-kind costs ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Third-party and partnership costs ($)																							*$0*
Share of above attributable to sub-bachelor teaching activities (%)																							
Share of above attributable to bachelor teaching activities (%)																							
Share of above attributable to coursework postgraduate teaching activities (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Calculations

TOTAL TEACHING COSTS - INCLUDING ADDITIONAL ITEMS ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for SUB-BACHELOR STUDENTS - INCLUDING ADDITIONAL ITEMS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for BACHELOR STUDENTS - INCLUDING ADDITIONAL ITEMS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
COST for COURSEWORK POSTGRADUATE STUDENTS - INCLUDING ADDITIONAL ITEMS, ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Total Onshore EFTSL (excluding non-award and enabling courses)																							
Sub-bachelor EFTSL																							
Bachelor EFTSL																							
Postgraduate coursework EFTSL																							

Appendix B: Data collection guidelines

B.1. Definitions

Term	Description
Field of education	Fields of education are defined using the Australian Standard Classification of Education (ASCED). The specific categorisation of fields has been determined by the Department.
Sub-bachelor	Sub-bachelor covers all courses delivered at the diploma, advanced diploma and associate degree level. Excludes non-award and enabling courses.
Bachelor	Bachelor covers all courses delivered at a Bachelor degree level. This includes Bachelor's Pass, Bachelor's Honours and Bachelor's Graduate Entry. Excludes non-award and enabling courses.
Postgraduate coursework	Postgraduate coursework includes all postgraduate degrees that are delivered predominantly through coursework (e.g. those courses for which research makes up less than two thirds of the student load as per the Commonwealth Scholarships Guidelines (Research) 2017), including Masters and coursework PhDs. Where a coursework postgraduate degree includes a research component, this should be included as postgraduate coursework. Excludes non-award and enabling courses.
Academic staff	Members of staff, whether full-time or part-time, who are employed wholly or principally in teaching and/or research or to whom such persons are responsible in relation to their teaching or research. This includes staff who are employed wholly or principally to assist other academic staff in teaching and/or research activities (e.g. tutors, research assistants, etc.). This excludes casual academic staff.
Casual academic staff	Members of staff employed on a casual basis, wholly or principally involved in teaching and/or research (e.g. tutors, research assistants, and labour hire arrangements, where a 3rd party is contracted to provide teaching services on a casual basis). This excludes members of staff employed on a full-time or part-time basis.
Non-academic staff	Both permanent and casual members of staff who are not academic staff (teaching and/or research), and instead provide support functions for the university, e.g. administrative staff, IT staff, those involved in student enrolments and learning assistance. Non-academic staffing levels should amount to total staff minus academic staff and casual academic staff.
Teaching	Teaching time includes all of the following: lecturing, tutoring, demonstrating, reading and preparation for classes (lecture and tutorial content, handouts, workbooks, placing material on the Web, laboratories), all forms of marking and assessment, discussion and feedback to students (both face-to-face and electronically), administration of subjects, course advice and enrolment, organisation and supervision of practicum (including work experience and excursions), supervision of Honours students and committee work related to teaching. Teaching only staff are those whose time is spent exclusively on teaching and scholarship activities.
Teaching & Research	Time spent by staff members that are involved in both teaching and research activities. This category recognises that staff may be involved in a variety of activities including teaching, supervising research students and engaging in research and scholarship.

Term	Description
Research only	Certain staff will only be employed for research, i.e. staff with no teaching responsibilities. These staff, activities and costs are explicitly excluded.
Employee wages, benefits and on-costs (i.e. total wage bill)	All staff-related expenses. The wage bill should include all expenditure on staff compensation including gross salaries and salary on-costs such as superannuation and leave entitlements (i.e. annual leave, personal leave and long service leave).
Cost of materials, utilities, equipment	Cost of teaching-related expenses such as materials, utilities and equipment by field of education
Expenses that relate to placements	Cost of teaching-related expenses associated with the placements by field of education.
Depreciation, amortisation, repairs and maintenance, borrowing and bad debts.	Cost associated with asset and capital management.
Other non-staff expenses	All remaining costs by field of education, i.e. costs not captured by 'staff costs', 'cost of materials, utilities and equipment', 'expenses relating to labs/practicum/field work' and 'depreciation, amortisation, repairs, maintenance, borrowing and bad debts'.

