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Characteristics of Australian higher education providers and their relation to first-year student attrition

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Contents

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1 Introduction

Over the last 20 years, there has been significant interest in factors leading to student drop out (attrition) from first-year higher education studies. The factors identified include a range of personal attributes of the students themselves as well as academic and administrative aspects of higher education institutions' operations. Concern over attrition is primarily centred on financial and reputational issues, for governments and for the institutions. But the issue is of considerable significance for the students themselves, in terms of wasted time and personal debt.

While many new approaches to improving student attrition outcomes have been tried and there has been some improvement in retention in Australia and other countries, the improvement is not universal across the institutions, and there remains a persistent level of attrition in the sector.

In Australia, the Commonwealth Government has been monitoring and publishing university attrition rates regularly and has a significant historical time series of data on attrition from 1992 to the present time (Department of Education, Science and Training, 2004; Department of Education, 2015; and Department of Education and Training, 2016). The published data show that overall, until 2010 average attrition rates were slowly decreasing in universities but not universally, and since then have slightly increased, but currently are at similar levels to those observed early in the decade.

TEQSA categorises providers in Australia's diverse higher education sector into various 'market' groupings. The two major groups are universities and non-university higher education providers (NUHEPS). The latter is divided into a number of subcategories (TAFE, faith-based not-for-profit, other not-for-profit, for-profit and pathway organisations) which exhibit different student profiles, institutional characteristics and attrition rates. Therefore it is important to look at student attrition across the whole-sector, and not just in the universities.

Student attrition is identified by TEQSA as a major risk factor for higher education providers. Indeed, it is the most common indicator of high risk to students across the sector. The following table shows the percentage of registered higher education providers at each risk level in relation to first-year attrition in 2012–2014. The table shows that during this period there has been a shift in the proportion of providers rated as low risk to the moderate risk category, and that the proportion of high risk providers in relation to attrition has remained at over 40% of all rated providers for each of the three years.

Table 1: Distribution of risk-rated providers across risk categories for first-year student attrition, 2012–2014

Year	No. of rated providers	High risk	Moderate risk	Low risk
2012	153	41.8%	16.4%	41.8%
2013	153	40.5%	21.6%	37.9%
2014	164	40.2%	22.0%	37.8%

Against this background, TEQSA undertook a study of first-year student attrition to determine whether institutional characteristics might identify factors which are associated with higher attrition rates. This study differs from previous Australian studies in that (a) it focuses on institutional characteristics, including of the students within institutions rather than an analysis of characteristics of individual students, and (b) the whole-sector is included rather than an analysis limited to universities, which make up only 25% of providers (but enrol 93% of students). The study includes an analysis of attrition in the sector as a whole, as well as attrition within various groupings in the sector that were defined by cluster analysis. This study undertaken by TEQSA complements the Department of Education and Training's (DET) cohort analysis of completion, retention and progress.

2 Methodology

2.1 Definition of attrition

TEQSA defines attrition as the ratio of first-year higher education commencing students in a year who neither completed nor returned to study in the following year, to the total commencing students in that year. This ratio encompasses courses at all levels: sub-bachelor, bachelor and postgraduate, and therefore differs from the rates published by DET which only include the first year of bachelor degree courses. DET's attrition reports in 2013 and 2015 use adjusted attrition rates, which make allowance for student transfers between institutions based on the tracking of students through their student IDs and the Commonwealth Higher Education Student Support Number (CHESSN).[1] The CHESSN is not available for students in other institutions without access to FEE-HELP loans, or for international students in universities. The TEQSA study uses unadjusted, or raw, attrition rates for both domestic and international students, to allow comparability of outcomes between different groups of providers, while the DET rates represent adjusted attrition and focus only on domestic bachelor degree students in universities.

The first-year attrition rate used in the TEQSA study is defined as:

$$\text{First-year attrition rate} = \frac{R1-R2-R3}{R1} \times 100$$

where R1= Commencing students (headcount) in year x (cohort A)
R2= Cohort A continuing students (headcount) in year x + 1
and R3= Completing students (headcount) in year x (cohort A).

This definition and formula have been in use for many years, and were based on an assumption about a traditional academic year structure of two semesters of study in each calendar year. Such a structure for the academic year is becoming less common with the introduction in many institutions of trimesters and more flexible teaching periods, which makes the concept of comparing enrolments at the same time points in consecutive years less meaningful.

2.2 Data scope

The data set analysed was for 2014, the latest comprehensive data available at the time the study was commenced. The number of registered higher education providers in the sector at that time was 173. 18 of these providers did not have sufficiently mature or complete data sets of institutional, staff and student statistics from which to calculate student attrition due to their early phase of operation, and so these providers were excluded from the study.

Universities and those providers in receipt of Commonwealth funds through the HECS-HELP and FEE-HELP programs submit data through the annual Higher Education Information Management System (HEIMS) data collections (student, staff and finance). Until 2016, the remainder of registered providers provided data to TEQSA through more limited Provider Information Request (PIR) collections. In the

1 The CHESSN was introduced to the Higher Education Student Data Collection in 2005, and is available only for domestic students with access to HECS-HELP or FEE-HELP loans.

analysis of characteristics of institutions which might have an impact on attrition, it was decided to include information about:

- the socio-economic status profile of the institution
- entry scores
- Indigenous student percentages
- age distribution of students
- admission on the basis of mature age entry, and
- admission on the basis of VET qualifications.

The data on which these six variables are based are included in the HEIMS data collection but not in the PIR collection.

Among the group of 155 providers potentially available for inclusion in the analysis, 130 reported to HEIMS, and these are the institutions included in the study. A full list of the 173 institutions is provided in Appendix 1, including the names of those providers for which no attrition data was available, those which were PIR collection institutions, and the remaining 130 providers for which a full data set was available.

2.3 Factors included in the analysis

Based on the characteristics identified locally and internationally as possibly affecting attrition levels in universities, a set of 36 institutional variables was identified for each of the 130 providers, with a view to using this data to formulate a multivariate regression model for attrition across the sector as a whole (Table 2).

The first seven variables in Table 2 are categorical and the rest are continuous variables which use Equivalent Full-Time Student Load (EFTSL), Staff Full-Time Equivalent (FTE) and percentage measures in their formulation. There is a considerable variation in size of the 130 providers, so the range of values of several of the data elements such as EFTSL and FTE staff numbers covers a large spectrum. The calculation of percentages for use in the modelling standardised the values of the variables into similar ranges. All percentage measures used were computed from data fields held in the TEQSA database, as a percentage of the EFTSL or FTE as appropriate for the characteristic of interest. For example, the percentage of international students is computed as follows:

% international students = (international students EFTSL)/Total EFTSL *100

creating the variable 'international' which is the percentage that international student EFTSL represents of total EFTSL.

It is important to note that all of the variables used in the analysis, including those relating to student characteristics, are expressed at the institutional level. For example, the variable 'Median TES' is the median tertiary entrance score of commencing students at the institution. A definition for each of the variables in Table 2 is provided in Appendix 2.

Table 2: Variables used in the attrition analysis

Description	Variable Name
Is the institution a profit or not-for-profit organisation	Profit/not-for-profit
Is the institution a university, TAFE, Pathway, etc.	Grouping
Duration of operation	Duration
Revenue band	Revenue
Does the institution also provide VET education	MultiSector
Is the institution a regional provider	Regional
Is the institution eligible to provide FEE-HELP	HEIMS
Equivalent Full-time Student Load	EFTSL
Percentage of total EFTSL who are external students	External
Percentage of total EFTSL who are international students	International
Percentage of total EFTSL who are part-time students	PartTime
Percentage of total EFTSL who are postgraduate students	Postgraduate
Percentage of total EFTSL enrolled in the field of education of Health	Health
Percentage of total EFTSL enrolled in the field of education of Management and Commerce	Management
Percentage of total EFTSL enrolled in the field of education of Society and Culture	Society
Percentage of total EFTSL enrolled in the field of education Other	FoE_Other
Staff Full-time equivalent	FTE
Percentage of FTE staff who are academic	Academic
Percentage of total academic staff FTE who are Teaching only staff	Teaching
Percentage of total academic staff FTE who are senior academics	SeniorAca
Percentage of total academic staff FTE who are research only staff	ResearchAca
Percentage of total academic staff FTE who are full-time academic staff	FulltimeAca
Student to academic staff ratio	SSR
Percentage of total academic staff FTE who are casual staff	Casuals
Percentage of CEQ responses that are positive responses	Agreement
Percentage of responses to Graduate Destination Survey in FT Employment	FTemployment
Percentage of responses to Graduate Destination Survey in FT Study	FTstudy
Percentage of responses to Graduate Destination Survey seeking FT Study/ Employment	SeekingFT
Progress rates	Progress
Percentage of total EFTSL with low socio-economic status (defined as in HEIMS collection)	Low SES
Median Tertiary Entrance Score (TES)	Median TES
Percentage of total EFTSL who are Indigenous students	Indigenous background
Average Age	Age
Percentage of total EFTSL who are female	Female
Percentage of total EFTSL who are Mature Age Entrants	Basis for Admission (Mature Age Entry)
Percentage of total EFTSL admitted on the basis of VET studies	Basis for Admission (VET Award Course)

2.4 Approach taken

The study initially aimed to formulate a multivariate linear regression model which would provide a good fit to the 2014 attrition data for the sector, and allow identification of the variables which were the most significant in explaining higher attrition rates.

Because of the diversity of providers in the sector, it was decided to explore whether attrition could also be examined in relation to subgroups of institutions. Hierarchical cluster analysis was used to segment the 130 higher education providers into subgroups of institutions which demonstrate more commonality in their characteristics than those institutions outside of the particular set. The greater the similarity within a segment and the greater the difference between segments, the better or more distinct the clustering. A more detailed description of the approach taken to the cluster analysis is provided in Appendix 3.

Once the clusters were identified, multivariate regression models of attrition for the sector as a whole and for each of the clusters using the variables in Table 2 were fitted using a model-selection procedure, based on backward elimination and the goodness of fit Akaike Information Criterion (AIC) (see Agresti 2002, Section 6.1.4). The models which minimise the AIC are the best models statistically in terms of goodness of fit to the data.

