



The dynamics of qualifications: implications for VET

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About the research

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Lisel O'Dwyer and Ian White

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Changes in the qualification profiles of workers is one indicator of changes in the supply and demand for education and training. Using Australian Census data on highest qualification held (which may understate the incidence of VET qualifications if they were obtained after completing higher education) this project analyses how tertiary qualification profiles in occupations changed between 2006 and 2016. Data from the 2015 Survey of Qualifications and Work, conducted by the Australian Bureau of Statistics (ABS), are also used to examine how well qualifications match workers' occupations.

A specific focus of this analysis is on changes in the proportions of workers with vocational education and training (VET) qualifications.

The analysis finds that, over the last decade, the overall workforce has become more educated: the proportion of workers holding VET or higher education qualifications has increased, while the numbers and proportion of workers without post-school qualifications has correspondingly decreased.

The study also revealed a general mismatch in terms of the skill level (and relevance) of the highest qualifications held by workers and the level of skill required for the job, with many more workers holding qualifications that 'exceed' the skill requirements for their occupation. While this may indicate underutilisation of skills and therefore sub-optimal returns on public and private investment in education and training, the study does not consider the broader social and economic benefits of having a more highly educated and skilled workforce.

As the study noted, changes in the mix of VET and higher education qualified workers in the workforce can be influenced by changes to industry regulatory requirements, credentialism and supply-side factors rather than occupational demand per se. In particular, supply-side influences such as higher education funding policies, combined with young people preferencing higher education over VET, are key factors in the changing distribution of the qualification profiles within the workforce.

Key messages

- The supply of qualified workers rose sharply between 2006 and 2016, with around two-thirds of all workers in 2016 holding a post-school qualification compared with just over half (55.5%) in 2006.
- The largest increase in post-school qualifications was for higher education qualifications (33.5%), followed by diplomas (19.6%) and VET certificates (5.3%).
- Younger workers are more likely than older workers to have higher education qualifications, while older workers are more likely to have VET qualifications.
- All major occupational groups experienced a rise in the proportion of higher education-qualified workers.

- Occupations with the largest shifts out of VET qualifications were ambulance officers and paramedics, dental hygienists, technicians and therapists, and medical imaging professionals, with the share of VET-qualified workers in those occupations declining over the 10 years.
- VET is playing an increasingly important role in providing formal skills development for several occupations that have historically been dominated by workers without post-school qualifications, such as truck drivers, storepersons, kitchenhands and labourers.
- In the largest 20 occupations, a key driver of the growth in the supply and demand for higher education qualifications has been the ongoing professionalisation of occupations such as primary school teachers, registered nurses and accountants.
- Workers holding a VET certificate reported the closest match between the qualification undertaken and relevance to their job (90.3%).
- Technical and trades workers with VET certificates and professional workers with diplomas were more likely than other occupational groups to be working in the same field of study as their highest qualification level (82.4% and 72.6% respectively).

Simon Walker
Managing Director, NCVER

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Executive summary

Changes in the qualification profiles of workers are one indicator of changes in the supply and demand for education and training, with associated implications for education and training provision and fulfilment of industry needs. Changes in the mix of workers with vocational education and training (VET) and higher education qualifications may also reflect changes in the labour market, as well as regulatory requirements, credentialism and supply-side factors, rather than occupational demand per se.

This project analyses how tertiary qualification profiles in occupations changed between 2006 and 2016. We use 2006 and 2016 census data for occupations at the 4-digit ANZSCO level and employed persons' highest level of non-school qualification. A fundamental limitation of census data is that some workers may hold both a VET qualification and a higher education qualification, but only the latter is recorded, even if it is not the most recent qualification. Data from the 2015 Australian Bureau of Statistics (ABS) Survey of Qualifications and Work (SQW) are used to determine how well workers' qualifications match their occupations. Further supplementary analyses draw on the 2018 ABS Labour Force Survey and unpublished data from the 2018 NCVET National VET Provider Collection.

The dynamics of qualifications by occupation

In terms of absolute numbers of people employed, the census data showed that the most substantial growth in employment over the period was for community and personal service workers (44.3%) and professionals (31.3%), with all other major occupational groups experiencing growth of between 6% and 16%. This change in employment has affected the overall composition of the workforce, such that the overall proportion of community and personal service workers in the workforce has increased by 22.9%, with professionals rising by 11.8%. The proportion of all other occupational groups has decreased accordingly.

Over the 10 years from 2006 to 2016, there was a definite shift in the distribution of highest qualifications held by workers overall, as well as within major occupational groupings. Workers holding higher education qualifications accounted for the largest increase over the period, in both proportional (33.5%) and absolute terms (1.2 million). The proportion of the total workforce with VET qualifications (as their highest level of credential) increased by 9.5%, with the number of workers holding a diploma-level qualification increasing by 19.6% and those with a certificate-level qualification increasing by 5.3%.

Within each major occupational group, the proportion of workers holding higher education qualifications increased, while the number of workers who had no post-school qualifications decreased. Also, the proportion of workers with VET diploma qualifications increased in all major occupational groups, except professionals.

The largest increases in the proportion of workers holding a certificate-level qualification were for those in the lower-skilled occupational groups of machinery operators and drivers, and labourers, where the large majority of these workers do not hold a post-school qualification. For these two categories, however, the greatest

increase by far in the number and proportion of workers with a post-school qualification was for both higher education and diploma qualifications.

How well do qualifications match occupations?

The 2015 ABS Survey of Qualifications and Work shows that the closest match between qualification held and the level of qualification considered 'most relevant to their current job' is for workers holding VET certificates (90.3%), followed by workers with higher education qualifications (78.6%) and those with diplomas (60.8%).

None of the workers surveyed indicated that the most relevant qualification for their job was higher than the one they held.

The Survey of Qualifications and Work also indicates that workers with a VET qualification in the technicians and trades category are most likely to be working in the same field as their field of study, relative to all other qualification levels and occupations. The three categories of machinery operators, labourers, and sales workers are the least likely to work in the same field.

VET certificate holders were much more likely than diploma and higher education graduates to report that the main reason for working outside their field of qualification was that staying in their field of qualification would have meant a pay cut. On the other hand, a lack of available positions was the main reason reported by nearly half (48.8%) of higher education graduates, but by only 17.1% of diploma holders and 34.1% of certificate holders.

Government-funded VET qualification completions were investigated in the occupations with the largest absolute growth in the number of employed as captured by the census. Completions in VET qualifications for some occupations traditionally associated with VET showed a direct positive relationship with growth for some occupations but not others. Some occupations with a negative relationship between the number of VET completions and absolute growth have experienced regulatory changes to minimum qualification standards, for example, child carers and nurses, while in others, higher education has become more prevalent in general.

Most of the individuals who completed VET programs relevant to the occupations with the largest absolute growth had no post-school qualifications before undertaking their programs. Individuals training for lower-skilled occupations were generally younger than those training for professional and management occupations, although there were some differences in age profiles by gender.

The dynamics of qualifications within occupations

The study analysed the qualification profiles of the largest 20 occupations by overall employment size. Most of these occupations would generally require a VET qualification rather than a higher education qualification. While they account for about 30% of all employed people, these occupations are not necessarily experiencing the most change in their proportions of workers holding VET qualifications.

Of the 20 largest occupations, all had an increase in the proportion of workers holding higher education qualifications and a decline in the proportion of workers with no post-school qualification. Some of these occupations had a decline in the proportion of

workers with VET qualifications (often from a low base), which can be attributed to changes to the minimum education requirements for that occupation. Examples of occupations now generally requiring higher education include registered nurses, primary and secondary school teachers and accountants.

Amongst the 20 largest occupations in 2016, not only did all of these occupations have increases in the proportion of workers with higher education qualifications, but in some cases (for example, child carers and waiters) the proportion of workers with higher education qualifications grew more rapidly than the proportion with a VET qualification as their highest level of education. Some care needs to be taken with interpretation, as some of the workers with higher education qualifications may also have gained a VET qualification.

An analysis of government-funded VET completions between 2007 and 2016 showed that the proportion of all VET graduates also holding a higher education qualification remained stable from 2007, albeit with an upswing after 2015. Within VET childcare qualifications, however, the proportion of graduates also holding a higher education qualification doubled over the period, to represent 9.0% of all VET childcare graduates in 2016. This pattern illustrates the impact of ‘regulatory’ drivers on supply and demand (in this case, as a result of new accreditation requirements for childcare centres to employ staff with relevant VET qualifications).

Age and gender differences

The dynamics of the distribution of VET qualifications are more pronounced for younger workers than older workers. There were also much larger increases in the proportion of younger workers with higher education qualifications in all occupations compared with older workers. Even in occupations dominated by one gender, the distribution of qualifications in each gender is usually similar.

Implications for VET training

The findings show that VET is being ‘crowded out’ by higher education, a development that may signal overqualification: in a tight labour market, overqualification may reflect credentialism and qualification inflation. Data from the Survey of Qualifications and Work suggest that these phenomena occur more frequently in some fields than others but appear to be least prevalent in non-professional fields.

While census data show that the greatest rise in VET qualifications is at diploma level, more recent enrolment data (2015–18) indicate marked declines in diplomas and certificate IV qualifications. Note that apparent demand for diploma enrolment trends is significantly distorted by the changes to student loans during this period, meaning that the underlying demand pattern may not be known for some years. Nonetheless, the recent trend highlights potential longer-term implications for the relevance and utility of higher-level VET credentials in the workforce.

The patterns of change suggest that future demand for VET will be underpinned by certificate-level VET for school students, entry-level roles, trades and non-professional occupations in high-employment growth sectors such as the human services. Further, while census data demonstrate that younger workers are more likely to hold higher

education qualifications, previous research has suggested that they may require additional VET qualifications to compensate for their lack of experience.

While this study analysed full qualifications only, future demand for VET may also be driven by the emerging need for the workforce of the future to reskill and upskill, by undertaking training based on skill sets or micro-credentials rather than completing full qualifications.



Background

Changes in the qualification profiles of workers are one indicator of changes in the supply of and demand for education and training, with implications for education and training provision and fulfilment of industry needs. Changes in the proportion of VET-qualified workers in the workforce may reflect changes in the labour market itself, as well as altered regulatory requirements and the phenomenon of ‘credentialism’. For example, regulation introduced in the last few years requires childcare workers to hold VET qualifications, while the professionalisation of nursing has meant a decrease in VET-qualified workers and an increase in those holding higher education qualifications.

Karmel (2011) documented the implications of such changes in the VET sector for 1996–2006 and found that workers with diplomas were particularly affected, with a diploma no longer an entry qualification into jobs requiring high skill levels. This project extends Karmel’s 1996–2006 census research by examining movements in VET qualifications by occupation, using census data from 2006 and 2016. It also adds some supplementary analyses using other data to deepen the understanding of the census findings.