B.2. Background

Deloitte Access Economics has been engaged by the Department of Education and Training (the Department) to conduct a three-year project to collect and analyse data on the cost of delivering higher education. This is an extension of a previous 2016 study, and will include all Australian public universities in the final year of the exercise (in 2020).

B.2.1. Introduction and context

At a high level, the key objectives that the Department is seeking to achieve with this exercise include:

- Accurately measuring the costs of teaching (including scholarship[20]) by field and level of education; and
- The continued transition to a more comprehensive, systematic and streamlined data collection process over the three years from 2018 to 2020 (and beyond).

As part of this important study, Deloitte Access Economics will work closely with universities to support the successful collection of data. This document forms one element of this support, and has been developed to assist universities in reporting their data on a consistent basis, and to cover common questions that are likely to arise in the course of collecting and allocating the costs of teaching.

Importantly, while this document intends to cover a number of issues and clarifications, it is unlikely to cover all scenarios or questions that you may have for your institution. For this reason, the Deloitte Access Economics team will arrange a time (if it has not already done so) to conduct an extended discussion with each institution, which will address:

- any issues or queries you have with respect to the data collection tool;
- any contextual points specific to your university that we should be aware of in interpreting the data provided; and
- any further background on the decision-making regarding the relative costs of teaching within your institution.

Alongside the Excel-based Transparent Costing Worksheet, universities will also be provided with guidelines for a supporting statement in order to provide additional commentary on how they have completed the data collection exercise.

In addition, the Deloitte Access Economics team is available to answer questions as they arise. In any instances where you require clarification or guidance, please contact the project email address at HEcosting@deloitte.com.au.

We thank you for your participation in this important research and look forward to being in contact.

B.2.2. Some guiding principles

The objective of this exercise, as outlined above, is to estimate the cost of teaching (including scholarship) in higher education. While the collection is intended to reconcile against universities' statutory financial accounts, the basis upon which costs are characterised in the collection differs to standard accounting approaches.

In seeking to appropriately estimate the cost of higher education teaching (including scholarship), the exercise is concerned with the economic cost attributable to each field and level of education. This may see costs allocated across activities in a manner, which differs to how they might be allocated for other – accounting – purposes.

[20] Note: For simplicity in this document, 'teaching and scholarship' and 'teaching' are used and referred to synonymously throughout.

With this in mind, the design of the approach and methodology has been geared toward achieving the overarching objectives of this exercise, and has been informed by a number of guiding principles. These principles are intended to support the generation of a final dataset in which costs are characterised and captured in a manner that is:

1. **Reliable** - such that a suitable level of assurance can be established regarding the underlying data.
2. **Comparable** - across universities, given differences in university context, and over time.
3. **Attributable** - ensuring costs are captured only to the extent that they are incurred as a result of a defined and in-scope activity.
4. **Actual** - in that the economic rather than the accounting measure of cost is of primary interest to the exercise.

The practical application of these principles necessitates an approach which:

- scrutinises existing information sources carefully;
- applies common definitions while allowing for local context;
- requires the application of standards and rules for apportioning shared costs in line with appropriate economic attribution; and
- sees iterative interaction through the course of the collection to support real time guidance and moderation.

Their application can be further understood with reference to two practical examples.

Example 1: Pro-rating common costs by a common cost driver
Using common cost drivers to allocate central costs is an example of applying the 'attributable' principle, whereby a common cost driver (or drivers) is chosen that allows systematic alignment of costs to specific teaching activities.

For example – IT systems and computer labs may be a central cost for the whole-of-institution, but clearly have a role in teaching and may not be equally shared or used by each teaching unit. Depending on the systems available, and a university's understanding of how to most reliably allocate costs to where they are ultimately incurred, one or multiple cost drivers may be used to partition this central cost (e.g. EFTSL, staff numbers, student login counts, etc.).