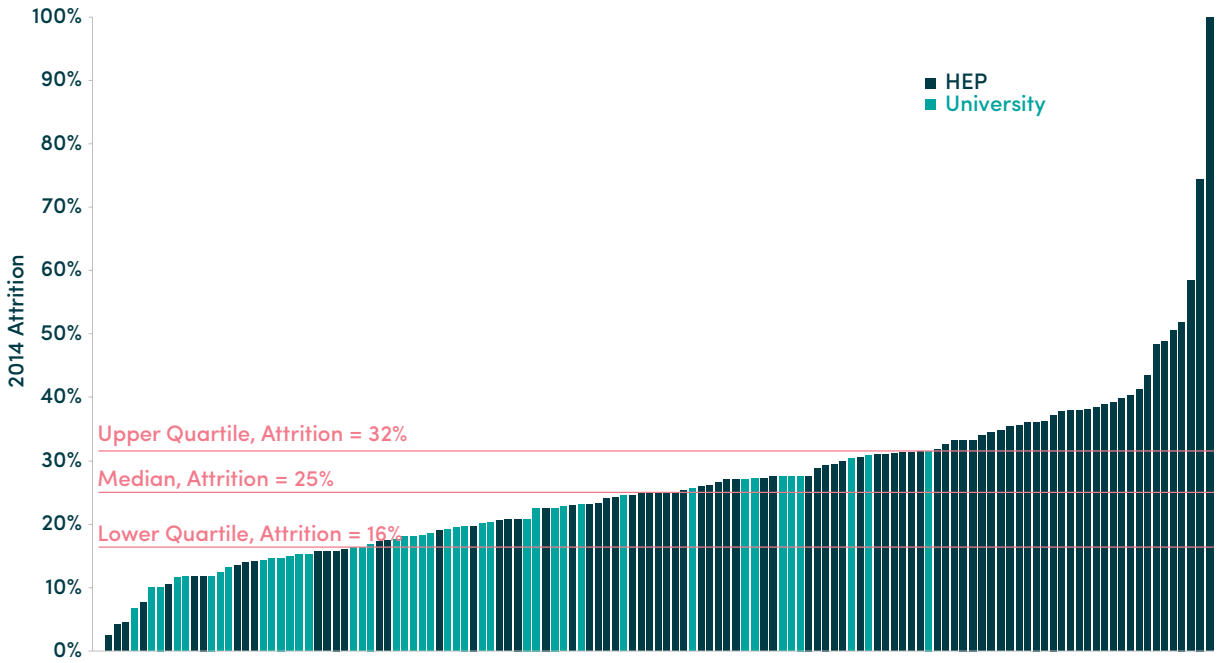
Any improvements to the explanatory power of the models identified for the clusters, compared with the whole-sector model, can be attributed to the benefit of clustering the Australian higher education sector into specific segments of institutions.

3 Results

3.1 Distribution of attrition

Attrition levels vary considerably across the current range of higher education providers in Australia, with half of the registered institutions having attrition rates in excess of 25% as shown in Figure 1 below. The attrition levels observed for the universities on average (20%) are lower than for the non-university providers (27%) as shown by the shading of the two groups in the chart (light blue for universities and dark blue for other providers). Any variable that affects institutional attrition for the universities is of importance, because the public universities represent 93.1% of the EFTSL in the Australian higher education sector.

Figure 1: Attrition rate by provider, 2014



Note: Chart shows attrition for the 130 institutions in the study

3.2 Whole-sector modelling

The linear relationships between attrition and each of the continuous variables in Table 2 were explored prior to the application of a multivariate model. The majority of these individual scatter plots showed strong linear patterns, but most had close to zero gradients in the regression lines, signalling no particular relationship with attrition. The only variables which showed a significant positive or negative relationship with attrition were:

- postgraduate EFTSL (negative)
- proportion of senior academic staff (negative)
- size of institution (EFTSL) (weak negative), and
- proportion of students admitted on the basis of a VET qualification (strong positive).

Multivariate analysis of the whole-sector data produced a model which identified a number of significant variables related to attrition. The characteristics of the model are shown in Table 3 below. The model was a reasonable fit to the attrition data, with a goodness of fit measure (R^2) of 44% and an adjusted R^2 of 41%, explaining just less than half of the variance of attrition. All of these variables identified through the model-selection process as influencing attrition are statistically significant with p-values of less than 0.05.

Table 3: Whole-sector multivariate regression model (n=130)

R^2 =44%; Adjusted R^2 =41%			
Variable	Standardised Coefficients Estimate	Impacts	VIF
VET	0.451	31.7	1.09
Postgraduate	-0.313	22.0	1.49
EFTSL	-0.215	15.1	1.09
External	0.17	12.0	1.15
SeniorAca	-0.143	10.1	1.22
PartTime	0.129	9.1	1.67

The values for the coefficients in the second column, labelled **Standardised Coefficients Estimate**, indicate the nature of the relationship between the variable and attrition in the multivariate model. A negative value indicates that attrition increases as the variable value decreases.

The **impacts** shown in the third column in the table are a measure of the relative importance of the variables' contribution to the overall model. Thus, for the whole-sector, the variable with the greatest impact on the size of attrition is the percentage of students admitted to courses on the basis of prior VET studies. The second most significant variable in impacting on attrition is the percentage of postgraduate students enrolled, and the third is the size of the institution. These three elements provide approximately two thirds (68.8%) of the explanatory power of the sector-wide model.

The final column contains the **variance inflation factors** (VIF) which provide an indication of the presence of multi-collinearities between the explanatory variables of the model (i.e. two or more of the variables are highly correlated with each other). The presence of multi-collinearity is problematic because it can inflate the regression coefficients and the resulting R^2 value associated with the model. A VIF of close to 1 is indicative of no or very low correlation, with a VIF of greater than 5 signifying moderate to high correlation and multi-collinearity in the variable set. The VIF values shown in Table 3 indicate that multi-collinearity in the data is not an issue, and so variance values (R^2) can be assumed to be reliable indicators of goodness of fit of the models developed as part of the study.

In summary, the whole-sector model shows that, in general, the following characteristics of institutions are associated with **higher levels of attrition**:

- institutions admitting a larger proportion of students on the basis of prior VET education
- institutions with a lower percentage of postgraduate students
- institutions smaller in size
- institutions with a higher percentage of external enrolments
- institutions having a lower percentage of senior academic staff, and
- institutions with a higher percentage of part-time enrolments.

3.3 The clusters

Applying the cluster-analysis approach described in Appendix 3 resulted in the cluster solution dendrogram depicted in Figure 2.

The lengths of the vertical lines in the dendrogram are a measure of how distinctive the clusters are from each other. The cluster outcome shown consists of four distinct clusters, but the highest level of the tree consists of two clusters. Cluster 1 of the dendrogram consists of all 37 of the public Australian universities and two private universities (Bond and Notre Dame Australia). Clusters 2-3 come from the second main cluster of 91 institutions, comprising:

- one private university
- two overseas universities
- one university of specialisation, and
- 87 other higher education providers.

Appendix 1 provides a list of the institutions and their EFTSL and attrition rate in each of the clusters shown in Figure 2.

By analysing the contents of the clusters, it is possible to identify the main characteristics of each and then describe them in these terms. In order to assist in identifying the critical characteristics of each cluster, a profile of the averages of the values of the characteristics for the four clusters was calculated and is shown in Table 4.

As highlighted in this table, the average value for attrition for Cluster 1 is significantly lower than for Clusters 2–4. The variables shaded in the table indicate the characteristics which differentiate between the clusters. Differences are considered to be important when the average value of a variable in one of the clusters is twice the size, or more, of the average in the other clusters. The description of each cluster relates to the highlighted areas of difference shown in the table.

Figure 2: Dendrogram of the resulting clusters derived from the discriminator variables

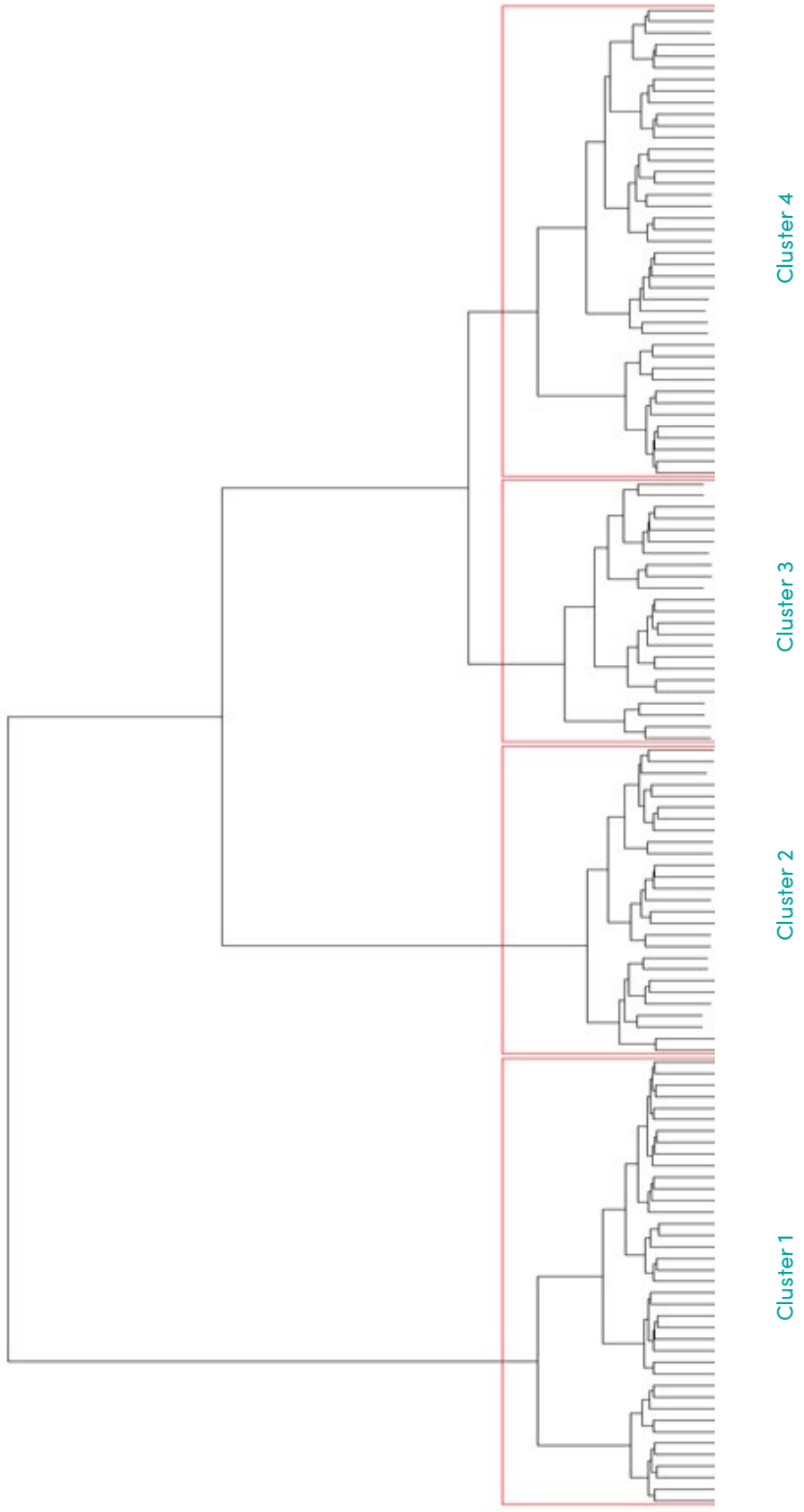


Table 4: Average values of segmentation variables for the clustering shown in Figure 2

Segmentation variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
N	39	27	23	41
%	30.0	20.8	17.7	31.5
EFTSL	23527.8	360.9	772.9	771.7
External	14.6	23.4	14.1	2.8
International	24.3	7.5	71.3	27.5
PartTime	15.4	39.1	24.0	12.1
Postgraduate	21.6	47.5	39.0	2.0
FoE_Other	41.2	8.6	9.2	29.0
Health	17.6	1.0	0.7	10.7
Management	21.7	0.1	85.4	23.8
Society	19.5	82.9	0.4	4.7
FTE	3142.0	24.0	17.9	41.1
Academic*	45.6	97.9	100	98.7
Teaching	27.3	44.8	55.2	83.5
SeniorAca	39.3	49.6	39.2	25.7
ResearchAca	22.8	1.9	2.2	0.3
FulltimeAca	66.5	62.5	55.5	37.6
SSR	19.8	14.3	32.2	22.9
Casuals	17.2	16.8	34.0	47.9
FTemployment	48.2	43.5	54.5	31.6
FTstudy	17.0	13.8	18.4	36.3
SeekingFT	14.1	29.3	6.4	16.8
Progress	0.9	0.9	0.8	0.8
Low_SES	13.5	14.1	4.3	10.2
Indigenous	1.3	4.0	0.1	0.5
Females	56.6	58.9	41.1	50.4
Mature	1.9	4.9	4.6	1.9
VET	3.0	4.1	7.2	4.6
Age	26.0	36.8	27.5	25.8
TES	77.7	70.3	68.3	67.2
Attrition	0.2	0.28	0.27	0.27

* The Academic characteristic shows that apart from the universities, the cluster 2-4 institutions employ relatively few non-academic support staff.