Since age is a key factor in people’s choice and availability of education and occupations in the past and present, this analysis compares patterns in qualifications by occupation for both younger and older workers. Changes in the match between occupations and qualifications are likely to differ between younger and older workers and according to education levels and types of occupation. Further, some occupations may be better suited to workers of particular ages. By way of example, Australian Census data show that, on average, physically demanding occupations, such as labourers or chefs, are likely to have a younger age profile. In contrast, workers in sedate occupations such as librarians may be older: approximately 80% of librarians were aged over 40 years in 2016 compared with 40% of construction and mining labourers (ABS 2016c). A worker’s age is a key factor in their propensity or capacity to retrain and to find employment in different occupations, with younger workers more likely to do so (Cully et al. 2000; Griffin & Beddie 2011; Productivity Commission 2017). The current distribution of qualifications in the workforce in 2016 reflects the types of education and training (and social expectations and economic conditions) available up to 50 years ago. However, the distribution of qualifications in the short- and medium-term future will be influenced more by the existing qualifications of younger workers, and their potential demand for other qualifications, than those of older workers.

Changes in the proportions of workers holding VET qualifications are also examined through the lens of gender, given longstanding, but possibly shifting, social and cultural pressures on males and females to pursue different types of qualifications and occupations. The differing non-school qualifications of males and females determine future careers and work patterns (ABS 2012), although trends towards a more equal distribution of qualifications may reflect improving social and economic equity. Many occupations requiring VET qualifications are in the trades, which are known for their historically gendered profile (Butler, Clarke & Simon 2015; Department of Further Education, Employment, Science and Technology 2012; Security4Women 2009; Shewring 2009).

How have qualification profiles in different occupations changed over time and what do these changes mean for VET in the future?

Research questions

- How have qualification profiles within occupations changed between 2006 and 2016, especially in the VET sector?
- What are the implications of such changes for future direction in the VET sector?

Methods

Using data from the 2006 and 2016 Australian Censuses, this study analyses trends in qualification levels in occupations. The unit of analysis is the 'highest completed non-school qualification' (QALLP) for the 4-digit level ('unit group') of the Australian and New Zealand Standard Classification of Occupations (ANZSCO¹), used by the ABS for classifying occupations in the census. This level is the fourth most detailed of the five hierarchical groups in ANZSCO, allowing for meaningful analysis without becoming unwieldy: it has 358 categories, compared with 97 at the third level ('minor group') and 1028 at the fifth level ('occupation') (ABS 2013). Data relating to employed persons' highest level of non-school qualification by ANZSCO 1- to 4-digit occupations for the 2006 and 2016 censuses were downloaded from the ABS table builder (ABS 2016b).

Data from the 2015 ABS Survey of Qualifications and Work are used to show how workers perceive their qualifications to match their occupations. Further supplementary analyses draw on the 2018 ABS Labour Force Survey quarterly data from 2001 to 2017 by occupation. The NCVET National VET Provider Collection 2018 (unpublished data) is also used to show how graduate supply from completions in government-funded VET courses since 2006 aligns with the fastest-growing census occupations.

Census classification/grouping of qualifications

We compare the composition of qualifications within each occupation at the ANZSCO 4-digit level. The qualification level groupings are:

- higher education
- VET
 - diplomas
 - certificates I, II, III and IV
- no post-school qualification.

Table A1 in the appendix shows the classifications of the qualifications within each grouping. Diplomas and certificates are grouped separately within the VET category because they have different occupational outcomes (Karmel 2015; Fowler 2017).

1 <<https://www.abs.gov.au/ANZSCO>>.

Census assumptions and cut-offs

The analysis included only those occupations at the ANZSCO 4-digit level containing 500 or more people in the 2016 census as employed, to maximise reliability. This approach excluded 46 occupations with fewer than 500 people (9.7% of the 474 occupations included in the 2016 census and 0.1% of all employed persons).

Statistical analyses

The first step was to identify the proportion of those employed in each occupation at the highest-level grouping (ANZSCO 1-digit-level classifications), with all employed Australians as the denominator for each census year, along with percentage change over the period between the two censuses. Changes in percentage points and the percentage change were calculated for the difference in proportions between 2006 and 2016.

We then calculated the proportions of people by qualification group within each ANZSCO 4-digit occupation. For these calculations, the numerator is the number of people with each qualification type, and the denominator is the total number of people in the ANZSCO 4-digit occupation of interest.

The totals within each occupation provided by the ABS table builder were slightly inconsistent (the totals were derived by summing the numbers across all qualifications in each occupation), due to the randomisation of small cells with small numbers for confidentiality. The totals (the denominators used in the calculations) are the derived totals from summing across all qualifications, not the totals extracted from the ABS table builder.

We also ranked ANZSCO 4-digit occupations by the percentage-point change in the proportion of workers with VET qualifications. We use an arbitrary cut-off to identify the 20 occupations with the greatest increase and the 20 with the greatest decrease between 2006 and 2016. 'Not further defined' (nfd) occupation codes were excluded in the rankings as they are used to process incomplete, non-specific or imprecise responses and are not a formal part of a classification. The 'not stated' and 'inadequately defined' categories were also excluded as they generally contain small numbers and contribute little to understanding the main changes in the distribution of qualifications by occupation.

Limitations

The use of census data for analysing qualifications has several limitations. First, there is no distinction between diplomas in VET and diplomas in higher education. For this analysis, we include all diplomas as VET, based on the relative numbers collected in NCVET's Total VET Activity Collection and the Department of Education and Training's Higher Education Datacube², which together show that approximately 88% of diplomas are offered in the VET sector.

We group all certificate qualifications in this analysis, as the focus is on documenting shifts in and out of VET qualifications overall. Individuals with qualifications at

2 See <<http://highereducationstatistics.education.gov.au/>>.

certificates I and II may have different occupational outcomes compared with those holding certificates III and IV, but a breakdown by certificate level is not appropriate for many occupations where very few workers hold only certificates I or II. For example, only eight accountants from a total of 146 399 held a certificate I or II as their highest level of education in 2016.

Individuals may hold more than one type or level of qualification, but the census data reflect the highest qualification only. For example, an individual may hold a bachelor degree obtained in 2010 and a certificate IV gained in 2014, but only the bachelor degree is recorded in the census. The relevance of the qualification to the occupation is a crucial assumption which cannot be tested in this analysis, although the included analyses of the Survey of Qualifications and Work offer insights into this relationship at the broader ANZSCO 2-digit level. The findings must be therefore be treated as indicative only.



Occupation and qualification profiles

Employment numbers by occupation and qualification

This section introduces the occupations and qualifications in the labour force and identifies broad-level changes as a context for the analyses at the 4-digit ANZSCO level.

Table 1 shows that the proportion of the workforce with post-school qualifications increased substantially between 2006 and 2016. There is also a clear trend toward the acquisition of higher education qualifications rather than VET qualifications. VET was the largest qualification grouping for the workforce in both census years, but higher education had the largest percentage increase in proportion (33.5%) between 2006 and 2016. Diplomas had a 19.6% increase in proportion (but are a relatively small group within all post-school qualifications, accounting for only 11.4% of all highest qualifications held by employed persons in 2016). Certificates had a 5.3% increase in proportion between 2006 and 2016.

Table 1 Number employed in each qualification grouping, 2006 and 2016

Qualification group	2006		2016		2006–16
	n	%	n	%	% change in proportion
Higher education	2 005 651	23.3	3 229 021	31.1	33.5
VET Diplomas	818 068	9.5	1 179 977	11.4	19.6
Certs I–IV	1 958 694	22.7	2 486 625	23.9	5.3
Total	2 776 762	32.2	3 666 602	35.3	9.5
No post-school qualification	3 829 131	44.5	3 489 027	33.6	-24.4
Total	8 611 544	100	10 384 650	100	

Source: ABS (2006b, 2016b).

Table 2 shows the number of people employed in each broad occupation category (ANZSCO 1-digit) for the census years 2006 and 2016. The largest occupational group in both years was professionals. The occupational group with the largest increase in size and as a proportion of the total labour force between 2006 and 2016 was community and personal service workers (44.3% increase in size, 22.9% increase in proportion), followed by professionals (31.3% increase in size, 11.8% increase in proportion). Employment as a proportion of the total census labour force fell in all other occupations.

Table 2 Number employed¹ in each occupation (ANZSCO 1-digit), 2006 and 2016

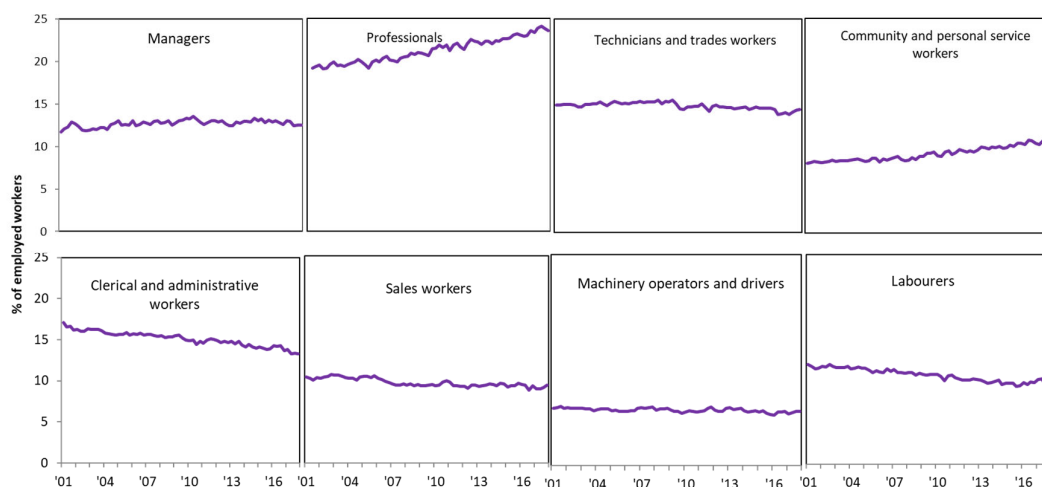
Occupation	2006		2016		2006–16	2006–16
	n	%	n	%	% absolute growth	% change in proportion
Managers	1 202 246	13.5	1 389 882	13.2	15.6	-1.6
Professionals	1 805 768	20.2	2 370 787	22.6	31.3	11.8
Technicians and trades workers	1 309 090	14.6	1 447 314	13.8	10.6	-5.9
Community and personal service workers	801 820	9.0	1 156 919	11.0	44.3	22.9
Clerical and administrative workers	1 365 709	15.3	1 449 698	13.8	6.1	-9.6
Sales workers	896 193	10.0	1 000 891	9.5	11.7	-4.9
Machinery operators and drivers	604 544	6.8	670 015	6.4	10.8	-5.6
Labourers	952 444	10.7	1 011 459	9.6	6.2	-9.6
Total	8 937 814	100	10 496 965	100	17.4	

Note: 1 Excludes not stated and inadequately described (n = 165 591 in 2006, 189 013 in 2011 and 186 157 in 2016).