Example 2: Recognising scholarship activities that are required for teaching
The inclusion of 'scholarship' costs is another example of the 'attributable' principle, by recognising that activities such as presenting public lectures or keeping up to date with contemporary discipline knowledge is important and necessary for the delivery of teaching and learning by staff.[21]

Noting that the breadth and depth of scholarship activities can vary by staff type and discipline, universities are required to consider the principle of attributable costs in identifying and defining costs of scholarship, as they necessarily relate to the delivery of teaching.

[21] More detail on the types of activities that may be considered 'scholarship' is provided in Section 2.2 of these guidelines.

B.3. Guidelines

B.3.1. Structure of the template

At a high level, the Transparent Costing Worksheet is structured by cost item and level of education (along rows), and by field of education (across columns). Data is collected for each combination of these three elements, which are described in detail below.

Levels of education

The levels of education to be reported separately are sub-bachelor, bachelor, and coursework postgraduate. These are defined in Table B.1. Only onshore enrolments are included in the scope of the data collection.

Table B.1: Levels of education

Level of education	Definition
Sub-bachelor	Sub-bachelor covers all courses delivered at the diploma, advanced diploma and associate degree level. Excludes non-award and enabling courses.
Bachelor	Bachelor covers all courses delivered at a Bachelor degree level. This includes Bachelor's Pass, Bachelor's Honours and Bachelor's Graduate Entry. Excludes non-award and enabling courses.
Postgraduate coursework	Postgraduate coursework includes all postgraduate degrees that are delivered predominantly through coursework (e.g. those courses for which research makes up less than two thirds of the student load as per the Commonwealth Scholarships Guidelines (Research) 2017), including Masters and coursework PhDs. Where a coursework postgraduate degree includes a research component, this should be included as postgraduate coursework. Excludes non-award and enabling courses.

The scope of the data collection includes all students in award courses at the sub-bachelor, bachelor and postgraduate coursework level including Commonwealth Supported Places, domestic fee-paying students and onshore international students. Student in non-award courses and enabling programs are not included within the scope of the data collection exercise.

Cost items

The cost items are distinguishable types of costs and have been chosen to reflect commonly understood categories of disaggregation. These cost types are:

- Total staff costs - employee benefits and on-costs (i.e. total wage bill) – teaching and scholarship:
  - Academic staff costs attributable to teaching and scholarship;
  - Casual academic staff costs attributable to teaching and scholarship; and
  - Non-academic staff costs attributable to teaching and scholarship.
- Non-staff costs attributable to teaching and learning:
  - Cost of materials, utilities, equipment;
  - Expenses that relate to placements;
  - Depreciation, amortisation, repairs, maintenance, borrowing, bad debts; and
  - Other non-staff expenses.

Some further cost measures are defined which relate to total costs across the institution (i.e. including research and non-teaching-related commercial activities) and total costs for non-teaching activities, to be used for the purposes of reconciliation with institution-wide financial reporting. These additional cost types are:

- Total staff costs - employee benefits and on-costs for staff excluding teaching and scholarship activities (e.g. research, community activities etc.);

- Total staff costs - employee benefits and on-costs for all staff (i.e. total wage bill);
- Total non-staff costs excluding teaching and scholarship activities (e.g. research, community activities etc.); and
- Total non-staff costs for the whole institution.

It is not required that these costs be provided by field of education, but rather at the whole of institution level.

Two additional items are also separately identified below the main costing collection area of the template – 'in kind' costs and 'third party and partnership' costs. These items are collected to inform a broader picture of costs, but are not used in reconciliation with financial reporting. These two items are described in more detail in Section B.3.4.

Fields of education
Fields of education are defined using 22 ASCED code groupings in Table B.2. These fields of education have been chosen by the Department and are broadly consistent with those chosen in the previous 2016 exercise. The columns representing fields of education should be considered to be exhaustive, such that all courses and teaching activity are captured.