The differences in profile between the four clusters which might have an impact on the attrition rates are therefore:

- the overall size of the institution (in terms of EFTSL and FTE staff)
- the proportion of international students enrolled
- the field of study profile of the institutions, particularly the proportions enrolled in Business and Management studies and Society and Culture
- the percentage of research-only academic staff employed
- the percentage of Indigenous students enrolled, and
- the percentage of graduates continuing with full-time study.

Using this profile, the clusters can be described according to their most prominent characteristics, as shown below.

Cluster 1
A university-only cluster composed of large institutions that are research-focused and have students enrolled across all fields of education.

Cluster 2
A cluster composed of small institutions that have high percentages of external, part-time and postgraduate students in the field of Society and Culture, and higher proportions of Indigenous students and those admitted as mature-aged entrants.

Cluster 3
A cluster of medium-sized institutions with a significant casual academic workforce that are focused on international students' education in the field of Management and Commerce (many at the postgraduate level) with students admitted on the basis of VET studies.

Cluster 4
A cluster of medium-sized institutions with a strongly casualised workforce and a focus on undergraduate domestic students in a range of fields. The graduates of these institutions are more likely to continue with full-time higher education study than to enter full-time employment.

There is variability present within each cluster, meaning that each individual institution may not entirely hold the characteristics of the cluster that the institution belongs to; rather, on average, the characteristics for which the clusters are defined represent the characteristics of the institutions within them.

Table 5 shows the distribution of institutions by cluster and by TEQSA market group. The institutions in Clusters 2-4 are spread widely over TEQSA market groups. Most of the faith-based colleges are in Cluster 2, all of the TAFEs and most of the pathway colleges are in Cluster 4, and the for-profit colleges (excluding pathway colleges) are split largely between Clusters 3 and 4.

Table 5: Institutions by cluster and TEQSA market group

	University	TAFE	Faith-based	Agency	Pathway	For-Profit	Professional body	Other	TOTAL
Cluster 1	39	0	0	0	0	0	0	0	39
Cluster 2	1	0	17	1	0	3	0	5	27
Cluster 3	3	0	0	0	3	16	1	0	23
Cluster 4	0	9	2	0	8	15	0	7	41

3.4 Cluster multivariate regression analyses

3.4.1 Cluster 1 – universities

The features of the model for Cluster 1, which comprises 30% of the sector's providers, are shown in Table 6.

Table 6: Multivariate regression model, Cluster 1 (universities) (n=39)

R^2 =88%; Adjusted R^2 =86% Variable	Standardised Coefficients Estimate	Impacts	VIF
External	0.446	31.7	1.31
EFTSL	-0.398	28.3	1.17
VET	0.218	15.5	1.91
SeniorAca	-0.21	14.9	1.64
Postgraduate	-0.135	9.6	1.35

The VIF levels indicate that there is a considerable degree of independence of the variables and suggest that the R^2 values are not likely to be overestimated. The universities included in Cluster 1 are shown in Appendix 1 together with their 2014 attrition rates. The most significant variables affecting attrition according to this model are the proportion of enrolments which are external, and the size of the university, but these act in different directions.

The model is an excellent fit for attrition, accounting for 86% of the variance in the data (adjusted R^2 value).

The average attrition rate for the universities in Cluster 1 is 20% but there is a considerable spread in the actual values. In 2014, attrition ranged from 10–32%.

The contribution of each of the above variables is additive, so that for an institution, the likelihood of higher attrition rates increases as the number of characteristics increases.

The model shows that for Cluster 1, **attrition is likely to be higher when:**

- the university has a larger proportion of external enrolments
- the EFTSL is smaller (i.e. the smaller the university, the higher the attrition is likely to be)
- the university admits a greater proportion of students on the basis of prior VET qualifications
- the proportion of senior academic staff in the staff profile is lower, and
- the proportion of postgraduate enrolments is lower.

3.4.2 Cluster 2 – small providers with a focus on Society and Culture

Cluster 2 is a smaller cluster having only 27 members which are mainly teaching in the education of Society and Culture (see Appendix 1). These providers tend to have higher proportions of external, part-time and postgraduate enrolments than the providers in other clusters, and many are faith-based not-for-profit providers. Table 7 shows the results of fitting a multivariate regression model. Each of the variables identified is highly significant, having large impact values. The variables are also independent, confirming that the adjusted R^2 value is likely to be reliable even though it is much lower than those associated with the other clusters. Table 7 describes the model for Cluster 2.

Table 7: Multivariate regression model, Cluster 2 (smaller providers with a focus on Society and Culture) (n=27)

R^2 =41%; Adjusted R^2 =33% Variable	Standardised Coefficients Estimate	Impacts	VIF
Postgraduate	-0.357	40.3	1.63
Progress	-0.271	30.6	1.7
External	0.257	29.0	1.07

This group represents 21% of the sector's higher education providers and has a majority of faith-based institutions (67%). These faith-based organisations usually teach in the philosophy and religious studies fields, hence the predominance of Society and Culture field of study enrolments. The average attrition rate is 28% and the distribution is spread from 5% for a specialised arts-related provider, to 58% for a professional society conducting courses in counselling (see Appendix 1). The majority of the institutions in this cluster have attrition rates in the high 20% range.

The model shows that for Cluster 2, **attrition is likely to be higher when:**

- the proportion of students undertaking postgraduate courses is lower
- the progress rate of students is poor, and
- there is a higher percentage of external students enrolled.

3.4.3 Cluster 3 – medium-sized providers with an international focus

Cluster 3 consists of 23 medium-sized institutions and is the smallest segment of the sector. Its main characteristics are that it enrols a high proportion of international students and focuses on the field of Management and Commerce.

Appendix 1 shows that the providers in this cluster are diverse and mainly for-profit providers. Table 8 describes the model for Cluster 3.

Table 8: Multivariate regression model, Cluster 3 (medium-sized international focus) (n=23)

R^2 =63%; Adjusted R^2 =57% Variable	Standardised coefficients estimate	Impacts	VIF
FulltimeAca	-0.468	43.9	1.39
VET	0.322	30.2	1.4
Age	-0.277	26.0	1.04

Each of the three variables identified has a significant impact on attrition, and the low VIF values show their independence.

This cluster represents 18% of the sector's providers. The attrition rates span the range from 7% to 51%. Apart from a majority of non-university for-profit providers (15 of the 23 providers), the cluster includes three pathway colleges associated with Australian public universities (Monash College Pty Ltd, INSEARCH Ltd [Trading as UTS: INSEARCH], and UOWC Ltd [trading as UOW College]) and three private universities operating in South Australia (Carnegie Mellon University, University College London and Torrens University Australia Ltd [which is for-profit]). The fit of a multivariate regression model to this cluster is good with a relatively high adjusted R^2 value of 57%.

The model shows that for Cluster 3, **attrition is likely to be higher when:**

- the percentage of full-time academic staff employed by the institution is lower
- there is a higher percentage of students admitted on the basis of VET level qualifications, and
- the students admitted to courses are younger.

3.4.4 Cluster 4 – medium-sized providers with mixed disciplinary profiles

The fourth cluster in the sector is the largest, comprising 41 non-university higher education providers. These providers have few uniquely distinctive characteristics, as shown in Table 4, apart from their staffing structure, a focus on undergraduate students and a high proportion of graduates seeking further full-time study. These providers have a balanced enrolment across fields of study. Table 9 describes the model for Cluster 4.

Table 9: Multivariate regression model, Cluster 4, (medium-sized providers with a mixed disciplinary profile) (n=41)

R^2 =62%; Adjusted R^2 =58% Variable	Standardised Coefficients Estimate	Impacts	VIF
VET	0.798	55.9	1.18
PartTime	0.307	21.5	1.04
FulltimeAca	-0.197	13.8	1.19
SeniorAca	-0.125	8.8	1.04

The level of variance in the attrition data explained by the model is high, with an adjusted R^2 of 58%.

The most significant factors of the institutions identified in the model for this cluster are the proportion of the student profile admitted on the basis of VET qualifications, and the proportion of students enrolled part-time.

The model shows that for Cluster 4, **attrition is likely to be higher when:**

- the proportion of students admitted on the basis of VET qualifications is higher
- the percentage of part-time students is higher
- the percentage of full-time academic staff in the staff profile is lower, and
- the proportion of senior academic staff in the profile is also lower.

3.4.5 Summary of regression models

A comparison of the models derived for the four clusters and the whole-sector is shown in Table 10. Some of the significant variables occur in more than one cluster, such as the proportions of external, postgraduate and VET admission from the student enrolment perspective, and the proportions of academic staff who are full-time or senior in status.

The explanatory power of the regression models for each of the clusters is stronger than the whole-of-sector model, except for Cluster 2. As indicated earlier, these improvements to the explanatory power of the models identified for the clusters, compared with the whole-sector model, can be attributed to the benefit of clustering the Australian higher education sector into specific segments of institutions.

Table 10: Summary of models

Segments	Size	Model: Significant variables	Direction of significance	Impact (%)	Adj R^2	Cluster attrition average
Cluster 1 Universities	39	External EFTSL VET SeniorAca Postgraduate	Larger Smaller Larger Smaller Smaller	31.7 28.3 15.5 14.9 9.6	86%	20%
Cluster 2 Society and Culture	27	Postgraduate Progress External	Smaller Smaller Larger	40.3 30.6 29.0	33%	28%
Cluster 3 International	23	FulltimeAca VET Age	Smaller Larger Smaller	43.9 30.2 26.0	57%	27%
Cluster 4 Mixed disciplines	41	VET PartTime FulltimeAca SeniorAca	Larger Larger Smaller Smaller	55.9 21.5 13.8 8.8	58%	28%
Overall sector	130	VET Postgraduate EFTSL External SeniorAca PartTime	Larger Smaller Smaller Larger Smaller Larger	31.7 22.0 15.1 12.0 10.1 9.1	41%	25%

4 Discussion

4.1 Previous research

A review of past and current studies of attrition in tertiary education institutions shows a common pattern of attrition rates being generally higher than institutions and government funding agencies are comfortable with, irrespective of the country in which the study has been undertaken. A recent research project (Aljohani, 2016) reviews a number of studies undertaken in Australia, the US, Britain, Europe and Arabia, and identifies factors that are most commonly associated with high levels of attrition. Aljohani comments that in the past, studies of attrition identified student characteristics that were believed to be related to high levels of attrition and focused on students' personal attributes and shortcomings, but in more recent years there has been a shift to considering the educational, sociological, organisational and economic influences related to the institutions themselves. Tinto (1975, 2010), who was one of the early researchers into the nature of attrition in the US college system, believes that most institutions now have a good understanding of the factors involved in attrition and are focused on changing their teaching and administration processes to identify students at risk of not completing, to improve student outcomes.