Source: ABS (2006b, 2016b).

To provide further context, we analysed the ABS quarterly labour force data from 2001 to 2017 by occupation. Figure 1 shows the percentage of workers employed in each occupation (ANZSCO 1-digit) for this period. The share of workers working as clerical and administrative workers, and labourers has declined. The shares of machinery operators and drivers, sales workers, technicians and trades workers, and managers have remained reasonably stable. Community and personal service workers, and professionals have increased their share of all employed persons, with professionals demonstrating the most rapid increase, as well as the largest share. Machinery operators and drivers represent the smallest share of employed workers.

Figure 1 Quarterly percentage of employed by occupation (ANZSCO 1-digit), Australia, 2001–17



Source: ABS (2018).

Figure 2 shows the degree of change in each qualification level for all occupations at the broad 1-digit ANZSCO level. In terms of the broad qualification categories, the increase in the proportion of the workforce holding certificate-level VET qualifications was relatively modest, with the highest increases for the lower-skilled occupational groups of machinery operators and drivers, and labourers. With the sole exception of professionals, a higher proportion of workers in all other occupations held diplomas in 2016 than in 2006. Note, however, that the large increase in numbers of workers with this level of qualification comes from a small base. Workers in all occupations are more likely to have higher education and less likely to have no post-school qualifications in 2016 than they did in 2006 (in terms of the percentage change in the proportion of workers with this qualification level).

Figure 2 Changes in the distribution of qualification groups within each occupation (ANZSCO 1-digit) 2006—16

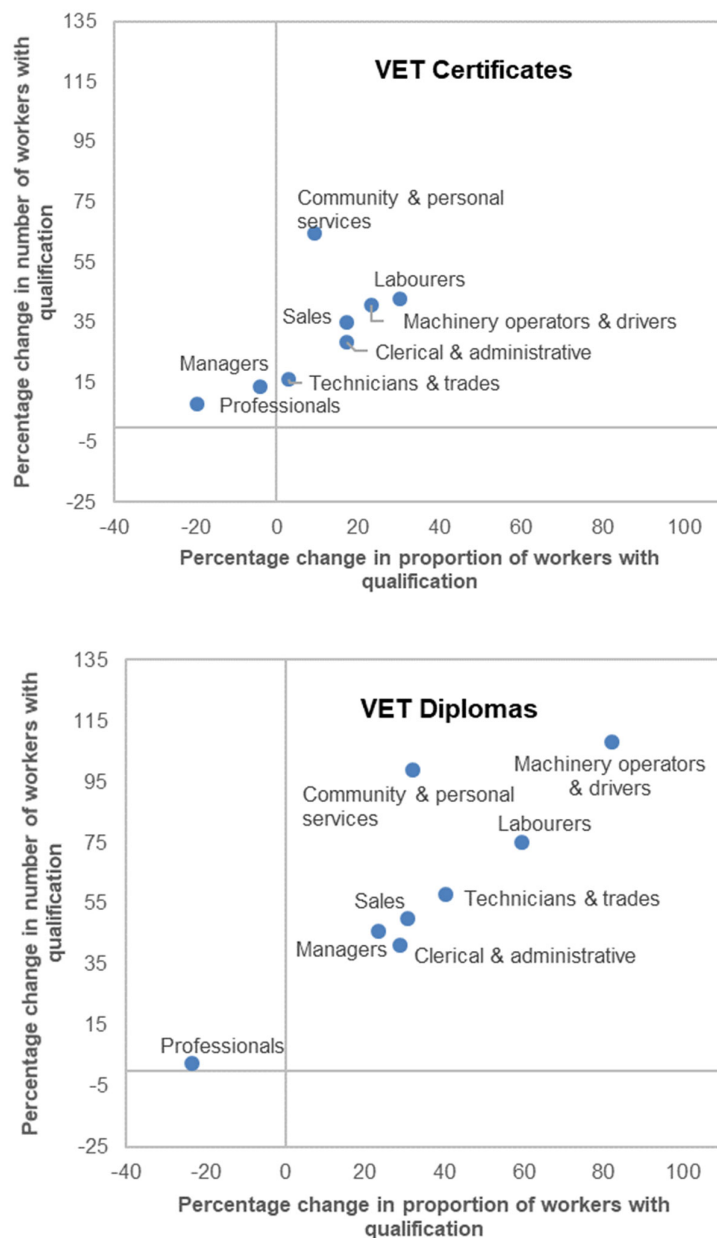
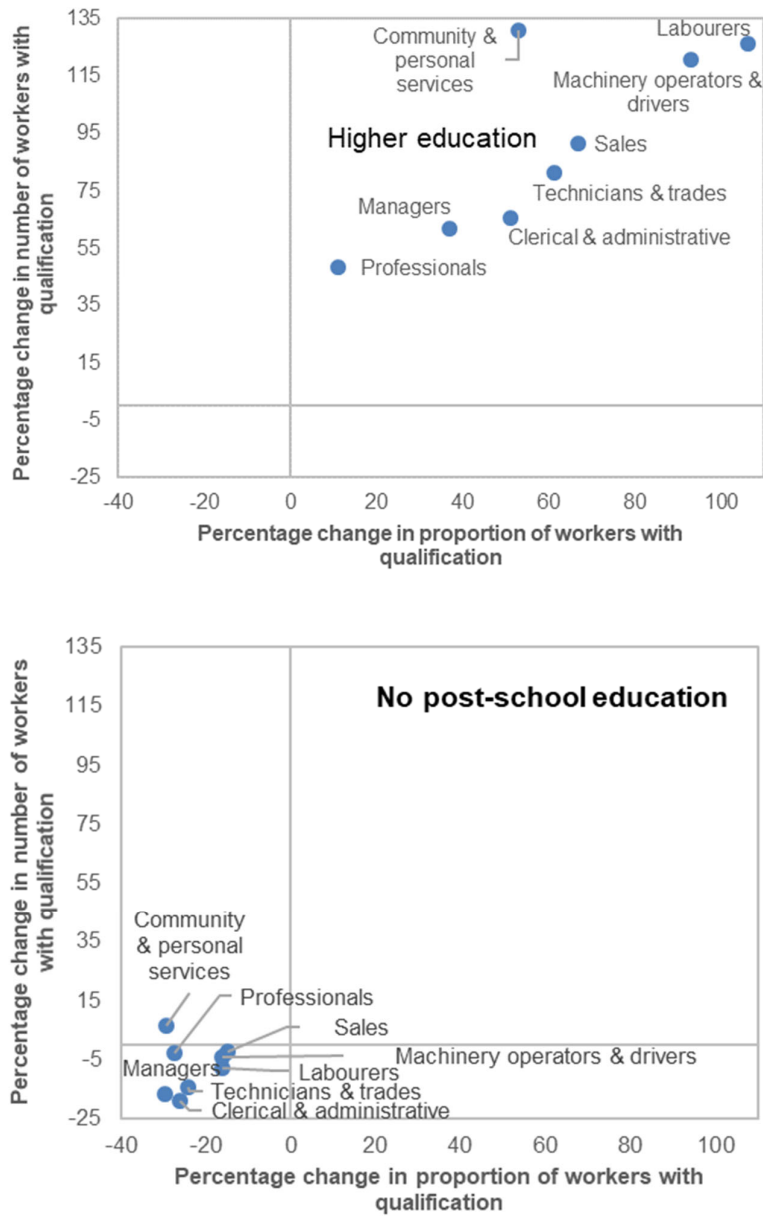


Figure 2 Changes in the distribution of qualification groups within each occupation (ANZSCO 1-digit) 2006—16 (continued)



Source: ABS (2006b, 2016b).



How well do qualifications match occupations?

The 2015 ABS Survey of Qualifications and Work was analysed to determine how well qualifications matched workers' occupations. Due to the level of standard error at the 4-digit ANZSCO level, we present occupation level data at the 1-digit ANZSCO³ level.

Match between qualifications, field of study and occupation

The SQW shows that 61.2% of workers currently work in the same field as their highest qualification's field of study (table 3), and ranges from 29.8% for machinery operators and drivers to 76.6% for technicians and trades. Within the occupation categories, there is considerable variation by type of qualification for some occupational groupings but not others.

Working in the same field as field of study is most likely for workers with a certificate in the technicians and trades occupations (82.4%), followed by professionals with higher education or a diploma (72.7% and 72.6% respectively). Across all qualification types, machinery operators and drivers, labourers, and sales workers are the least likely to work in the same field in which they studied, although sales workers with diplomas are more likely to work in the same field as their field of study (44.6%) compared with sales workers with higher education or certificates (23.9% and 36.7% respectively). Similarly, managers with diplomas are also slightly more likely to work in the same field as their field of study (65%) than managers with higher education or certificates (59.9% and 58.4% respectively). Clerical and administrative workers (57.1%) and sales workers (36.7%) are more likely to work in the same field if they have a certificate as opposed to any other type of qualification. The relationship between qualification field and field of work could be interpreted in several ways; for example, some qualifications have greater transferability than others; alternatively, some workers cannot find work in their preferred field.

³ <<https://www.abs.gov.au/ANZSCO>>.

Table 3 Share of current workers in same field as main field of study for highest qualification, by occupation and highest qualification level, 2015

Occupation	Highest qualification level				
	Higher education	VET		Total	n (000')
		Diploma	Certificate		
Managers	59.9	65.0	58.4	60.5	802
Professionals	72.7	72.6	65.0	72.3	2204
Technicians and trades	58.2	63.5	82.4	76.6	1 057
Community and personal services workers	43.9	59.7	64.9	57.3	568
Clerical and administrative	43.2	49.2	57.1	49.5	548
Sales workers	23.9	44.6	36.7	34.0	159
Machinery operators and drivers	25.0	27.9	31.7	29.8	101
Labourers	27.0	22.3	33.4	30.7	138
Total	62.0	58.9	61.3	61.2	5 576

Source: ABS (2015).