Table B.2: Fields of education

Number	ASCED Code	Title
1	0101	Mathematical Science
2	0109901	Medical Science
3	01 – Other	Other Science
4	02	Information Technology
5	03	Engineering and Related Technology
6	04	Architecture and Building
7	0509	Environmental Science
8	05 – Other	Other Agriculture, Environmental and Related Studies
9	0601	Medical Studies
10	0603	Nursing
11	0607	Dental Studies
12	0611	Veterinary Studies
13	06 – Other	Other Health
14	07	Education
15	08	Management and Commerce
16	090701	Psychology*
17	091503 to 091519	Foreign Languages and Translating
18	09 – Other	Other Society and Culture
19	1007	Communication and Media Studies
20	10 – Other	Other Creative Arts
21	11	Food, Hospitality and Personal Services
22	12	Mixed Field Programmes

* This field is intended to represent all psychology, not just 'clinical psychology'.

The structure of the data collection template is not to be changed, however the Deloitte Access Economics team welcomes suggestions from universities regarding any potential refinements for future versions of the survey.

B.3.2. Which activities and costs are in-scope?

The focus of this research is to collect and analyse costs related to teaching and scholarship for 2017, such that only costs relevant to these activities should be included. Other university operations should be separated and excluded, such as costs related to research, community outreach and commercial activities (i.e. not related to teaching).

This study recognises that teaching requires some 'scholarship' activities, which are required to support teaching, i.e. activities that maintain and advance the knowledge of an academic discipline required for staff to deliver teaching and training.

The level of scholarship may vary across field of education, and may include activities such as:

- Keeping up-to-date with contemporary discipline knowledge;
- Writing textbooks or newspaper articles;
- Participating in conferences;
- Delivering public lectures; and
- Participating in government enquires, among other relevant activities.

Universities are required to proportionally separate time spent by staff on teaching and scholarship activities, from other non-teaching activities. Those staff who teach across multiple fields should have their costs appropriately partitioned across each of these fields based on staff time or alternatively EFTSL taught. Based on the approach agreed in the 2016 study, other areas of university activity that are included to the extent that they are related to delivery of teaching are:

- Student support and welfare systems;
- Marketing related to teaching e.g. coursework student recruitment, or a reasonable proportion of brand marketing; and
- Central administration costs that relate to university operations.

Costs for low EFTSL

Costing data will be collected for 22 fields of education by level of education, i.e. Management and Commerce at the bachelor level.

All field-level combinations are to be reported in the template. Minimum EFTSL thresholds will be applied in the reporting and analysis of data to exclude low EFTSL counts but institutions are asked to report all data as per the template even for field-level combinations with minimal EFTSL.

Irregular costs

Additional costs may be incurred in a given year, for example, to support the development of new courses, or due to organisational restructures. These can be included in the template, but the irregular nature of these costs should be noted in the accompanying supporting statement.

B.3.3. Which costs and activities should be excluded?

All costs and activities not directly related to 'teaching' are considered out-of-scope and excluded from this analysis based on the scope for the exercise established by the Department. A non-exhaustive list of activities and costs which should be excluded – based on the agreed approach in the 2016 exercise is provided below:

- Non-award program and enabling courses, and any education not reported to the Department as EFTSL, examples including;
  - English language commercial courses
  - Open Academies/continuing education businesses for Conservatorium
  - Rural Schools for Medicine/Dentistry funded by State Governments
- Off-shore activity and international campuses;

- Most commercial activities, including investments and investment funds management business (see further clarification in relation to commercial activities below);
- Student and staff support services, provided on the basis of a fee for service or co-payment, for example childcare, health services (including IVF clinics), and student accommodation services (further clarification is provided below on services that are included to the extent that they contribute to education of students);
- Research activities, including research training and HDR supervision and expenditure related to research only staff;
- Marketing not related to coursework student recruitment;
- Philanthropic and community engagement activities; and
- All activities and staff that are for VET-training or administration (where that training and administration does not overlap with higher education activity) are explicitly excluded.

Other university activities (including commercial activities) which may have a teaching component
Many university activities have multiple purposes, where one of those is to support teaching. For example, some commercial activities may also serve to provide teaching or placements to students.

For activities with multiple purposes, universities should include an estimate of the portion of costs that is associated with teaching and report this in the template, while excluding any other costs unrelated to teaching.

The aim is to capture the costs associated with teaching activities and to separate these from other costs associated with running other university activities (commercial or otherwise) that are not associated with teaching.