In 2007 a major study of retention of undergraduate students in higher education was undertaken by the National Audit Office in the UK (National Audit Office, 2007). This report stated that the retention rates of UK institutions compared favourably with those of institutions in other Organisation for Economic Co-operation and Development (OECD) countries, shown by the published survival rates (the ratio of graduates from either a Type A or Type B undergraduate degree to new entrants n years before where n years is the full-time duration of the degree). The data relate to 2004 and show that at that time the UK had a much higher survival/retention rate (77%) than Australia (67%).

In the last 10 years there has been a much greater focus on ensuring that students are engaged with their higher education experience. Internationally, there has been an increase in identifying the extent of student engagement and social integration through surveys such as the University Experience Survey in Australia and the National Survey of Student Engagement (NSSE) in the US and Canada, which assist in the identification of issues which may lead to discontinuation.

There is considerable commonality about the issues which may lead to high attrition rates between the various international studies (NAO, 2007; James, 2008; ACER, 2011; ACER, 2015; Aljohani, 2016; Crosling, Thomas and Heagney, 2008). The factors identified in these studies include:

> student academic ability

> a range of personal issues such as :
  - lack of engagement with fellow students and staff
  - family pressures
  - financial pressures
  - poor preparation for higher education study
  - poor choice of course,

and from the institutional perspective:

> quality of teaching

- quality of student services and facilities
- the type of institution and its size, and
- the disciplines offered.

The Australian references cited above (James, ACER, Crosling et al) report similar experience and causes of attrition as the overseas studies. Many of the personal factors identified as being associated with high levels of attrition are beyond the control of the institutions. While many new approaches to improving student outcomes have been tried, improvement in retention is not universal across the institutions, and there remains a persistent level of attrition due to the factors summarised above.

4.2 Comparison of Australia's and overseas attrition rates

The latest *Education at a Glance* publication from the OECD (OECD, 2016) does not include survival rates such as those quoted in earlier versions which were used in the UK NAO report and the James study (2008), but does present full-time student completion rates at bachelor degree level or equivalent. These completion rates, all calculated through a cohort analysis of full-time commencers including international students, show that in 2014, Australia's full-time student completion rate (within n+3 years of commencement, where n is the length of the course) is 70%; compared with the UK's 84%, the US' 78% and an OECD average of 69% (see Figure 9.1 of OECD 2016, p.168). These relativities suggest that Australia's overall attrition rate (as opposed to first-year attrition) plus the proportion of students taking longer than n+3 years to complete is approximately 30%, while the corresponding rates are 16% and 22%, for the UK and the US respectively.

Figure 9.2 of the 2016 OECD report divides the full-time cohorts by: whether they have graduated in n+3 years or less; the proportion of the cohorts still studying after this time period; and the percentage who had not graduated and were not still in education. The values shown in table 11 of the OECD cohort analysis are extracted from Figure 9.2 (OECD, 2016, p172). These figures are based on cohort analysis.

Table 11: Distribution of full-time students who entered bachelor degree or equivalent study at the end of n+3 years study

Country	% graduated with bachelor degree or equivalent	% still in education	% not graduated and not in education
Australia	70	9	21
UK	84	1	15
US	78	5	17
OECD Average	69	8	23

Source: Figure 9.2, OECD 2016, page 172

The final column in table 11 is a form of attrition on a similar basis for different countries but using cohort analysis for full-time students only. This is not directly comparable with the first-year bachelor degree attrition calculations based on cohort analysis derived in the study of completions, retention and progress recently completed for 2015 by DET. The reasons for the differences include that DET's study:

- uses adjusted attrition which takes account of students moving between higher education providers and graduating in the new institution
- covers full-time and part-time students in its analysis
- has a focus on first year student attrition, and
- excludes international students.

In spite of these differences, the OECD information provides some insight into recent relative positions with respect to attrition for Australia and its major higher education competitors. The difficulties in obtaining a consistent time series of data include variations in the methodology for calculating completion rates between years and the levels of courses included in the indicators. Nevertheless it is possible to say that Australia's full-time undergraduate completion rates based on cohort analysis are currently and for the last ten years have been around the OECD average.

4.3 Findings of the study

The more recent focus on the student-institution interaction and the developing understanding of the impact of this on attrition levels is consistent with TEQSA's approach of monitoring attrition performance at the institutional level, and modelling attrition levels by institutional characteristics.

This study has provided TEQSA with a better understanding of attrition in the range of higher education institutions it regulates. Using an approach which focuses on institutional characteristics identified through the findings of past and current research studies in attrition, it has been possible to segment the 130 institutions included in this analysis into four groups of providers which are quite distinct. Multivariate regression analyses performed on each of the four clusters provide excellent fits to the data in three of the four clusters, with high adjusted R^2 values indicating that the majority of the variance in the data for the clusters is adequately explained by the models obtained.

While it is possible to fit a multivariate regression model to the sector as a whole, the better models in terms of goodness of fit and explanatory power for attrition found in the cluster analysis give a more nuanced picture of the factors affecting attrition levels in Australian higher education providers.

Several of the significant variables found in these models affect attrition rates in the Australian higher education sector across more than one segment:

- external enrolments
- postgraduate level study
- proportion of senior academic staff employed by the institution
- percentage of students admitted on the basis of VET study, and

> percentage of full-time staff employed.

What is interesting in the findings of TEQSA's study is that many of the student-centred factors expected to impact on attrition levels such as ATARs, socio-economic status, and mature-aged entry, do not emerge as having significant impacts on attrition levels overall or in the clusters of institutions identified. Only in Cluster 2 is there any significant relationship between progress rates and attrition. The presence of the proportion of students admitted on the basis of VET studies as an important explanatory variable in the model for the whole-sector and those for Clusters 1, 3 and 4 suggests that it could be acting as a surrogate for other variables such as ATAR or socio-economic status.

Concerns have been frequently raised in the media about likely links between increased first-year attrition and the admission of larger numbers of students with lower year 12 entry ranks under the demand-driven system implemented in 2009. But the facts do not support this premise. As shown by DET's time-series analysis of attrition, while first year attrition in bachelor degrees has been rising in recent years, in 2014 it was no higher than in 2005, which was well before the demand-driven system commenced. Over that same period there were 37% extra enrolments and the majority of these students have successfully completed or are pursuing their studies.

4.4 The cluster analysis

The segments obtained through the hierarchical cluster analysis are intuitively reasonable but, as shown earlier, cross the market groupings currently used by TEQSA in its regulatory activities. The clustering highlights common characteristics of the providers often identified through the qualitative analysis of assessment applications. Characteristics such as field of education focus, the proportions of part-time and external enrolments, and the mix of international and domestic students for example, are often noted in cases where first-year attrition is found to be high and reporting requirements are imposed as a condition of registration of the provider.

Grouping institutions in clusters of similar providers based on the chosen discriminating set of variables enables more targeted initiatives to be developed for each cluster, to remediate high levels of attrition. This approach should assist TEQSA in identifying critical characteristics impacting on attrition levels for groups of similar institutions. It will also assist in framing appropriate conditions and data-reporting requirements in the Agency's assessment of renewal of registration and renewal of accreditation applications from providers.

The cluster-analysis approach has been useful in providing a purely statistical analysis of common features of segments of institutions compared with their peers. At a recent higher education conference at Cambridge University in the UK (29th Consortium of Higher Education Researchers, held in September 2016) a paper was presented which used cluster analysis to group Italian universities based on their performance on a number of indicators related to funding systems and outcomes. The approach was very similar to that undertaken in TEQSA's study reported here; it would be useful for TEQSA to examine outcomes and issues identified in the two approaches.

The importance of Cluster 1 (the universities) needs to be stressed, comprising as it does 93% of the

enrolments in the sector. The findings for this cluster are powerful in enabling an understanding to be developed of attrition for the majority of higher education commencing student enrolments in Australia.

4.5 The multivariate models

4.5.1 The universities

The two most significant characteristics emerging from the analysis as being associated with high attrition rates in universities were the proportion of students studying externally, and the size of the institution. This finding is consistent with one of the key messages from the Commonwealth Government's most recent cohort analysis which indicated that type of attendance (full-time/part-time) and student age had a greater influence on university bachelor degree students completing successfully, than a student's ATAR score (DET, 2016).

It is interesting to note that the proportion of students admitted on the basis of VET qualifications was an important explanatory factor for the university cluster, even though the proportion of previous VET students enrolled is not large in most institutions in this group (with the exception of the relatively small number of dual-sector universities).

4.5.2 Other clusters

As stated earlier, Cluster 2 (small providers with an emphasis on Society and Culture) consists predominantly of faith-based institutions. This is the only cluster for which high attrition is impacted by poor progress rates. This result could reflect the nature of the enrolment patterns undertaken by students in faith-based institutions. TEQSA often receives feedback from this group of providers that a number of their students never intend to complete a course of study but instead enrol in particular single units which contain material they want to study. This sometimes leads to higher attrition rates because such students never intend to return to study in the following year.

In fact, in TEQSA's regulatory assessments, high attrition rates are often accompanied by high progression rates. This combination of indicator values suggests that for these institutions increased levels of attrition are not generally related to poor academic progress or within-year academic success, but may reflect other characteristics and reasons for non-continuation of study, such as personal issues or the structure of academic programs.

Cluster 3 represents a distinctively different market and student profile compared with institutions in the other clusters, and consists of a group of medium-sized for-profit providers with a strong focus on international students and the Management and Commerce field of education.

The model for attrition in this cluster is consistent with what is often observed in the assessments

undertaken by TEQSA for some for-profit institutions with large international student intakes. The emphasis on the field of Management and Commerce and focus on young overseas students are common features of the student profile of this group. A complaint is often made by these providers when attrition issues are raised in their renewal of registration or renewal of accreditation assessments because it is not possible to calculate adjusted attrition for international students. In this study, all attrition data are raw figures and so all institutions are considered on a comparable basis.

Cluster 4 is the largest group of institutions and most diverse segment for the sector. Examination of the list of institutions in Cluster 4 shows that the group is a very mixed group of institutions, consisting of:

- some for-profit providers
- all of the for-profit pathway institutions (mainly Navitas and Institute of Business and Technology centres in various states)
- all of the TAFE providers providing higher education courses, and
- some specialist organisations, such as Avondale College and Marcus Oldham College.

The institutions generally offer a wide range of disciplines.

The attrition rates vary from very low values in some of the specialist organisations, to 74% in one TAFE college. Mostly, the attrition rates are in the 20-29% range. Because of the diversity in the institutions in the cluster, it is difficult to generalise about what might impact on the attrition rates for the group as a whole.