Relevance of qualification to job

The closest match between qualification held and level of qualification most 'relevant' to current job is for workers holding VET certificates, at 90.3% (table 4). The remaining 8.9% of certificate holders reported that no qualification was relevant or presumably necessary. The greatest anomaly is for workers holding VET diplomas, where nearly a third thought that a certificate qualification was most relevant or presumably sufficient for their job, rather than a diploma. None considered that higher education was more relevant than a VET diploma. This pattern suggests that substantial proportions of workers with higher education and VET diplomas are overqualified, with 21.5% of workers with higher education believing that higher education was not relevant to their job and 39.2% of diploma holders believing that a diploma was not relevant to their job⁴. At the same time, nearly three-quarters of workers with no post-school qualifications reported that a VET certificate would be most relevant to their current job. High rates of standard errors preclude disaggregation by occupation.

⁴ These percentages are the sum of the remaining percentages. For example, for higher education holders in Table 4, 21.5= (6.3 + 8.0 +7.2).

Table 4 Level of qualification perceived as most relevant to current job by highest qualification held

Highest qualification held						
		VET			n ('000)	
Higher education		Diplomas	Certs. I-IV	No post-school qualifications		
Level of qualification most relevant to current job (ASCED ¹)						
Degree or higher		78.6	0.0	0.0	0.0	1 551
VET	Diplomas	6.3	60.8	0.0	0.0	400
	Certs I-IV	8.0	31.6	90.3	73.7	804
No qualification most relevant		7.2	6.8	8.9	17.4**	229
Total		100	100	100	100	2 984
n ('000)		1 973	452	523	42	

Note: 1 ASCED = Australian Standard Classification of Education.

** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use. Cells in this table have been randomly adjusted to avoid the release of confidential data. Discrepancies may occur between sums of the component items and totals.

Source: ABS (2015).

Relevance of qualifications for jobs outside field of study

Workers in jobs outside their field of study accounted for 32.7% of all individuals with post-school qualifications in the labour force (ABS 2015)⁵. These figures compare with 47.9% of workers with higher education. In sum, 55.4% of workers with post-school qualifications occupy jobs outside their field of study with qualifications that are not at all relevant. Workers with VET qualifications form 60.3% of this group (ABS 2015).

Table 5 Perception of relevance of field of study to current job for respondents working outside field of study, by highest qualification

Highest level of education	Relevant or highly relevant	Somewhat relevant	Not at all relevant	Total	n ('000)	
Higher education	22.3	29.8	47.9	100	1 215	
VET	Diplomas	18.5	26.1	55.4	100	513
	Certificates	17.6	21.5	60.9	100	981
No post-school qualifications	na	na	na	na	na	
Total	18.5	26.1	55.4	100	2 709	
n ('000)	539	707	1 463	100		

Source: ABS (2015).

⁵ The base is all workers, ie workers working in their field of study (5 576 in Table 3) and workers outside their field of study with post school education (2 709 in Table 4). The calculation is 2 709/(2 709+5 576).

Why are workers working in fields unrelated to qualifications?

The two main reasons for working in fields unrelated to qualifications (table 6) were no longer interested in original field (22.9%) and a lack of positions available in the field of qualification (21.4%). A greater proportion of those who reported lack of interest were VET graduates (68.4%) than higher education graduates (30.8%).

VET graduates were much more likely than higher education graduates (85.6%) to report that working in the field of their highest qualification would mean a pay cut. The necessity of taking a pay cut applied to more than twice as many certificate holders as diploma holders; however, only 5.5% of workers in unrelated jobs reported this as their main reason.

Lack of interest in the original field could work both ways in terms of the effect on qualification dynamics: a worker no longer interested in their original field may retrain in another field, one that previously did not require qualifications; or they may undertake higher-level qualifications in their original field of study.

Table 6 Reasons for not working in a field relevant to highest non-school qualification for persons in labour force whose highest non-school qualification is not relevant to job by qualification level

Main reason main field of study is not relevant to current job	Highest non-school qualification				Proportion of all workers in unrelated jobs	n
	Higher education	VET		Total		
		Diplomas	Certificates	Total		
A lack of positions available	48.8	17.1	34.1	100	21.4	313
Would otherwise have had to take a pay cut	18.3	24.0	61.6	100	5.5	80
Would otherwise have had to accept lesser conditions	36.9	28.4	51.7	100	1.6	24
No longer interested in field of qualification	30.8	22.9	45.5	100	22.9	335
Comfortable in current job	33.9	20.6	46.1	100	14.5	213
Personal reasons	39.2	15.7	46.1	100	13.0	190
Qualification not recognised in Australia	69.9	7.6	19.4	100	3.6	53
Skills not current	50.7	15.1	29.0	100	3.6	53
Other	43.6	20.5	35.0	100	14.0	205
Total	39.7	19.4	40.8	100	100	1 463
n ('000)	581	285	597	1 463		

Source: ABS (2015).

The 20 largest occupations

Table 7 shows the 20 largest occupations (ANZSCO 4-digit level) in the 2016 census as a proportion of the employed population. This group of 20 occupations accounted for 29.6% of all employed persons in 2016.

The two occupations with the largest employment gains were aged and disabled carers (45.9% increase) and child carers (39.4% increase). Note that the size of categories at the ANZSCO 4-digit level are small by definition.

Table 7 The 20 largest occupations amongst employed people (ANZSCO 4-digit) as a percentage of all employed persons, 2016

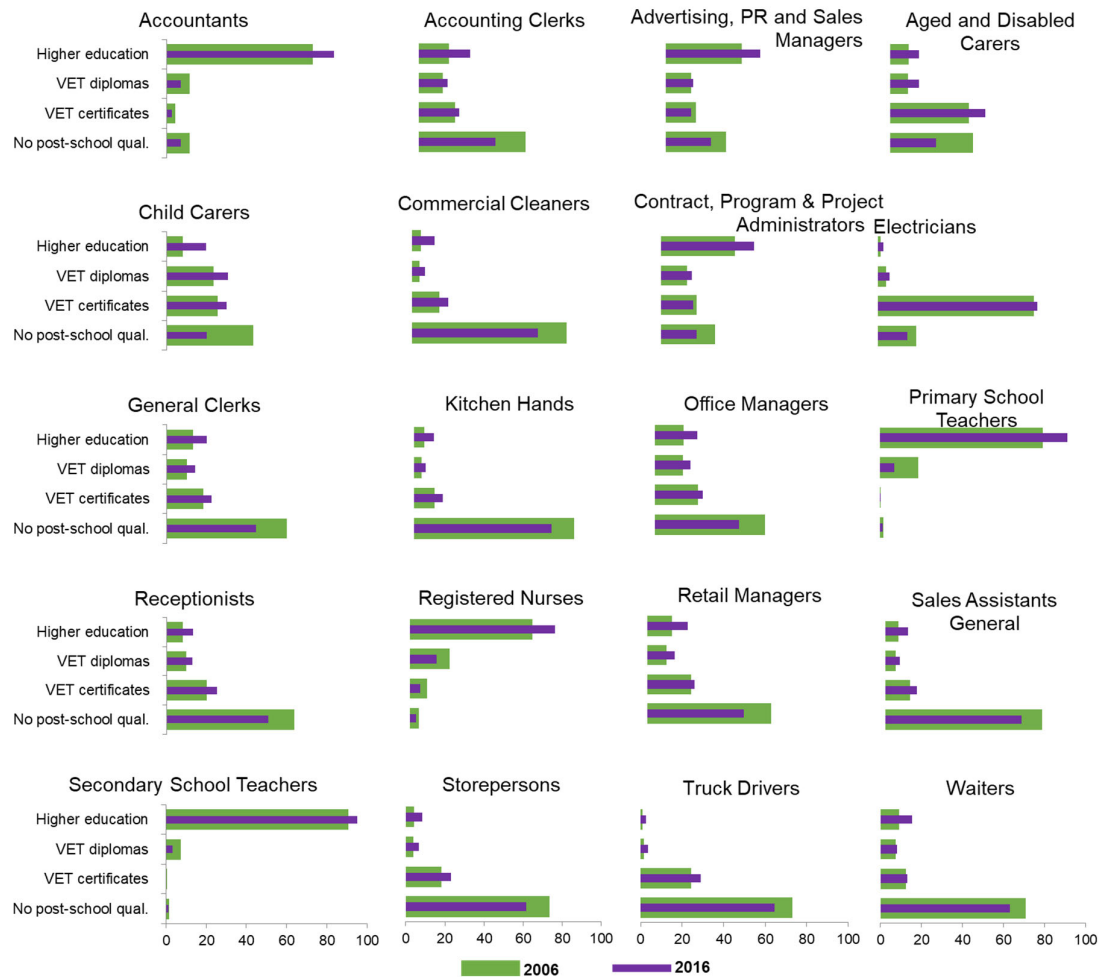
Occupation	2006 (%)	2016 (%)	2006–16 % change	2016 number
Sales assistants (General)	4.87	4.92	1.0	526 013
Registered nurses	1.90	2.07	8.9	220 981
General clerks	2.27	2.06	-9.3	219 845
Retail managers	2.07	1.73	-16.4	184 751
Receptionists	1.42	1.45	2.1	154 775
Truck drivers	1.43	1.39	-2.8	148 566
Primary school teachers	1.38	1.39	0.7	148 498
Accountants	1.36	1.37	0.7	146 399
Child carers	0.94	1.31	39.4	139 595
Secondary school teachers	1.30	1.29	-0.8	137 346
Aged and disabled carers	0.85	1.24	45.9	132 324
Commercial cleaners	1.24	1.18	-4.8	126 153
Office managers	1.01	1.08	6.9	115 647
Electricians	0.99	1.08	9.1	115 152
Advertising, public relations and sales managers	0.96	1.04	8.3	111 086
Kitchenhands	0.95	1.03	8.4	109 631
Storepersons	1.06	1.01	-4.7	108 209
Contract, program and project administrators	0.92	1.01	9.8	108 041
Waiters	0.95	1.00	5.3	106 357
Accounting clerks	0.99	0.97	-2.0	103 638
Total	28.9	29.6	2.3	3 163 007

Source: ABS (2006b, 2016b).

Figure 3 shows changes in the distribution of qualifications over time for the 20 largest occupations in 2016. Overall, within these occupations, the proportion holding any post-school qualifications has generally increased since 2006. Most occupations with modest or large proportions of workers with VET qualifications hold certificates rather than diplomas, excepting child carers.

Note the marked shifts from VET to higher education over time for primary school teachers (and secondary school teachers to a lesser extent), registered nurses and accountants. Occupations with marked shifts from no post school qualifications to VET certificates include truck drivers, storepersons and child carers. Child carers also held more higher education qualifications in 2016 than in 2006.

Figure 3 Distribution of qualification groups within the 20 largest occupations (ANZSCO 4-digit), 2006 and 2016



Source: ABS (2006b, 2016b).