Since the focus is on the costs of teaching and scholarship, there is no requirement to offset these costs with revenue received. Commercial activities that have no role in teaching students are excluded from the scope of the data collection.

Examples of other university activities (including commercial activities) in which the costs of teaching may be included are:

- Veterinary teaching hospitals used for training veterinary students;
- Physio clinics used for training physiotherapy students;
- Farms used for training agriculture students;
- Performing Arts theatres for training theatre and performance students; and
- Reciprocal arrangements in medical hospitals or medical clinics where services are provided in return for teaching services from non-University staff, e.g. professional administrative staff provided in return for 'no cost teaching' from hospital staff.

Vocational Education and Training (VET) delivered by Dual-sector universities
Universities that also deliver VET-training should not include any enrolment activity in VET courses. All costs for VET-training or administration (where that training and administration does not overlap with higher education activity) are explicitly excluded. However, all centralised administration costs associated with teaching of higher education students should be included.

B.3.4. Additional collection items

Below the main data collection area of the Transparent Costing Worksheet, there are two additional items. These items are collected to inform a broader picture of costs, but are not used in reconciliation with financial reporting.

Third party and partnership arrangement costs
All costs to the institution related to the delivery of teaching by any partner organisations (for EFTSL applicable to the institution) are to be included, as well as any administrative and management costs associated with the partnership agreement attributable to teaching.

The key principle in assigning partnership costs is that all teaching costs (or reasonable proxies thereof) should be included. If this involves, for example, the sharing of revenue with partner institutions, the revenue (foregone) which accrues to the partner for the purposes of teaching can be included, as this represents a reasonable proxy for teaching costs.

However, costs which are incurred (or estimated to have been incurred) by a partner organisation may need to be recorded in a different part of the Transparent Costing Worksheet to costs incurred by universities.

Where universities incur teaching costs in relation to a partnership agreement which would be recorded in their statutory accounts, these costs are to be included in the main cost collection area of the Transparent Costing Worksheet (i.e. above the line). This could include teaching, administration or management costs incurred by the university itself or payments to third parties for teaching activities.

In cases where costs related to teaching are incurred by a partner organisation, and this is proxied by the revenue that partner organisation receives, this revenue can be recorded in a separate line item below 'Total teaching and scholarship costs' labelled 'Third-party and partnership costs' (i.e. below the line). Notably, these costs will not appear in a university's statutory accounts.

While each university relationship with a partner organisation may vary, there are likely to be some common types of arrangements, for example:

- A university may collect all revenue (and report the EFTSL), while the partner institution delivers all teaching. The partner receives some share of the revenue collected as payment. In the likely absence of cost data for the partner instruction, the revenue shared is likely to be a suitable measure of the cost of teaching, and should be used as a proxy measure of the actual cost of teaching. The revenue shared should be included in the separate line item for third party and partnership costs.
- A university may collect all revenue and subcontract additional teaching requirements to a partner institution. The partner charges additional fees to students in order to cover the costs of additional tuition. In this instance, no additional considerations are required for the partner institution, as there are no additional costs to the university.

In some instances, the EFTSL may be recorded to the partner institution (and not the host university). As the EFTSL is not attributable, no costs of teaching are to be included.

Indirect or 'In-kind' costs of teaching
In some instances, teaching may be delivered by another institution, or using another institution's staff or other resources. The university may provide certain resources 'in kind' in relation to this teaching. Such 'in kind' contributions may include use of university buildings, research and library facilities or other resources.

Universities may include a reasonable estimate of their 'in kind' costs such as the building and facility utilisation, staff time or other resources that they provide to the other institution. Only the 'in kind' costs to the university in the teaching arrangement should be included, and not any costs borne by the other institutions.

These 'in-kind' costs will need to be converted to a dollar figure and included in the template. The high-level process for calculating 'in-kind' costs and any relevant considerations in interpreting these figures should be included in the supporting statement.

B.3.5. Staff costs: Allocating between teaching, scholarship and research

To estimate the costs of teaching, only staffing costs related to 'teaching and scholarship' are to be included in the data collection. Universities will have different methods of allocating staff activities and costs between teaching, scholarship and research (and others). Common methods include:

- Activity-based costing tools;
- Detailed timesheets;
- Workload models; and

- Enterprise Bargaining Agreements and other employment contracts that dictate specific allocations of time.