4.5.3 Interpretation and limitations of the findings

The analysis of data on first-year student attrition is a complex problem and there are often issues such as the definitions and scope of the data used which impact on the conclusions drawn. Care needs to be taken when interpreting the outcomes of this analysis, and the following comments are provided to assist in this.

The approach taken needs to be appropriate to the business focus of the organisation undertaking the analysis. This study is a cross-sectional, point in time analysis. It focuses on institutional outcomes which is consistent with TEQSA's regulatory functions and risk-based approach. But the cluster analysis and modelling used does not describe student outcomes for those who drop into and out of higher education but eventually complete. The inclusion of international students, who do not have a CHESSN to enable tracking of movements between institutions in the TEQSA study prevent adjustment of attrition rates as in some other cohort analyses. The use of a single year's enrolment information has limitations, although the shifts that occur between year-to-year attrition rates are fairly steady. However this should be tested and the TEQSA study repeated for successive years to see that the approach is stable over time.

While it may be important for higher education providers catering to particular student groups such as rural or Indigenous students to be able to track enrolment patterns between years, there are also advantages in examining raw attrition rates for a wider group of students and then following up on patterns of enrolment for particular enrolment subgroups using detailed cohort analysis on individual student data. Both approaches are fit for purpose and provide different and complementary insights into the issue of attrition.

The multivariate regression models derived in this study for the clusters describe associations among variables and attrition rate. While these models document possible relationships between the relevant variables and attrition rate, they do not indicate whether the relationship is causal or not, and there is no way of determining causality using a cross–sectional approach. For example, part-time study and external enrolment were identified as highly correlated with attrition rates in some of the clusters but the approach does not indicate whether or not these enrolment types of study cause subsequent attrition in the course. An alternative explanation is that a student's enrolment pattern is due to the life circumstances of the student and it is those circumstances, such as work and family commitments, which cause them to drop out of first-year study. Care therefore needs to be taken in using these models to identify the *causes of attrition* in particular institutional or individual cases.

The converse of this is also the case. It is possible for a causative relationship to exist between a particular variable and attrition but that variable may not be included in the multivariate model for the cluster. As indicated above the cluster modelling did not identify ATAR scores, low socio-economic status or mature-aged entry as significant factors associated with attrition. This does not mean that these factors are totally unrelated to drop out rates from higher education; rather it indicates that they are less strongly related to attrition at the institutional/cluster level than the other variables identified in the analysis. The expression of the variables related to these student characteristics at an institutional levels (e.g. median ATAR for the provider, percentage of EFTSL with low socio-economic status background), the nature of some of the factors which were significantly associated with attrition (e.g. admission on the basis of VET studies and part-time enrolment) and the inclusion of postgraduate students in the analysis may explain the lack of association between attrition rate and ATAR and low SES background. It is also not uncommon for variables identified in univariate analysis to drop out in multivariate analysis because of the inter-relationships between factors and the strength of association with the outcome of interest.

It has been pointed out that TEQSA's definition of attrition rate differs from that used by DET. Again, this is appropriate given TEQSA's regulatory remit and the nature of many of the non-University providers which have a strong focus on international students. However, looking to the future, the definition needs review because of the changing nature of the academic year and because it assumes that students are progressing through well-structured courses of study packaged as annual tranches of learning. Increasingly, the sector is undergoing change regarding delivering higher education to students in different packets of knowledge such as micro-credentialling, customised learning to suit individual student needs, and industry-based learning with a focus on need-to-know knowledge and skill without the coherence of a traditional academic course. These innovations need to be considered when thinking about attrition and how to measure it.

5 Implications for the future

This study has enabled the identification of a range of factors which appear to influence first-year attrition rates in Australian higher education institutions. TEQSA is interested in:

- updating the analysis with the 2015 data to examine whether the multivariate models are stable over time
- exploring further the nature of the variables used in the multivariate modelling to see whether there are more powerful ways to represent the institutional variables than those used in the 2014 analysis
- incorporating in its analysis qualitative information held in its database on improvements in attrition by providers when conditions or data requests have been imposed as part of the assessments for registration or accreditation (this will help to identify good practice in the sector in relation to improving first-year attrition), and
- considering possible improvements to the definition of attrition to take account of emerging trends in the structure of the academic year and student enrolment behaviour.

Several of the explanatory variables in the models for the clusters have been identified in other studies as common features of higher education providers with high levels of attrition, and others represent factors TEQSA has identified as being associated with institutions which show high levels of risk to students. These factors include smaller size of the institution and a narrow profile of fields of study, particularly in Management and Commerce. The findings of the most significant factors impacting on the first-year attrition rate for a particular institution can be used by TEQSA to assess the likelihood of a new or existing institution exhibiting a high risk in relation to student attrition, and, by their nature, allow the more useful targeting of advice about actions which need to be taken by the provider to mitigate this risk.

TEQSA will continue to monitor first-year attrition closely as part of its assessment of risk for all higher education providers, and will engage in discussion with the sector on the findings of this study.

Appendix 1

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12008	Australian Catholic University Limited	Cluster 1	University	21519.4	0.21
PRV12002	Australian National University	Cluster 1	University	15586.9	0.15
PRV12072	Bond University Limited	Cluster 1	University	5495.5	0.15
PRV12073	Central Queensland University	Cluster 1	University	12299.77	0.27
PRV12069	Charles Darwin University	Cluster 1	University	6131.9	0.31
PRV12018	Charles Sturt University	Cluster 1	University	22018.1	0.28
PRV12158	Curtin University of Technology	Cluster 1	University	35310.06	0.17
PRV12124	Deakin University	Cluster 1	University	35272.3	0.19
PRV12160	Edith Cowan University	Cluster 1	University	17271.6	0.23
PRV12151	Federation University Australia	Cluster 1	University	9758.9	0.24
PRV12076	Griffith University	Cluster 1	University	33058.2	0.20
PRV12077	James Cook University	Cluster 1	University	16471.5	0.23
PRV12132	La Trobe University	Cluster 1	University	27436.2	0.18
PRV12032	Macquarie University	Cluster 1	University	28691.21	0.16
PRV12140	Monash University	Cluster 1	University	52991.6	0.12
PRV12163	Murdoch University	Cluster 1	University	16391.99	0.20
PRV12079	Queensland University of Technology	Cluster 1	University	34739.7	0.16
PRV12145	Royal Melbourne Institute of Technology	Cluster 1	University	45475.5	0.12
PRV12043	Southern Cross University	Cluster 1	University	9147.5	0.30
PRV12148	Swinburne University of Technology	Cluster 1	University	22130.6	0.27
PRV12097	The Flinders University of South Australia	Cluster 1	University	16428.36	0.18
PRV12105	The University of Adelaide	Cluster 1	University	21385.73	0.14
PRV12150	The University of Melbourne	Cluster 1	University	42636.8	0.10
PRV12170	The University of Notre Dame Australia	Cluster 1	University	9127.03	0.18
PRV12080	The University of Queensland	Cluster 1	University	39962.80	0.15

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12057	The University of Sydney	Cluster 1	University	43265.07	0.12
PRV12169	The University of Western Australia	Cluster 1	University	21093.0	0.13
PRV12003	University of Canberra	Cluster 1	University	11731.5	0.18
PRV12054	University of New England	Cluster 1	University	11659.0	0.27
PRV12055	University of New South Wales	Cluster 1	University	39596.6	0.12
PRV12056	University of Newcastle	Cluster 1	University	25582.3	0.18
PRV12107	University of South Australia	Cluster 1	University	22495.08	0.20
PRV12081	University of Southern Queensland	Cluster 1	University	14385.1	0.27
PRV12110	University of Tasmania	Cluster 1	University	18901.2	0.32
PRV12060	University of Technology, Sydney	Cluster 1	University	27747.32	0.15
PRV12082	University of the Sunshine Coast	Cluster 1	University	7961.6	0.26
PRV12061	University of Western Sydney	Cluster 1	University	32912.0	0.19
PRV12062	University of Wollongong	Cluster 1	University	23502.4	0.15
PRV12152	Victoria University	Cluster 1	University	20013.4	0.23
PRV12006	Alphacrucis College Limited	Cluster 2	Faith-based	361.1	0.25
PRV12010	Australian College of Theology Limited	Cluster 2	Faith-based	1427.2	0.36
PRV12011	Australian Film, Television and Radio School	Cluster 2	Government Agency	206.0	0.05
PRV12114	Australian Guild of Music Education Inc.	Cluster 2	Other	15.54	0.33
PRV12083	Australian Institute of Professional Counsellors Pty Ltd	Cluster 2	For-profit	114.1	0.58
PRV12068	Batchelor Institute of Indigenous Tertiary Education	Cluster 2	Other	11.5	0.00*
PRV12017	Campion Institute Limited	Cluster 2	Faith-based	97.8	0.33
PRV12075	Gestalt Therapy Brisbane Pty Ltd	Cluster 2	For-profit	29.3	0.08
PRV12127	Harvest Bible College Inc.	Cluster 2	Faith-based	155.2	0.35
PRV12161	Harvest West Bible College Inc	Cluster 2	Faith-based	31.71	0.24
PRV12130	John Paul II Institute for Marriage and Family, Melbourne	Cluster 2	Faith-based	33.0	0.25

* No commencing students in year 1.

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12155	Leo Cussen Institute	Cluster 2	Other	397.0	0.17
PRV12135	Melbourne College of Divinity	Cluster 2	University	682.5	0.23
PRV12136	Melbourne Institute for Experiential and Creative Arts Therapy	Cluster 2	Other	71.0	0.16
PRV12033	Moore Theological College Council	Cluster 2	Faith-based	326.9	0.21
PRV12034	Morling College Ltd	Cluster 2	Faith-based	69.0	0.38
PRV12035	Nan Tien Institute Limited	Cluster 2	Faith-based	16.9	0.25
PRV12009	Navitas Professional Institute Pty Ltd	Cluster 2	For-profit	2504.1	0.41
PRV12165	Perth Bible College Inc	Cluster 2	Faith-based	39.92	0.52
PRV12045	Sydney College of Divinity Ltd	Cluster 2	Faith-based	550.3	0.27
PRV12047	Tabor College (NSW) Ltd	Cluster 2	Faith-based	20.43	0.23
PRV12149	Tabor College (Victoria) Inc.	Cluster 2	Faith-based	146.3	0.27
PRV12103	Tabor College Incorporated	Cluster 2	Faith-based	364.5	0.37
PRV12168	Tabor College Incorporated (WA)	Cluster 2	Faith-based	24.08	0.39
PRV12109	Tabor College Tasmania Inc.	Cluster 2	Faith-based	40.0	0.48
PRV12048	The College of Law Limited	Cluster 2	Other	1658.9	0.26
PRV12064	Wesley Institute	Cluster 2	Faith-based	350.5	0.27
PRV12146	Acknowledge Education Pty Ltd	Cluster 3	For-profit	156.9	0.40
PRV12090	Australian Institute of Business Pty Ltd	Cluster 3	For-profit	2733.2	0.12
PRV12091	Australian Institute of Management South Australian Division	Cluster 3	Professional Body	38.4	0.16
PRV13001	Australian Institute of Professional Education Pty Ltd	Cluster 3	For-profit	92.1	1.00
PRV12016	Blue Mountains International Hotel Management School	Cluster 3	For-profit	1236.85	0.16
PRV12095	Carnegie Mellon University	Cluster 3	University	83.93	0.07
PRV12122	Chifley Business School Pty Ltd	Cluster 3	For-profit	1118.4	0.19