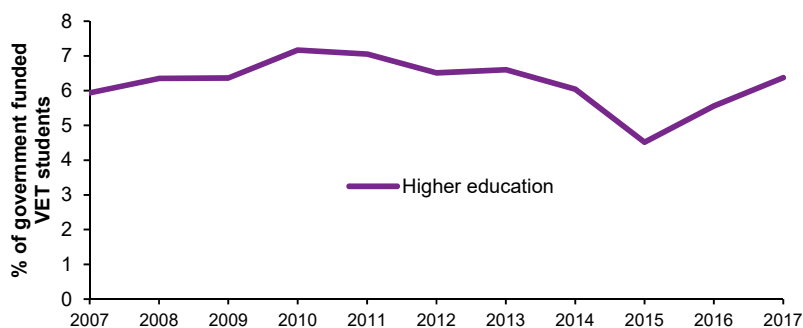
Government-funded VET qualification completions in the fastest-growing occupations

Absolute growth in an occupation is another critical driver of demand for workers with specific qualifications. The 20 occupations with the largest absolute growth are not necessarily the largest per se (although most of the occupations in this group also appear in the list of the 20 largest occupations, in table 7). Figure A1 in the appendix shows how well growth in these occupations is matched by completions in aligned government-funded VET courses (certificates I–IV and diplomas) since 2006. Occupations traditionally associated with a VET pathway, such as electricians, child carers, and nursing support and personal care workers, demonstrate a strong and direct positive relationship between the number of completions in VET and number of workers. For varying reasons, some other occupations show a decline in the number of VET program completions even as the occupation is expanding; for example, VET qualifications are no longer the minimum requirement for registered nurses, while the aged care qualifications have been restructured and rebadged (see the corresponding increase from 2015 in program completions in nursing support and personal care in figure A1).

Figure A2 in the appendix shows the government-funded program completions, the prior education level, and median age by gender for the 20 occupations with the fastest growth. Most government-funded students who completed VET programs aligned with occupations with the largest absolute growth did not hold any post-school qualifications. Child carers and construction managers had the largest proportion of students already holding VET qualifications.

Some occupations in figure A2 show an increase over time in the proportion of government-funded VET students already holding a higher education qualification. The proportion of government-funded VET childcare graduates with higher education doubled over the period, to represent 9.0% of all VET childcare graduates in 2016. This pattern illustrates the impact of ‘regulatory’ drivers on supply and demand (in this case, as a result of new accreditation requirements for childcare centres to employ staff with relevant VET qualifications). Figure A2 also shows that, of the occupations with the most growth in numbers, some occupations (aged and disabled carers; ICT managers; contract, program and project administrators; management and organisation analysts; office managers and accountants) showed a peak in the proportion of VET graduates with previous higher education between 2011 and 2014. For all occupations, however (not just those with the most absolute growth), the proportion of government-funded VET graduates who already held a higher education qualification varied from between 7.2% in 2010 to 4.5% in 2015, but was generally stable over time, albeit with an upswing after 2015 (figure 4).

Figure 4 Proportion of all government-funded VET students holding prior higher education qualifications, 2007–17



Source: NCVET National VET Provider Collection 2018, unpublished data.

The age of government-funded VET graduates in these occupations reflects the stage of working life for people undertaking this supported further training. For example, individuals in entry-level occupations, such as sales assistants and kitchenhands, were consistently the youngest (with most students under 20 years of age), while advertising and marketing professionals, and management and organisation analysts were generally aged 40 or higher. Some occupations had distinct differences by gender in median age at completion. Females were markedly older than males if they had completed programs to become chefs, education aides, receptionists or accountants, and younger if they had completed programs to become advertising, public relations and sales managers between 2011 and 2013, or contract, program and project administrators between 2009 and 2013. Note that the unstable patterns for median age in figure A2 reflect small numbers of cases (fewer than 30 cases) such as for registered nurses and ICT managers of both genders, male education aides and male receptionists.



The dynamics of VET qualifications within occupations

The 20 occupations with the largest proportions of VET qualifications (diplomas and certificates combined) in 2016 are shown in table A2 in the appendix, in ranked order. VET qualifications comprised about 80% or more of the highest qualifications for 11 occupations in 2016. The top five occupations with the largest shares of VET qualifications were enrolled and mothercraft nurses, electrical distribution trades workers, automotive electricians, metal fitters and machinists, and hairdressers.

The 20 occupations with the largest percentage-point increases and decreases in the proportion of workers with VET qualifications (tables A3 and A4 in the appendix) account for 4.5% and 5.9% of all workers in 2016, respectively. Approximately 90% of the labour force (that is, all occupations) is relatively stable over time in terms of its share of VET qualifications, with changes of fewer than 10 percentage points. Tables A3 and A4 indicate that some of the largest changes occur amongst occupations with relatively small absolute numbers; the most extreme example in table A3 is aquaculture workers, where there was a change of 11.9 percentage points in the proportion of workers with VET qualifications, although the number of workers was only 553.

Table 8 summarises the occupations with the largest changes in the share of VET-qualified workers. Of the four occupations with increases of more than 15 percentage points (railway track workers, recycling and rubbish collectors, shearers, and train and tram drivers), only train and tram drivers had more than 10 000 workers. The others had fewer than 4000, while recycling and rubbish collectors and shearers have declined in number by 41.5 % and 30.4% respectively (see Table A3). Other occupations with more modest increases in proportions of VET-qualified workers but marked declines in absolute numbers include plastics and rubber production machine operators (8714 to 6325) and forestry and logging workers (3120 to 1953). Smaller numbers of workers in some occupations partly explain the increased proportion of workers with VET certificates: attrition of workers in these occupations may be those with no post-school qualifications (and who are likely to be older individuals), thereby increasing the proportion of higher qualified workers remaining in or entering these occupations. Occupations with the largest shifts out of VET qualifications were ambulance officers and paramedics, dental hygienists, technicians and therapists, and medical imaging professionals, with the share of VET-qualified workers in those occupations declining over the period.

Table 8 Occupations with changes greater than 15 percentage points in share of VET-qualified workers and direction of change in number of workers (+ or -), 2006–16

Increase in VET qualified share	Decrease in VET qualified share
Railway track workers (n = 3961, +)	Ambulance officers and paramedics (n = 13 351, +)
Recycling and rubbish collectors (n = 2118, -)	Dental hygienists, technicians and therapists (n = 6552, +)
Shearers (n = 2686, -)	Medical imaging professionals (n = 15 622, +)
Train and tram drivers (n = 10 739, +)	

Source: ABS (2006b, 2016b).

The top three occupations with decreases of more than 15 percentage points in their share of VET qualifications between 2006 to 2016 were all large compared with the top three occupations with increases (table 8). All occupations with decreasing VET shares had increases in the proportion of workers with higher education qualifications (table A4 in the appendix).

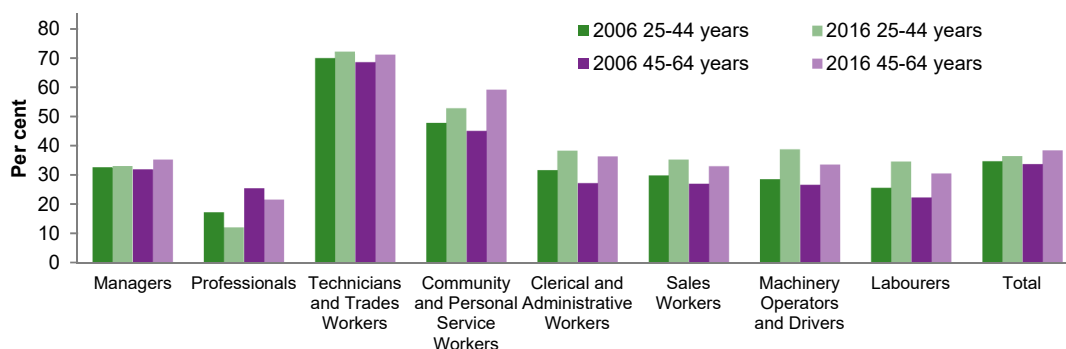
Occupations with the largest increase in VET-qualified workers tended to be at a lower skill level than the occupations with the largest decrease in VET workers. Nine of the 20 occupations with increases in VET-qualified workers are classed in ANZSCO as skill level 5 on the 1 (highest skilled) to 5 (lowest skilled) scale), and six are classed as skill level 4. Of the remaining five occupations, four are classed as skill level 3. Occupations with skill levels of 3 generally require certificate IV, and occupations with skill levels 4 and 5 may require certificates I to III (ABS 2006b, 2009). Conversely, 16 of the occupations with the largest decreases in VET-qualified workers were classed at skill levels 1 and the remaining four at level 2, consistent with patterns in rising higher education qualifications.

Age differences

Figure 5 shows that both younger and older workers increased their proportion of VET qualifications in all occupations except managers and professionals. The proportion of VET qualifications held by older community and personal service workers increased more than for younger workers in this occupation. By comparison, younger machinery operators and drivers, and labourers were slightly more likely to increase their share of VET qualifications than older workers in these occupations. The greatest difference between the two age groups in the share of VET qualifications is for professionals, where older workers are more likely to have VET qualifications than their younger counterparts.

Younger workers are more likely than older workers to hold higher education qualifications; older workers are more likely to hold VET qualifications.

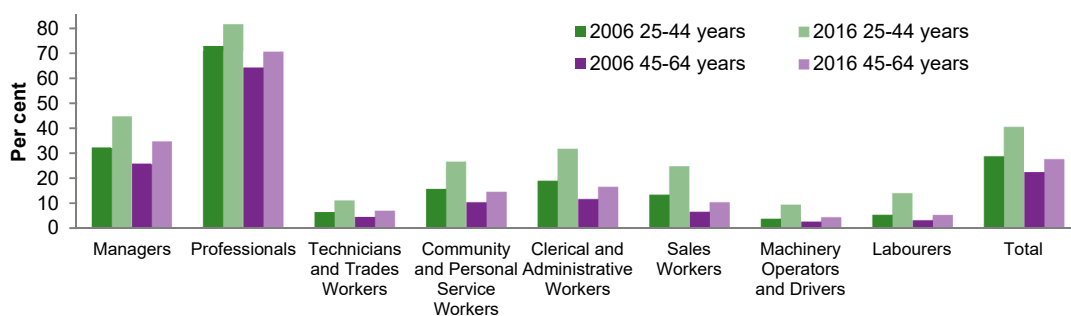
Figure 5 Proportion of workers with VET qualifications (certificates and diplomas) at ANZSCO 1-digit occupation level by broad age group, 2006 and 2016



Source: ABS (2006b, 2016b).