Universities should use the most rigorous and consistent method of allocating staff activities available to them to reflect the true time spent on teaching and scholarship. Where detailed time allocation data is not available, reasonable assumptions can be used.

If administrative costs would be incurred even in the absence of other activities, such as research or commercial activities, they should be included in teaching costs.

B.3.6. Non-staff costs: allocating assets and facilities costs across different fields of education

Similar to staffing costs, only the proportion of asset and facilities costs that relate to delivering teaching should be included in the data collection.

In the 2016 exercise, universities used various approaches to allocate non-salary costs to different FOES. The approaches tended to be based on the drivers that were judged to be most appropriate for each cost category. Some of the common drivers used included:

- floor space – used to apportion building (depreciation or maintenance) costs across FOEs;
- FTEs – used to apportion staff support services (such as a university's finance function);
- EFTSL – used to apportion non-salary costs driven by students (such as student support services); and
- enrolment headcount – used to apportion those costs driven by student numbers rather than load intensity (such as IT or enrolment costs).

Other potential drivers which could be used include: whether the student is a domestic or international student; level of study; delivery mode and number of staff by type. Deloitte will discuss the approach used with individual institutions to ensure consistency across the data collection exercise.

Instances of underutilisation attributable to teaching can be apportioned centrally. These central costs can then be allocated equally across all university EFTSL.

EFTSL data will be pre-populated in the data collection template at the beginning of the data collection process for participating universities in 2018.

B.3.7. Capital replacement costs

Costs associated with asset and capital management including depreciation, amortisation, repairs and maintenance should be included in the template, as reflected in universities' financial reporting.

It is noted that future upgrades, refurbishment, or replacement of an asset may be needed, due to changes in function, new pedagogy, technological advancement or changes in legal or regulatory requirements. This provisioning for future capital expenditure via retained operating margins, borrowing, and/or other means is an important consideration for universities. This future provisioning should nonetheless be kept separate from current depreciation and asset costs in the template.

Universities are able to provide a description of their processes and budget for sufficient future investment as part of the supporting statement that will accompany the Transparent Costing Worksheet. Some universities have also noted that there may be reasons why the stated level of depreciation, amortisation and repairs and maintenance in their statutory accounts may be understated. Again, universities can use the supporting statement to outline reasons why stated levels of depreciation may not reflect the true rate of depreciation on their assets.

B.3.8. Trimesters and summer semesters

Many universities offer summer subjects or a trimester option for students. For subjects/units that have census dates in the same calendar year, e.g. 2017, the EFTSL for the subjects/units will be

recorded for 2017, even if the subjects/units are delivered across two calendar years – 2017 and 2018.

This means there may be a misalignment between EFTSL data and cost data for a given calendar year. Universities should apportion the costs for these units consistently across different collection years and if EFTSL for these units differ significantly year-on-year, it should be outlined in the supporting statement.

B.3.9. Reconciliation

Total expenses reported in the template (excluding in-kind costs and third party and partnership costs) should be reconciled to statutory accounts, in particular Total Expenses from Continuing Operations (including deferred superannuation). This total expenses figure will be pre-populated for universities using data provided to the Department.

When reconciling the costs of teaching and scholarship with total expenses, the difference between total expenses and the costs of teaching and scholarship will include costs associated with activities that are outside the scope of this project such as research, community activities and costs for non-award students, enabling programs, higher degree research students and offshore enrolments.

Noting the guiding principle regarding a focus on actual economic costs (as opposed to accounting costs), there may be some additional variations in reported costs. Any differences can be explained in the supporting statement provided by the university.

Limitation of our work

General use restriction

This report is prepared solely for the use of the Australian Government Department of Education and Training. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of assessing the cost of teaching and scholarship in the higher education sector. You should not refer to or use our name or the advice for any other purpose.

Deloitte Access Economics
ACN: 149 633 116
8 Brindabella Circuit
Brindabella Business Park
Canberra Airport ACT 2609
Tel: +61 2 6263 7000
Fax: +61 2 6263 7004

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