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12021	Group Colleges Australia Pty Ltd	Cluster 3	For-profit	490.9	0.34
PRV12128	Holmes Institute Pty Ltd as Trustee for Holmes Institute Trust	Cluster 3	For-profit	3018.6	0.35
PRV12099	ICHM Pty Ltd	Cluster 3	For-profit	414.4	0.12
PRV12022	INSEARCH Ltd	Cluster 3	Pathway	1620.6	0.49
PRV12188	Investment Banking Institute Business School Pty Ltd	Cluster 3	For-profit	2.0	0.00*
PRV12094	Kaplan Business School Pty Limited	Cluster 3	For-profit	1536.6	0.36
PRV12030	Kaplan Higher Education Pty Ltd	Cluster 3	For-profit	806.58	0.39
PRV12100	Le Cordon Bleu Australia Pty. Limited	Cluster 3	For-profit	395.75	0.11
PRV12138	Melbourne Institute of Technology Pty Ltd	Cluster 3	For-profit	783.1	0.30
PRV12139	Monash College Pty Ltd	Cluster 3	Pathway	1831.0	0.13
PRV12044	Study Group Australia Pty Limited	Cluster 3	For-profit	144.8	0.44
PRV12051	The Centre of Academic Excellence Pty. Ltd.	Cluster 3	For-profit	234.0	0.29
PRV12059	Top Education Group Pty Ltd	Cluster 3	For-profit	791.8	0.33**
PRV12209	Torrens University Australia Ltd	Cluster 3	University	136.7	0.00*
PRV12106	University College London	Cluster 3	University	45.4	0.10
PRV12027	UOWC Ltd	Cluster 3	Pathway	63.8	0.51
PRV12113	Academy of Design Australia Limited	Cluster 4	For-profit	215.90	0.26
PRV12005	Academy of Information Technology Pty Ltd	Cluster 4	For-profit	253.1	0.27
PRV12066	ACPE Limited	Cluster 4	Other	788.2	0.36
PRV12087	Adelaide Central School of Art Incorporated	Cluster 4	Other	93.9	0.32
PRV12070	Australian College of Natural Medicine Pty Ltd	Cluster 4	For-profit	2505.8	0.36
PRV12187	Australian College of the Arts Pty Ltd	Cluster 4	For-profit	151.1	0.31
PRV12015	Avondale College Limited	Cluster 4	Faith-based	1004.6	0.25

* No commencing students in year 1.

** The attrition rates for these two providers were changed subsequent to this analysis. The revised rates are Top Education Group, 0.22, and Canberra Institute of Technology, 0.40. For further information, see Appendix 4.

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12117	Box Hill Institute	Cluster 4	TAFE	511.9	0.34
PRV12004	Canberra Institute of Technology	Cluster 4	TAFE	66.3	0.74**
PRV12123	Chisholm Institute	Cluster 4	TAFE	124.7	0.31
PRV12074	Christian Heritage College	Cluster 4	Faith-based	508.50	0.31
PRV12157	Colleges of Business and Technology (WA) Pty Ltd	Cluster 4	Pathway	775.1	0.23
PRV12096	Educational Enterprises Australia Pty Ltd	Cluster 4	Pathway	353.5	0.20
PRV12129	Holmesglen Institute	Cluster 4	TAFE	632.2	0.40
PRV12025	International College of Management, Sydney Pty. Limited	Cluster 4	For-profit	783.26	0.25
PRV12026	International Conservatorium of Music (Aust)	Cluster 4	Other	144.0	0.23
PRV12084	Jazz Music Institute Pty Ltd	Cluster 4	For-profit	57.10	0.25
PRV12029	JMC Pty. Limited	Cluster 4	For-profit	2689.7	0.29
PRV12031	Macleay College Pty Limited	Cluster 4	For-profit	286.7	0.31
PRV12133	Marcus Oldham College	Cluster 4	Other	164.1	0.02
PRV12137	Melbourne Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	2417.8	0.23
PRV12142	Melbourne Polytechnic (formerly NMIT)	Cluster 4	TAFE	811.6	0.38
PRV12036	National Art School	Cluster 4	Other	397.15	0.16
PRV12186	Navitas Bundoora Pty Ltd	Cluster 4	Pathway	649.9	0.38
PRV12166	Perth Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	579.9	0.21
PRV12144	Phoenix Institute of Australia Pty Ltd	Cluster 4	For-profit	42.0	0.25
PRV12200	Photography Holdings Pty Ltd	Cluster 4	For-profit	87.7	0.29
PRV12167	Polytechnic West	Cluster 4	TAFE	197.9	0.31
PRV12078	Queensland Institute of Business & Technology Pty Ltd	Cluster 4	Pathway	2036.9	0.24
PRV12039	Raffles College Pty Ltd	Cluster 4	For-profit	726.9	0.21
PRV12042	SAE Institute Pty Limited	Cluster 4	For-profit	2094.7	0.33
PRV12102	South Australian Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	953.2	0.27

** The attrition rates for these two providers were changed subsequent to this analysis. The revised rates are Top Education Group, 0.22, and Canberra Institute of Technology, 0.40. For further information, see Appendix 4.

Table A1.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Attrition rate
PRV12046	Sydney Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	2403.1	0.14
PRV12177	Sydney Institute of Health Sciences Pty. Ltd	Cluster 4	For-profit	61.4	0.38
PRV13003	TAFE Queensland	Cluster 4	TAFE	268.1	0.14
PRV12049	Technical and Further Education Commission	Cluster 4	TAFE	678.4	0.31
PRV12050	The Australian Institute of Music Limited	Cluster 4	Other	1097.6	0.31
PRV12052	The National Institute of Dramatic Art	Cluster 4	Other	174.0	0.04
PRV12058	Think: Colleges Pty Ltd	Cluster 4	For-profit	2757.07	0.38
PRV12065	Whitehouse Institute Pty Ltd	Cluster 4	For-profit	433.7	0.28
PRV12153	William Angliss Institute of TAFE	Cluster 4	TAFE	661.20	0.18

Table A1.2: Providers (18) with no available attrition rates

Prov #	Institution	Cluster
PRV12001	Commonwealth of Australia	Excluded
PRV12040	Relationships Australia (NSW)	Excluded
PRV12085	Southbank Institute of Technology	Excluded
PRV12088	Adelaide College of Divinity Incorporated	Excluded
PRV12104	Minister for Employment, Higher Education and Skills	Excluded
PRV12108	The Law Society of South Australia	Excluded
PRV12111	Worldview Centre for Intercultural Studies	Excluded
PRV12115	Australian Institute of Management - Victoria & Tasmania	Excluded
PRV12119	The Cairnmillar Institute School of Psychology Counselling and Psychotherapy Pty Ltd	Excluded
PRV12141	Navitas College of Public Safety Pty Ltd	Excluded
PRV12147	Summer Institute of Linguistics Australia	Excluded
PRV12154	Carrick Higher Education Pty Ltd	Excluded
PRV12156	Australian School of Management Pty Ltd	Excluded
PRV12178	Williams Business College Ltd	Excluded
PRV12189	Swinburne College Pty Ltd	Excluded
PRV12202	Vose College	Excluded
PRV13002	MHM Higher Education Pty Ltd	Excluded
PRV13004	West Coast Institute of Training	Excluded

Table A1.3: Providers (25) who submitted PIR data

Prov #	Institution	Cluster
PRV12007	Asia Pacific International College Pty Ltd	PIR
PRV12012	Australian Institute of Business and Management Pty Ltd	PIR
PRV12013	Australian Institute of Higher Education Pty Ltd	PIR
PRV12014	Commissioner of the Australian Federal Police	PIR
PRV12019	Governance Institute of Australia Ltd	PIR
PRV12020	The College of Nursing	PIR
PRV12023	Institute for Emotionally Focused Therapy Pty Ltd	PIR
PRV12024	Chartered Accountants Australia and New Zealand	PIR
PRV12038	Newcastle International College Pty Ltd	PIR
PRV12041	S P Jain School of Global Management Pty Limited	PIR
PRV12053	The New South Wales Institute of Psychiatry	PIR
PRV12063	Wentworth Institute of Higher Education Pty Ltd	PIR
PRV12071	Australian Institute of Management Education and Training	PIR
PRV12089	Adelaide College of Ministries Incorporated	PIR
PRV12112	Academies Australasia Polytechnic Pty Limited	PIR
PRV12116	OASES Community Learning Limited	PIR
PRV12120	Cambridge International College (Vic) Pty Ltd	PIR
PRV12121	Centre for Pavement Engineering Education Incorporated	PIR
PRV12125	Eastern Health	PIR
PRV12131	Kollel Academy of Advanced Jewish Education Limited	PIR
PRV12134	Mayfield Education Inc.	PIR
PRV12162	Montessori World Educational Institute (Australia) Inc	PIR
PRV12164	ParaPharm Pty Ltd	PIR
PRV12182	The Institute of Internal Auditors-Australia	PIR
PRV12203	International Institute of Business and Technology (Australia) Pty Ltd	PIR

Appendix 2

Table A2.1: Definitions of variables used in the attrition analysis

Variable Name	Definition
Profit/not-for-profit	Is the institution a profit or not-for-profit organisation? Yes or no
Grouping	Is the institution a university, TAFE, Pathway, etc. Type category
Duration	Duration of operation Less than 5 or greater than or equal to 5 years
Revenue	Revenue band – categories from $0.5m to greater than $1000m
MultiSector	Does the institution also provide VET education
Regional	Is the institution a regional provider – yes/no
HEIMS	Is the institution eligible to provide FEE-HELP
EFTSL	Equivalent Full-time Student Load
External	Percentage of total EFTSL who are external students External EFTSL/total EFTSL*100
International	Percentage of total EFTSL who are international students International EFTSL/total EFTSL*100
PartTime	Percentage of total EFTSL who are part-time students Part-time EFTSL/total EFTSL*100
Postgraduate	Percentage of total EFTSL who are postgraduate students Postgraduate EFTSL/total EFTSL*100
Health	Percentage of total EFTSL enrolled in the field of education of Health FoE Heath EFTSL/total EFTSL*100
Management	Percentage of total EFTSL enrolled in the field of education of Management and Commerce FoE Management and Commerce EFTSL/total EFTSL*100
Society	Percentage of total EFTSL enrolled in the field of education of Society and Culture FoE Society and Culture EFTSL/total EFTSL*100
FoE_Other	Percentage of total EFTSL enrolled in the field of education Other FoE Other EFTSL/total EFTSL*100
FTE	Staff Full-time equivalent
Academic	Percentage of FTE staff who are academic Academic FTE/total FTE staff*100
Teaching	Percentage of total academic staff FTE who are Teaching only staff Academic teaching only FTE/total FTE academic staff*100
SeniorAca	Percentage of total academic staff FTE who are senior academics Academic FTE classified at senior pay scale/total FTE academic staff*100
ResearchAca	Percentage of total academic staff FTE who are research only staff Academic research only FTE/total FTE staff*100
FulltimeAca	Percentage of total academic staff FTE who are full-time academic staff Academic full-time contract FTE/total academic FTE staff*100