By comparison, figure 6 shows much larger increases in the proportion of younger workers with higher education in all occupations. Younger workers in general increased their proportion of higher education by approximately 10 percentage points, while older workers increased their share by only four percentage points.

Figure 6 Proportion of workers with higher education at ANZSCO 1-digit occupation level by broad age group, 2006 and 2016



Source: ABS (2006b, 2016b).

Table A5 in the appendix shows the 20 occupations at the 4-digit ANZSCO level with the largest increase in the proportion of workers with VET qualifications between 2006 and 2016, split by age group (24–45 and 45–64 years).

For some occupations, the increase over time in the proportion of workers with VET qualifications was greater for the younger age group than for the older, often close to doubling. Examples include railway track workers, recycling and rubbish collectors, shearers, and train and tram drivers. Other occupations demonstrated the opposite pattern, with larger increases in the proportion of VET qualifications held by older workers, for example, veterinary nurses, dental assistants, caretakers, and crane, hoist and lift operators. In general, younger workers were more likely to have diplomas than certificates by comparison with older workers, but the proportion of workers with diplomas was small in all occupations for both age groups.

Declines in VET qualifications were much larger for young workers than for older workers, for both certificates and diplomas (table A6 in the appendix). For example, the decline of VET qualifications for younger telecommunications engineering professionals between 2006 and 2016 was 45.9%, while for older workers it was 10.6%.

Even if an occupation is dominated by one gender or the other, the distribution of qualifications between each gender is usually similar.

Gender differences

Table A7 in the appendix shows that females were more likely than males to increase their share of VET qualifications within the 20 largest occupations. The gender balance within VET-level qualifications does not differ from that in higher education or no post-school education, in each occupation (figure 7). Any changes in the gender distribution for VET qualifications are slight or modest and are more noticeable at the certificate level than diploma.

Figure 7 Distribution of gender with each qualification group within the 20 largest occupations (ANZSCO 4-digit), 2006 and 2016



Source: ABS (2006b, 2016b).



Implications for VET

Although the distribution of VET qualifications since 2006 has generally been stable, the changes identified in some occupations nevertheless have implications for future directions in VET provision.

Training provision

Based on higher rates of participation in education, higher levels of qualifications in almost all occupations, and absolute growth in specific sectors, demand for VET will come from three main sources. The first covers potential workers in occupations where there is scope for training to be introduced (particularly those with high rates of non-post-school training, such as semi-skilled occupations); the second addresses potential workers in occupations currently demonstrating high rates of VET qualifications and which are also expanding; namely, selected occupations in the community and personal services workers category, and some in the machinery operators and drivers category; and the final source includes occupations that may be declining in size but which nevertheless have proportionately more VET-qualified workers, for example, occupations in the labourers category. Workers in these broad categories form 27% of the total labour force, although substantial changes in the size of occupations and the distribution of qualifications apply to only a minority of occupations in these categories.

The broad category of community and personal services workers (with three occupations in the 20 largest and three occupations in the 20 occupations with the greatest increases in VET qualifications) has expanded its share of all occupational groups by 22.9% and in absolute terms by 19% (ABS 2016b) and is projected to increase again by 19.2% by May 2022 (Department of Employment, Skills, Small and Family Business 2019). Demand for VET is most likely to come from potential workers for this sector; namely, personal support workers (carers) and workers in hospitality occupations.

As one of the largest occupations and with more than half of its workers having no post-school qualifications in 2016, kitchenhands (also in the community and personal services group) have increased their qualification levels since 2006, even though the skill level of this job is rated at 5 (the lowest skill level). Census data cannot show whether this pattern has occurred amongst kitchenhands because employers now generally require it, or because individuals see a qualification as giving them an edge in a tight labour market, or because they are overqualified but working in this field for other reasons.

The absolute size of machinery operators and drivers is relatively stable, with growth of 1.6% from 2006 (ABS 2017). One of the occupations in this group (truck drivers) is currently amongst the 20 largest occupations. Other occupations in this category have the highest rate of increase in VET qualifications and also have high levels of no post-school qualifications. These occupations are generally rated as a low skill level (4 on the ANZSCO 1–5 scale of skill level)⁶, and many are declining in absolute numbers. However, future training may be demanded as a form of qualification or credentialism. The Jobs Outlook website (Department of Employment, Skills, Small and Family Business 2019) suggests that most occupations in the machinery operators and drivers

6 <<https://www.abs.gov.au/ANZSCO>>.

category usually require a VET qualification. Similarly, occupations that do not necessarily demand VET qualifications – according to current Job Outlook⁷ information – but which nevertheless had amongst the largest increases in the proportion of workers with a VET qualification include recycling and rubbish collectors, shearers, caretakers, and crane, hoist and lift operators (all of these, with the exception of caretakers, are in the machinery operators and drivers and labourers categories).

Productivity and overqualification

The census analyses showed that in 2016, workers in many occupations have higher qualifications than they had in 2006 for the same occupations. However, supporting an increase in the proportion of workers with qualifications at any level without considering the underlying labour market requirements (Oliver & Wright 2016) can lead to overqualification and productivity problems (Adalet McGowan & Andrews 2015; Maynard & Parfyonova 2013; Velciu 2017). Karmel (2015) argues that the expansion in the proportion of people with qualifications has far outstripped the change in the employment structure.

SkillsIQ (2017) has estimated that 25% of Australian workers are overqualified. In occupations with customer, patient or client services, the rate of overqualification is 35%, and in wholesale and retail occupations, it is 51%. The likelihood of overqualification is less frequent in occupations with regulated registration requirements or where a particular qualification is necessary for entry. The ABS Survey of Qualifications and Work analyses support this argument, showing that technicians and trades workers were most likely to hold only one qualification and that it was most likely to be at a VET level. Karmel (2015) also found that the proportion of workers with qualifications increased over the 1996–2011 period, even in occupations where a link between the qualification and the work is unlikely. Clearly, the trend is longstanding.

The productivity cost of overqualification is foregone income for the worker, income that could have been earned in a higher-paying occupation commensurate with the qualification. Additional costs include government outlays related to tuition support and foregone tax, which may exceed \$4 billion per year for private individuals (SkillsIQ 2017). In addition, overqualified workers are more likely than workers who are less overqualified to leave their position within six months (Maynard & Parfyonova 2013), and they may be less productive and less motivated (Adalet McGowan & Andrews 2015; Velciu 2017).

Overqualification and skills mismatch can apply to people of all working ages (SkillsIQ 2017), although young age cohorts are more likely to be overeducated relative to older cohorts in Australia (Dockery & Miller 2012). Our census analysis of broad occupational groups by age at the ANZCO 1-digit level supports this view. The more detailed 4-digit level analyses for individual occupations indicates that sometimes it is older workers who had the greatest increase in the proportion of VET qualifications within occupations with traditionally large numbers of workers with no post-school qualification, such as deck and fishing hands, crane, hoist and lift operators, concreters, forestry and logging workers, and caretakers.

Overqualification may reflect credentialism and qualification inflation in a tight labour market (with low or falling unemployment and a decline in vacancies): with growing numbers of applicants

7 <<https://joboutlook.gov.au/>>.

with qualifications exceeding the minimum requirements for the job, employers raise the bar and devalue all levels of qualifications (Marginson 1995; Dockery & Miller 2012).

SkillsIQ (2017) recommends that employers clearly define the skills required for a job role rather than rely solely on a qualification level. Qualifications alone may be a poor proxy for assessing future job performance by comparison with the real-time skills needed and performed in workplaces today (Siekman & Fowler 2017). Both employers and workers must recognise that qualifications are not the only means of developing labour market capability: higher qualifications may come at the expense of practical work experience early in individuals' working lives. Younger workers could build on practical skills gained in the initial stages of their career by completing a relevant qualification later in their career path (SkillsIQ 2017). On the other hand, gaining a higher qualification than necessary for the job may still be to a worker's advantage if employers use higher qualifications as a sorting device, or if they believe that qualification standards have been declining (Karmel 2015). This process contributes to 'structural crowding out', whereby the low-educated, at the bottom of the labour queue, are pushed out of the labour market by those higher in the queue (Klein 2015).

Karmel's 2015 analysis of the 1996–2011 census found that overqualification was more frequent amongst higher degree holders, a finding supported by our analyses of the Survey of Qualifications and Work, which show that professionals, who are most likely to hold degrees, are also most likely to have more than one qualification. Mavromaras, McGuinness and Fok (2009) reported that workers with certificate III or IV vocational qualifications were least likely to experience mismatch in the form of 'overskilling', a finding also supported by our analyses of the 2015 Survey of Qualifications and Work. The present analyses, showing a general upward shift in qualification levels, suggest that workers in occupations traditionally requiring VET qualifications may be increasingly overskilled in the future. Previous research has found that overeducation can lead to human capital depreciation, but that some overskilled workers voluntarily trade wages for increased job security, preferred hours, greater job flexibility and reduced stress (Black 2013).

Future demand for training

The trend towards the acquisition of higher education qualifications suggests that demand for VET may increasingly come from younger workers, who need practical skills to compensate for experience not routinely provided in higher education. Differences in qualification levels according to age reflect the historical availability of training and jobs. They also have implications for optimising the delivery of future training, given that different generations have different types and levels of literacy, as well as preferred modes of learning and other characteristics that affect learning and the delivery of training, such as health, family commitments and maturity. Although the census analyses indicate that older workers are also increasing their qualification levels in some occupations, the census cannot show whether this pattern is a cohort effect⁸ or whether older workers are retraining in other occupations (or upskilling within existing occupations).

Training providers need to consider both the number of workers requiring training and the rate of increase in the number of workers by occupation. For example, railway track workers had the

8 A cohort effect is a characteristic of a group of individuals who shared a temporal or common life experience, such as timing of birth or education.

largest shift toward VET qualifications (from 23.3% to 42.4%), but they comprise a relatively small group (n = 3961) and are not in the 20 largest occupations.

Based on the census patterns in our analyses, VET training for the following occupations is likely to be in strong demand over the next five to 10 years:

- aged care workers
- education aides
- concreters
- dental assistants.

The extent to which professionalisation is driving the introduction of registration or more stringent registration standards may also foreshadow an increase in demand for VET qualifications.

Childcare, aged care, and financial services, for example, have recently become more highly regulated. On the other hand, discussions about what training or qualifications are needed to perform job roles are disappearing from enterprise bargaining (Oliver & Wright 2016). Workers on enterprise agreements are no more likely to receive a wage boost for acquiring additional qualifications than those on informal arrangements, with award-reliant workers most likely to have their qualifications recognised in the form of higher pay (Oliver, in Oliver & Wright 2016).

Is the current pattern of training and education able to meet future skill requirements? Jobs that were built around technical skills – the mainstay of the VET system – have declined (including both manual jobs and clerical jobs rendered redundant by technological change) and will continue to decline (Oliver & Wright 2016). Jobs with the lowest probability of being superseded by machines are those that involve creative thinking, high social intelligence and considerable mobility and agility (Taylor 2015, p.21, in Oliver & Wright 2016) and the converse also applies. Training for some occupations likely to require more workers with VET qualifications may be a relatively short-term need if those occupations will no longer exist in the long-term.

Future demand for VET may also be driven by the emerging need for the workforce to reskill and upskill flexibly, by undertaking study or training based on skill sets or micro-credentials rather than full qualifications. The VET sector is already well placed to provide training of this type (Bowman & Davis 2012; Mills et al. 2012; Resources Industry Training Council 2013) and the value of skill sets as an efficient or cost-effective form of training is recognised by government and industry (Committee for Economic Development of Australia 2016; Australian Industry and Skills Committee 2017).

Several areas of research remain. The first is identifying the source of change in qualification levels: how much is due to genuine changes in the nature of the work and how much to credentialism? This distinction requires detailed job-content analyses (Dockery & Miller 2012). Second, the extent to which employers hire workers without a qualification but then require them to obtain one is unknown. Finally, we need to find better ways to match labour demands with the demand for both VET and higher education. The existing trends of higher rates of workers with higher education may represent an oversupply of graduates, with repercussions for the supply of VET-qualified workers. Determining employers' views of current and future skill requirements is a key starting point.



References

- ABS (Australian Bureau of Statistics) 2006a, *ANZSCO – Australian and New Zealand Standard Classification of Occupations*, 1st edn, cat.no.1220.0, ABS, Canberra, viewed September 2019, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1220.0Main+Features12006>>.
- 2006b, ‘2006 census’, ABS, Canberra, viewed 24 August 2019, <<https://www.abs.gov.au/websitedbs/censushome.nsf/home/historicaldata2006?opendocument&navpos=280>>.
- 2009, *ANZSCO – Australian and New Zealand Standard Classification of Occupations*, 1st edition, revision 1, cat.no.1221.0, ABS, Canberra, viewed September 2019, <[https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/C855D880504B67EDCA2575670016BC98/\\$File/12210_2009.pdf](https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/C855D880504B67EDCA2575670016BC98/$File/12210_2009.pdf)>.
- 2011, ‘2011 census’, ABS, Canberra, viewed 24 August 2019, <<https://www.abs.gov.au/websitedbs/censushome.nsf/home/historicaldata2006?opendocument&navpos=280>>.
- 2012, *Education differences between men and women*, Australian social trends, September 2012, ABS, Canberra, viewed September 2019, <[http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/09F1FEDBC601E3EDCA257A8400165219/\\$File/41020_educationdifferences_sept2012.pdf](http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/09F1FEDBC601E3EDCA257A8400165219/$File/41020_educationdifferences_sept2012.pdf)>.
- 2013, *ANZSCO – Australian and New Zealand Standard Classification of Occupations*, version 1.2, cat.no.1220.0, ABS, Canberra, viewed September 2019, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1220.02013,%20Version%201.2?OpenDocument>>.
- 2015, *Survey of Qualifications and Work microdata*, cat.no.4235.0, ABS, Canberra, <<https://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4235.0>>.
- 2016a, *Census of Population and Housing: census dictionary 2016*, cat.no.2091.0, ABS, Canberra, viewed September 2019, <<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2901.0>>.
- 2016b, ‘2016 census’, ABS Canberra, viewed 24 August 2019, <<https://www.abs.gov.au/websitedbs/censushome.nsf/home/2016>>.
- 2017, ‘Community and personal services workers on the rise’, media release, 23 October 2017, viewed September 2019, <<http://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbyReleaseDate/03B07F4B9599CBAECA2581D3001504D1?OpenDocument>>.
- 2018, *Labour force, Australia, detailed quarterly*, cat.no.6291.0, ABS, Canberra, viewed September 2019, <<https://www.abs.gov.au/ausstats/abs@.nsf/mf/6291.0.55.003>>.
- Adalet McGowan, M & Andrews, D 2015, *Labour market mismatch and labour productivity: evidence from PIAAC data*, OECD Economics Department working papers no.1209, OECD, Paris, viewed April 2018, <<http://dx.doi.org/10.1787/5js1pzx1r2kb-en>>.
- Atkinson, G & Stanwick, J 2016, Trends in VET: policy and participation, NCVET, Adelaide.
- Australian Industry and Skills Committee 2017, ‘Purpose and priorities’, fact sheet, viewed September 2019 <<https://www.aisc.net.au/sites/default/files/documents/factsheet-purpose-and-priorities.pdf>>.
- Black, DJ 2013, ‘The utilisation of human capital from education in Australian labour markets: over-education?’, PhD thesis, University of Melbourne, viewed September 2019, <https://minerva-access.unimelb.edu.au/bitstream/handle/11343/38342/302778_Black%20PhD%20thesis.pdf?sequence=1>.
- Bowman, K & Davis, S 2012, ‘Interview with Kaye Bowman on “Workforce skills development and engagement in training through skill sets”’, NCVET, Adelaide, viewed August 2019, <<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/interview-with-kaye-bowman-on-workforce-skills-development-and-engagement-in-training-through-skill-sets>>.
- Butler, E, Clarke, K & Simon, L 2015, *Women and girls into non-traditional occupations and industries: broadening career options for secondary school students*, Security4Women, North Sydney, viewed September 2019, <<http://www.security4women.org.au/wp-content/uploads/eS4W-Career-Exploration-Project-Report-20140615.pdf>>.
- Committee for Economic Development of Australia 2016, *VET: Securing skills for growth*, CEDA, Melbourne, viewed August 2019, <https://www.ceda.com.au/CEDA/media/ResearchCatalogueDocuments/Research%20and%20Policy/PDF/31760-CEDAVETReportAugust2016Final_flattened.pdf>.
- Cully, M, VandenHeuvel, A, Curtain, R & Wooden, M 2000, ‘Participation in, and barriers to training: the experience of older adults’, *Australasian Journal on Ageing*, vol.19, no.4, pp.172–9.

- Department of Employment, Skills, Small and Family Business 2019, 'Labour market information portal: Employment projections', viewed September 2019
<<http://lmip.gov.au/default.aspx?LMIP/GainInsights/EmploymentProjections>>.
- 2018, 'Job outlook – future outlook', viewed September 2019,
<<https://www.joboutlook.gov.au/IndustrySpecific.aspx?search=Industry&Industry=Q>>.
- Department of Further Education, Employment, Science and Technology 2012, *Female participation in STEM study and work in South Australia*, DFEEST, Adelaide, viewed September 2019,
<https://officeforwomen.sa.gov.au/__data/assets/pdf_file/0008/59336/2013-DFEEST-Female-participation-in-STEM-report.pdf>.
- Dockery, M & Miller, P 2012, *Over-education, under-education and credentialism in the Australian labour market*, NCVER, Adelaide, viewed April 2018, <<https://www.ncver.edu.au/publications/publications/all-publications/over-education,-under-education-and-credentialism-in-the-australian-labour-market>>.
- Fowler, C 2017, *The boundaries and connections between the VET and higher education sectors: 'confused, contested and collaborative'*, NCVER, Adelaide, viewed March 2019,
<<https://www.ncver.edu.au/publications/publications/all-publications/the-boundaries-and-connections-between-the-vet-and-higher-education-sectors-confused-contested-and-collaborative>>.
- Griffin, T & Beddie, F 2011, *Older workers: research readings*, NCVER, Adelaide, viewed September 2019,
<<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/older-workers-research-readings>>.
- Karmel, T 2011, 'The implications of skills deepening for vocational education and training in Australia', *International Journal of Training Research*, vol.9, nos.1–2, pp.72–94.
- 2015, 'Skills deepening or credentialism?: Education qualifications and occupational outcomes, 1996–2011', *Australian Journal of Labour Economics*, vol.18, no.1, pp.29–51, viewed August 2019,
<<http://business.curtin.edu.au/wp-content/uploads/sites/5/2016/04/AJLE-v18n1-Karmel.pdf>>.
- Klein, M 2015, 'The increasing unemployment gap between the low and high educated in West Germany: structural or cyclical crowding-out?', *Social Science Research*, vol.50, pp.110–25, viewed April 2018,
<<https://strathprints.strath.ac.uk/55665/>>.
- Marginson, S 1995, 'The decline in the standing of educational credentials in Australia', *Australian Journal of Education*, vol.39, no.1, pp.67–76.
- Mavromaras, K, McGuinness, S & Fok, Y 2009, *Assessing the incidence and wage effects of overskilling in the Australian labour market*, Blackwell Publishing, Melbourne.
- Maynard, DC & Parfyonova, NM 2013, 'Perceived overqualification and withdrawal behaviours: examining the roles of job attitudes and work values', *Journal of Occupational and Organizational Psychology*, vol.86, no.3, pp.435–55.
- Mills, J, Crean, D, Ranshaw, D & Bowman, K 2012, *Workforce skills development and engagement in training through skill sets*, NCVER, Adelaide, viewed August 2019, <<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/workforce-skills-development-and-engagement-in-training-through-skill-sets>>.
- Oliver, D & Wright, CF 2016, 'Australia's shifting skills ecosystem: contemporary challenges in education, training and immigration', *Industrial relations reform: looking to the future*, Federation Press, Sydney, pp.163–86, viewed September 2019,
<https://www.researchgate.net/profile/Chris_Wright11/publication/309739215_Australia's_shifting_skill_s_ecosystem_Contemporary_challenges_in_education_training_and_immigration/links/58214ac008aeccc08af69f8e.pdf>.
- Productivity Commission 2017, *Upskilling and retraining*, Productivity Commission, Canberra, viewed November 2018, <<http://www.pc.gov.au/inquiries/completed/productivity-review/report/productivity-review-supporting8.pdf>>.
- Resources Industry Training Council 2013, *Skill sets for the resources sector: an exploratory study*, Resources Industry Training Council, Perth, viewed August 2019, <<https://www.slideshare.net/ritcwa/130918-psritc-skills-sets-final-report-september-2013>>.
- Security4Women 2009, *Women and vocational education and training: strategies for gender inclusive VET reform*, S4W, Melbourne, viewed September 2019, <<https://www.security4women.org.au/wp-content/uploads/Women-and-VET-Strat.pdf>>.
- Shewring, F 2009, *The female 'tradie': challenging employment perceptions in non-traditional trades for women*, NCVER, Adelaide, viewed July 2018, <<https://www.ncver.edu.au/publications/publications/all-publications/the-female-tradie-challenging-employment-perceptions-in-non-traditional-trades-for-women>>.
- Siekmann, G & Fowler, C 2017, *Identifying work skills: international approaches*, NCVER, Adelaide, viewed July 2018, <<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/identifying-work-skills-international-approaches>>.