Table A2.1: Definitions of variables used in the attrition analysis (continued)

Variable Name	Definition
SSR	Student to academic staff ratio EFTSL/ FTE academic staff (including casual FTE)
Casuals	Percentage of total academic staff FTE who are casual staff Academic casual FTE/total academic FTE staff*100
Agreement	Percentage of CEQ responses that are positive responses Responses of 4 or 5 to CEQ questions/Total responses to CEQ*100
FTemployment	Percentage of responses to Graduate Destination Survey in FT Employment Responses 'in FT employment' to GDS question/ Total responses to GDS employment outcomes*100
FTstudy	Percentage of responses to Graduate Destination Survey in FT Study Responses 'in FT study' to GDS question/ Total responses to GDS employment outcomes*100
SeekingFT	Percentage of responses to Graduate Destination Survey seeking FT Study/ Employment Responses 'seeking FT employment' to GDS question/ Total responses to GDS employment outcomes*100
Progress	Progress rates Within year EFTSL passed/EFTSL attempted
Low SES	Percentage of total EFTSL with low socio economic status (defined as in HEIMS collection) Low SES EFTSL / total EFTSL*100
Median TES	Median Tertiary Entrance Score (TES) First-year student median ATAR
Indigenous background	Percentage of total EFTSL who are Indigenous students Indigenous EFTSL/total EFTSL*100
Age	Average Age Mean age of students on entry
Female	Percentage of total EFTSL who are female Female EFTSL/total EFTSL*100
Basis for Admission (Mature Age Entry)	Percentage of total EFTSL who are Mature Age Entrants Mature-aged first-year EFTSL/total first-year EFTSL*100
Basis for Admission (VET Award Course)	Percentage of total EFTSL admitted on the basis of VET studies Commencing EFTSL admitted on basis of VE qualifications /total first-year EFTSL*100

Appendix 3

Cluster analysis

Description

The cluster analysis used in this study to segment the Australian higher education sector was Hierarchical Cluster Analysis (HCA), using a dissimilarity matrix calculation (as explained in Struyf, Hubertand and Rousseeuw, 1997). This approach was available in the software package 'R', and the outcomes of the process are presented graphically as a treed structure with distinct branches. Such structures are known as dendrograms. This allows the institutional characteristics shown in Table 2 to be assessed specifically for each of the clusters identified in the segmentation of the higher education sector.

The analysis is exploratory in nature, with the optimal solution being produced by an iterative process of computational adjustments which are based on prior knowledge and cluster quality evaluation criteria such as cohesion, separation and within-cluster sum of square error (SSE) (Tan, Steinbach and Kumar, 2006).

Cohesion within a cluster identified using this approach is the sum of the proximities between the points in the cluster with respect to the cluster centroid (the middle of a cluster). Similarly, the separation between two clusters is measured by the proximity of the two cluster centroids. The within-cluster SSE is defined as half the sum of the square distances between the points in the clusters. Lower values of SSE are therefore desirable. A strong relationship exists between cohesion and separation which allows for the computation of an overall measure for cluster evaluation, known as the Silhouette coefficient (Tan, Steinbach and Kumar, 2006, Section 8.5.2). A positive Silhouette coefficient between 0 and 1 and as close as possible to 1 is desirable. The Silhouette coefficient and the SSE are the main statistical evaluation measures used to assess the structure and influence of discriminators on the segmentation. However, given that the primary objective of this analysis was to find clusters of similar institutions, particular emphasis was put on the SSE which is related to the distances between the objects in the cluster.

Discriminator variables used

In order to apply the cluster analysis methodology it was necessary to select a group of discriminator variables to be applied in the determination of the similar groups. The variables listed in Table 2 as expected relevant characteristics associated with attrition are used as a starting point for the discriminators, but some are eliminated because of the degree of interrelationships between them (for example EFTSL and FTE). In this case, only one of these was used for the analysis. EFTSL, which is a direct measure of institutional size, was chosen as a discriminator for the segmentation analysis. Good practice in cluster analysis suggests only a limited set of variables should be used to segment the data set.

Table A3.1 shows the discriminators chosen for the analysis. These are divided into three groups: institutional-based; student-enrolment based and staff-based variables. While some of these variables are derived from individual student and staff data, the variables used in the clustering are described at the institutional level. For detailed descriptions of the discriminatory variables, see the definitions in Table A2.1 of Appendix 2.

The student enrolment-based discriminators used aim at capturing the effects of institutions' target student populations and prominent fields of education in the clustering. The staff discriminators capture the effects of institutions' staffing practices, including strategies for the use of casual teaching staff.

Commonly, in cluster analysis, weights are applied to each of the discriminator variables, but in this study it was decided not to impose weights, to allow the patterns inherent in the data set to influence the clustering into segments, rather than impose a preconceived idea about the impact of particular outcomes.

Table A3.1: Discriminators used in the segmentation of the Australian higher education sector

Characteristics	Variable Name	Description
Institutional-based	Grouping	TEQSA market grouping
	Duration	Duration of operation
	MultiSector	Provider with vocational education and higher education courses
	Regional	Metro/Regional indicator–location of institution's main operation
Student-based	EFTSL	Equivalent Full Time Student Load - Total EFTSL enrolled including domestic and international students
	External	Percentage of total EFTSL who are not taught face-to-face
	International	Percentage of total EFTSL who are international students
	Part-time	Percentage of total EFTSL who are part-time students
	Postgraduate	Percentage of total EFTSL who are postgraduate students
	Health	Percentage of total EFTSL enrolled in the field of education of Health
	Management	Percentage of total EFTSL enrolled in the field of education of Management and Commerce
	Society	Percentage of total EFTSL enrolled in the field of education of Society and Culture
	FoE_Other	Percentage of total EFTSL enrolled in other fields of education
Staff-based	Teaching	Percentage of total academic staff FTE who are Teaching only staff
	Academic	Percentage of FTE staff who are academic
	SeniorAca	Percentage of FTE staff who are senior academics
	ResearchAca	Percentage of total academic staff FTE who are research only staff
	FulltimeAca	Percentage of total academic staff FTE who are full-time academic staff

Appendix 4

Amendment of Attrition Rates post publication of the report

Subsequent to the publication of this analysis of attrition rates, it was discovered errors had been made in Top Education Group Pty Ltd and Canberra Institute of Technology's final submission of enrolment data to the HEIMS data collection. These errors led to higher attrition rates than were actually the case. Revised data was submitted by the providers and the attrition rates re-calculated. The files used as the base data for the attrition calculations published in this report were obtained in August 2015 before agreement was reached between TEQSA and the providers about the correct attrition rates. There was no change to the formula for attrition, only the underpinning data.

Appendix 5

On 15 November 2017, the Department of Education and Training published attrition figures using a different methodology for the calculation raw attrition and adjusted attrition. The new attrition calculations ensure that students completing in year x + 1 in a teaching period commencing year x and concluding in year x + 1 are properly accounted for as completions rather than contributing to the attrition rate. This new attrition methodology is referred to by the Department of Education and training as 'new normal attrition' in its published data.

Table A5.1 displays the attrition rate utilized in this report (old attrition rate) and the revised figure using the new methodology (new attrition rate) together with the difference between the two figures. Whilst the majority of institutions were largely unaffected by applying the new methodology, five institutions experienced a greater than 10% drop in their reported attrition rate. TEQSA considers the new normal attrition calculation to be a more precise measure of attrition and will adopt it as a standard measure for all future work.

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12008	Australian Catholic University Limited	Cluster 1	University	21519.4	0.21	0.21	0.00
PRV12002	Australian National University	Cluster 1	University	15586.9	0.15	0.11	0.04
PRV12072	Bond University Limited	Cluster 1	University	5495.5	0.15	0.14	0.01
PRV12073	Central Queensland University	Cluster 1	University	12299.77	0.27	0.26	0.01
PRV12069	Charles Darwin University	Cluster 1	University	6131.9	0.31	0.30	0.01
PRV12018	Charles Sturt University	Cluster 1	University	22018.1	0.28	0.22	0.06
PRV12158	Curtin University of Technology	Cluster 1	University	35310.06	0.17	0.15	0.02
PRV12124	Deakin University	Cluster 1	University	35272.3	0.19	0.19	0.00
PRV12160	Edith Cowan University	Cluster 1	University	17271.6	0.23	0.22	0.01
PRV12151	Federation University Australia	Cluster 1	University	9758.9	0.24	0.24	0.00
PRV12076	Griffith University	Cluster 1	University	33058.2	0.20	0.19	0.01
PRV12077	James Cook University	Cluster 1	University	16471.5	0.23	0.21	0.02
PRV12132	La Trobe University	Cluster 1	University	27436.2	0.18	0.16	0.02

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12032	Macquarie University	Cluster 1	University	28691.21	0.16	0.14	0.02
PRV12140	Monash University	Cluster 1	University	52991.6	0.12	0.11	0.01
PRV12163	Murdoch University	Cluster 1	University	16391.99	0.20	0.19	0.01
PRV12079	Queensland University of Technology	Cluster 1	University	34739.7	0.16	0.16	0.00
PRV12145	Royal Melbourne Institute of Technology	Cluster 1	University	45475.5	0.12	0.12	0.00
PRV12043	Southern Cross University	Cluster 1	University	9147.5	0.30	0.29	0.01
PRV12148	Swinburne University of Technology	Cluster 1	University	22130.6	0.27	0.27	0.00
PRV12097	The Flinders University of South Australia	Cluster 1	University	16428.36	0.18	0.17	0.01
PRV12105	The University of Adelaide	Cluster 1	University	21385.73	0.14	0.13	0.01
PRV12150	The University of Melbourne	Cluster 1	University	42636.8	0.10	0.07	0.03
PRV12170	The University of Notre Dame Australia	Cluster 1	University	9127.03	0.18	0.18	0.00
PRV12080	The University of Queensland	Cluster 1	University	39962.80	0.15	0.15	0.00
PRV12057	The University of Sydney	Cluster 1	University	43265.07	0.12	0.11	0.01
PRV12169	The University of Western Australia	Cluster 1	University	21093.0	0.13	0.13	0.00
PRV12003	University of Canberra	Cluster 1	University	11731.5	0.18	0.18	0.00
PRV12054	University of New England	Cluster 1	University	11659.0	0.27	0.27	0.00
PRV12055	University of New South Wales	Cluster 1	University	39596.6	0.12	0.11	0.01
PRV12056	University of Newcastle	Cluster 1	University	25582.3	0.18	0.18	0.00
PRV12107	University of South Australia	Cluster 1	University	22495.08	0.20	0.20	0.00
PRV12081	University of Southern Queensland	Cluster 1	University	14385.1	0.27	0.27	0.00
PRV12110	University of Tasmania	Cluster 1	University	18901.2	0.32	0.31	0.01
PRV12060	University of Technology, Sydney	Cluster 1	University	27747.32	0.15	0.13	0.02
PRV12082	University of the Sunshine Coast	Cluster 1	University	7961.6	0.26	0.26	0.00
PRV12061	University of Western Sydney	Cluster 1	University	32912.0	0.19	0.19	0.00

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12062	University of Wollongong	Cluster 1	University	23502.4	0.15	0.14	0.01
PRV12152	Victoria University	Cluster 1	University	20013.4	0.23	0.23	0.00
PRV12006	Alphacrucis College Limited	Cluster 2	Faith-based	361.1	0.25	0.25	0.00
PRV12010	Australian College of Theology Limited	Cluster 2	Faith-based	1427.2	0.36	0.33	0.03
PRV12011	Australian Film, Television and Radio School	Cluster 2	Government Agency	206.0	0.05	0.05	0.00
PRV12114	Australian Guild of Music Education Inc.	Cluster 2	Other	15.54	0.33	0.33	0.00
PRV12083	Australian Institute of Professional Counsellors Pty Ltd	Cluster 2	For-profit	114.1	0.58	0.58	0.00
PRV12068	Batchelor Institute of Indigenous Tertiary Education	Cluster 2	Other	11.5	0.00*		
PRV12017	Campion Institute Limited	Cluster 2	Faith-based	97.8	0.33	0.33	0.00
PRV12075	Gestalt Therapy Brisbane Pty Ltd	Cluster 2	For-profit	29.3	0.08	0.08	0.00
PRV12127	Harvest Bible College Inc.	Cluster 2	Faith-based	155.2	0.35	0.33	0.02
PRV12161	Harvest West Bible College Inc	Cluster 2	Faith-based	31.71	0.24	0.30	-0.06
PRV12130	John Paul II Institute for Marriage and Family, Melbourne	Cluster 2	Faith-based	33.0	0.25	0.25	0.00
PRV12155	Leo Cussen Institute	Cluster 2	Other	397.0	0.17	0.17	0.00
PRV12135	Melbourne College of Divinity	Cluster 2	University	682.5	0.23	0.22	0.01
PRV12136	Melbourne Institute for Experiential and Creative Arts Therapy	Cluster 2	Other	71.0	0.16	0.16	0.00
PRV12033	Moore Theological College Council	Cluster 2	Faith-based	326.9	0.21	0.17	0.04
PRV12034	Morling College Ltd	Cluster 2	Faith-based	69.0	0.38	0.36	0.02
PRV12035	Nan Tien Institute Limited	Cluster 2	Faith-based	16.9	0.25	0.19	0.06
PRV12009	Navitas Professional Institute Pty Ltd	Cluster 2	For-profit	2504.1	0.41	0.41	0.00
PRV12165	Perth Bible College Inc	Cluster 2	Faith-based	39.92	0.52	0.52	0.00
PRV12045	Sydney College of Divinity Ltd	Cluster 2	Faith-based	550.3	0.27	0.27	0.00

* No commencing students in year 1.

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12047	Tabor College (NSW) Ltd	Cluster 2	Faith-based	20.43	0.23	0.23	0.00
PRV12149	Tabor College (Victoria) Inc.	Cluster 2	Faith-based	146.3	0.27	0.27	0.00
PRV12103	Tabor College Incorporated	Cluster 2	Faith-based	364.5	0.37	0.36	0.01
PRV12168	Tabor College Incorporated (WA)	Cluster 2	Faith-based	24.08	0.39	0.39	0.00
PRV12109	Tabor College Tasmania Inc.	Cluster 2	Faith-based	40.0	0.48	0.48	0.00
PRV12048	The College of Law Limited	Cluster 2	Other	1658.9	0.26	0.12	0.14
PRV12064	Wesley Institute	Cluster 2	Faith-based	350.5	0.27	0.26	0.01
PRV12146	Acknowledge Education Pty Ltd	Cluster 3	For-profit	156.9	0.40	0.40	0.00
PRV12090	Australian Institute of Business Pty Ltd	Cluster 3	For-profit	2733.2	0.12	0.11	0.01
PRV12091	Australian Institute of Management South Australian Division	Cluster 3	Professional Body	38.4	0.16	0.14	0.02
PRV13001	Australian Institute of Professional Education Pty Ltd	Cluster 3	For-profit	92.1	1.00		
PRV12016	Blue Mountains International Hotel Management School	Cluster 3	For-profit	1236.85	0.16	0.12	0.04
PRV12095	Carnegie Mellon University	Cluster 3	University	83.93	0.07	0.01	0.06
PRV12122	Chifley Business School Pty Ltd	Cluster 3	For-profit	1118.4	0.19	0.20	-0.01
PRV12021	Group Colleges Australia Pty Ltd	Cluster 3	For-profit	490.9	0.34	0.34	0.00
PRV12128	Holmes Institute Pty Ltd as Trustee for Holmes Institute Trust	Cluster 3	For-profit	3018.6	0.35	0.33	0.02
PRV12099	ICHM Pty Ltd	Cluster 3	For-profit	414.4	0.12	0.12	0.00
PRV12022	INSEARCH Ltd	Cluster 3	Pathway	1620.6	0.49	0.22	0.27
PRV12188	Investment Banking Institute Business School Pty Ltd	Cluster 3	For-profit	2.0	0.00*		
PRV12094	Kaplan Business School Pty Limited	Cluster 3	For-profit	1536.6	0.36	0.31	0.05
PRV12030	Kaplan Higher Education Pty Ltd	Cluster 3	For-profit	806.58	0.39	0.38	0.02

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12100	Le Cordon Bleu Australia Pty. Limited	Cluster 3	For-profit	395.75	0.11	0.11	0.00
PRV12138	Melbourne Institute of Technology Pty Ltd	Cluster 3	For-profit	783.1	0.30	0.27	0.03
PRV12139	Monash College Pty Ltd	Cluster 3	Pathway	1831.0	0.13	0.13	0.00
PRV12044	Study Group Australia Pty Limited	Cluster 3	For-profit	144.8	0.44	0.29	0.15
PRV12051	The Centre of Academic Excellence Pty. Ltd.	Cluster 3	For-profit	234.0	0.29	0.29	0.00
PRV12059	Top Education Group Pty Ltd	Cluster 3	For-profit	791.8	0.33**	0.33	0.00
PRV12209	Torrens University Australia Ltd	Cluster 3	University	136.7	0.00*		
PRV12106	University College London	Cluster 3	University	45.4	0.10	0.10	0.00
PRV12027	UOWC Ltd	Cluster 3	Pathway	63.8	0.51	0.36	0.15
PRV12113	Academy of Design Australia Limited	Cluster 4	For-profit	215.90	0.26	0.26	0.00
PRV12005	Academy of Information Technology Pty Ltd	Cluster 4	For-profit	253.1	0.27	0.26	0.01
PRV12066	ACPE Limited	Cluster 4	Other	788.2	0.36	0.36	0.00
PRV12087	Adelaide Central School of Art Incorporated	Cluster 4	Other	93.9	0.32	0.32	0.00
PRV12070	Australian College of Natural Medicine Pty Ltd	Cluster 4	For-profit	2505.8	0.36	0.36	0.00
PRV12187	Australian College of the Arts Pty Ltd	Cluster 4	For-profit	151.1	0.31	0.31	0.00
PRV12015	Avondale College Limited	Cluster 4	Faith-based	1004.6	0.25	0.24	0.01
PRV12117	Box Hill Institute	Cluster 4	TAFE	511.9	0.34	0.34	0.00
PRV12004	Canberra Institute of Technology	Cluster 4	TAFE	66.3	0.74**	0.40	0.34
PRV12123	Chisholm Institute	Cluster 4	TAFE	124.7	0.31	0.31	0.00
PRV12074	Christian Heritage College	Cluster 4	Faith-based	508.50	0.31	0.31	0.00
PRV12157	Colleges of Business and Technology (WA) Pty Ltd	Cluster 4	Pathway	775.1	0.23	0.23	0.00
PRV12096	Educational Enterprises Australia Pty Ltd	Cluster 4	Pathway	353.5	0.20	0.20	0.00
PRV12129	Holmesglen Institute	Cluster 4	TAFE	632.2	0.40	0.40	0.00

* No commencing students in year 1.

** The attrition rates for these two providers were changed subsequent to this analysis. The revised rates are Top Education Group, 0.22, and Canberra Institute of Technology, 0.40. For further information, see Appendix 4.

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12025	International College of Management, Sydney Pty. Limited	Cluster 4	For-profit	783.26	0.25	0.25	0.00
PRV12026	International Conservatorium of Music (Aust)	Cluster 4	Other	144.0	0.23	0.23	0.00
PRV12084	Jazz Music Institute Pty Ltd	Cluster 4	For-profit	57.10	0.25	0.25	0.00
PRV12029	JMC Pty. Limited	Cluster 4	For-profit	2689.7	0.29	0.29	0.00
PRV12031	Macleay College Pty Limited	Cluster 4	For-profit	286.7	0.31	0.31	0.00
PRV12133	Marcus Oldham College	Cluster 4	Other	164.1	0.02	0.02	0.00
PRV12137	Melbourne Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	2417.8	0.23	0.23	0.00
PRV12142	Melbourne Polytechnic (formerly NMIT)	Cluster 4	TAFE	811.6	0.38	0.38	0.00
PRV12036	National Art School	Cluster 4	Other	397.15	0.16	0.16	0.00
PRV12186	Navitas Bundoora Pty Ltd	Cluster 4	Pathway	649.9	0.38	0.38	0.00
PRV12166	Perth Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	579.9	0.21	0.20	0.01
PRV12144	Phoenix Institute of Australia Pty Ltd	Cluster 4	For-profit	42.0	0.25	0.25	0.00
PRV12200	Photography Holdings Pty Ltd	Cluster 4	For-profit	87.7	0.29	0.29	0.00
PRV12167	Polytechnic West	Cluster 4	TAFE	197.9	0.31	0.31	0.00
PRV12078	Queensland Institute of Business & Technology Pty Ltd	Cluster 4	Pathway	2036.9	0.24	0.24	0.00
PRV12039	Raffles College Pty Ltd	Cluster 4	For-profit	726.9	0.21	0.20	0.01
PRV12042	SAE Institute Pty Limited	Cluster 4	For-profit	2094.7	0.33	0.33	0.00
PRV12102	South Australian Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	953.2	0.27	0.27	0.00
PRV12046	Sydney Institute of Business and Technology Pty Ltd	Cluster 4	Pathway	2403.1	0.14	0.14	0.00
PRV12177	Sydney Institute of Health Sciences Pty. Ltd	Cluster 4	For-profit	61.4	0.38	0.11	0.27
PRV13003	TAFE Queensland	Cluster 4	TAFE	268.1	0.14	0.14	0.00

Table A5.1: Institutions by cluster, EFTSL and attrition, 2014 (continued)

Prov #	Institution	Cluster	Institution type	EFTSL	Old attrition rate	New attrition rate	Difference
PRV12049	Technical and Further Education Commission	Cluster 4	TAFE	678.4	0.31	0.31	0.00
PRV12050	The Australian Institute of Music Limited	Cluster 4	Other	1097.6	0.31	0.31	0.00
PRV12052	The National Institute of Dramatic Art	Cluster 4	Other	174.0	0.04	0.04	0.00
PRV12058	Think: Colleges Pty Ltd	Cluster 4	For-profit	2757.07	0.38	0.38	0.00
PRV12065	Whitehouse Institute Pty Ltd	Cluster 4	For-profit	433.7	0.28	0.28	0.00
PRV12153	William Angliss Institute of TAFE	Cluster 4	TAFE	661.20	0.18	0.18	0.01

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