- SkillsIQ 2017, *Right skills: right time?*, Skills IQ, Sydney, viewed April 2018, <<https://www.skillsiq.com.au/site/DefaultSite/filesystem/documents/SkillsIQ-Right-Skills-Right-Time.pdf>>.
- Velciu, M 2017, 'Job mismatch-effects on work productivity', *SEA: Practical Application of Science*, vol.5, no.3, pp.395–98, viewed September 2019, <<https://ideas.repec.org/a/cmj/seapas/y2017i15p395-398.html>>.



Appendix A

Table A1 Classification of census qualifications

Higher education qualifications

Postgraduate degree level		
10	Postgraduate degree level, nfd	
11	Doctoral degree level	Doctoral degree level, nfd Higher doctorate Doctorate by research Doctorate by coursework Professional specialist qualification at doctoral degree level
12	Master degree level	Master degree level, nfd Master degree by research Master degree by coursework Professional specialist qualification at master degree level
Graduate diploma and graduate		
20	Graduate diploma and graduate , nfd	
21	Graduate diploma level	Graduate diploma level, nfd Graduate diploma Professional specialist qualification at graduate diploma level
22	Graduate	graduate , nfd graduate certificate professional specialist qualification at graduate
Bachelor degree level		
31	Bachelor degree level	Bachelor degree level, nfd Bachelor honours degree Bachelor pass degree

Table A1 Classification of census qualifications (continued)

VET qualifications diploma

Advanced diploma and diploma level		
40	Advanced diploma and diploma level, nfd	
41	Advanced diploma and associate degree level	
		Advanced diploma and associate degree level, nfd
		Advanced diploma
		Associate degree
42	Diploma level	
		Diploma level, nfd
		Diploma

Certificates

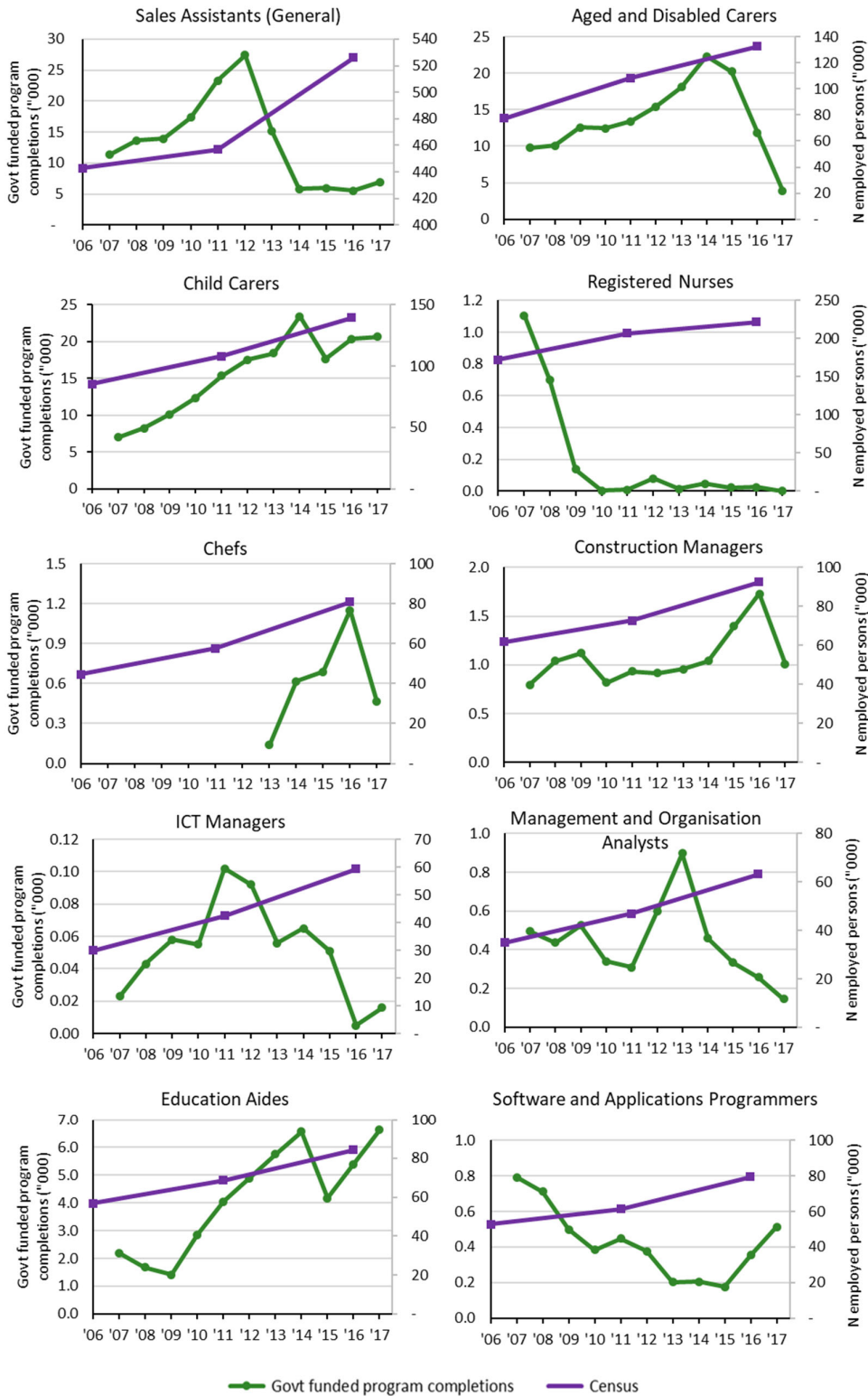
Certificate level		
50	Certificate I and II level, nfd	
	500	Certificate I and II level, nfd
51	Certificate III and IV level	
	510	Certificate III and IV level, nfd
	511	Certificate IV
	514	Certificate III
52	Certificate I and II level	
	520	Certificate I and II level, nfd
	521	Certificate II
	524	Certificate I

Other qualification groupings

No post-school qualifications		
	@@@	Not applicable (no response required as the question did not apply to the respondent. This grouping includes persons who have a qualification that is out of scope of the QALLP classification; persons with no post-school qualification; and persons still studying for a first post-school qualification).

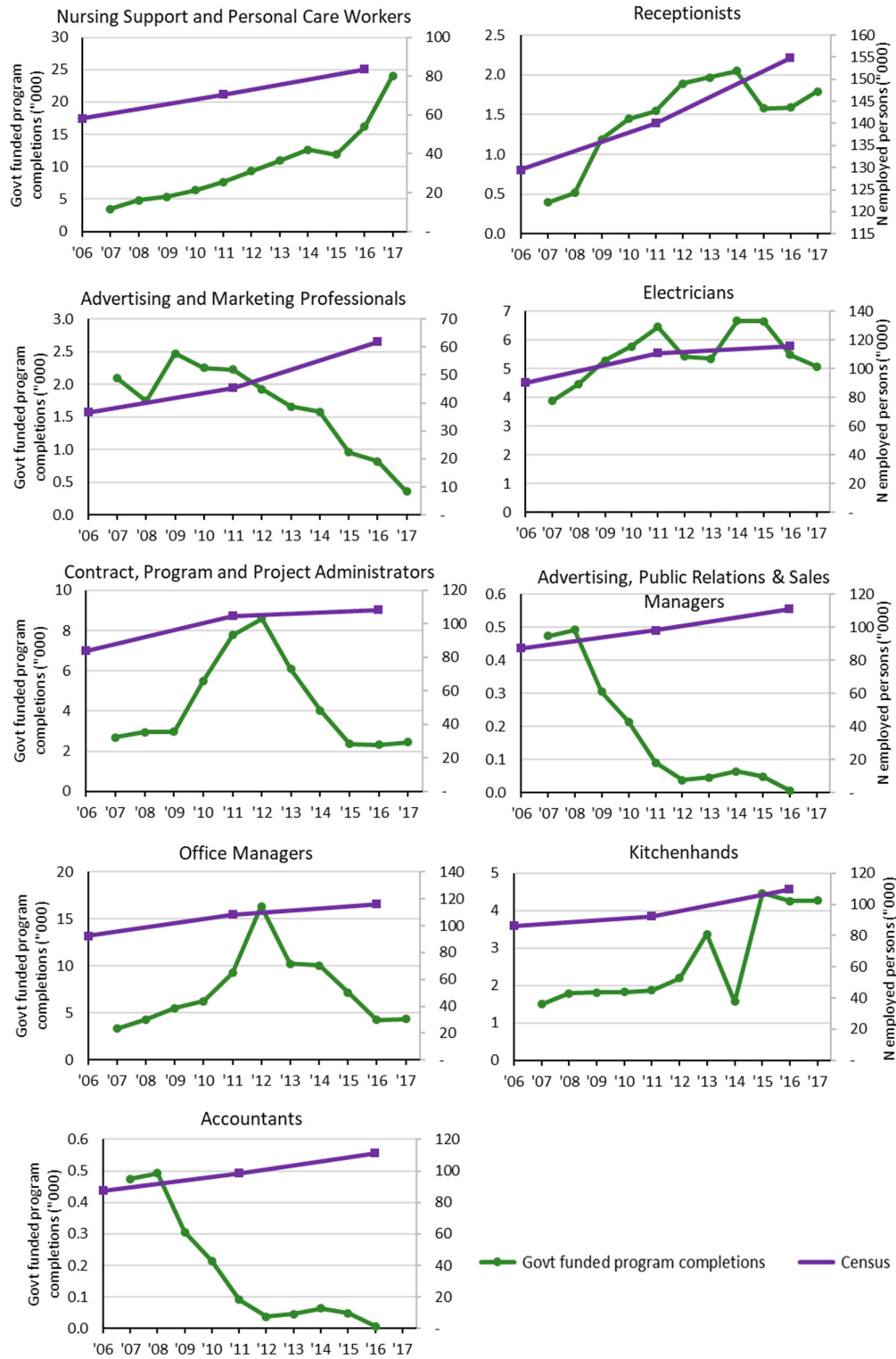
Source: ABS (2016a).

Figure A1 Number of government-funded VET program completions coded to ANZSCO (2007–17) and number of persons employed in 20 occupations with largest absolute growth (2006, 2011, 2016)†



† Bar attendants and baristas were in the 20 occupations with the largest absolute growth but program completions data were not available and only available for chefs from 2013.
 Source: NCVET National VET Provider Collection 2018, unpublished data; ABS (2006b, 2011, 2016b).

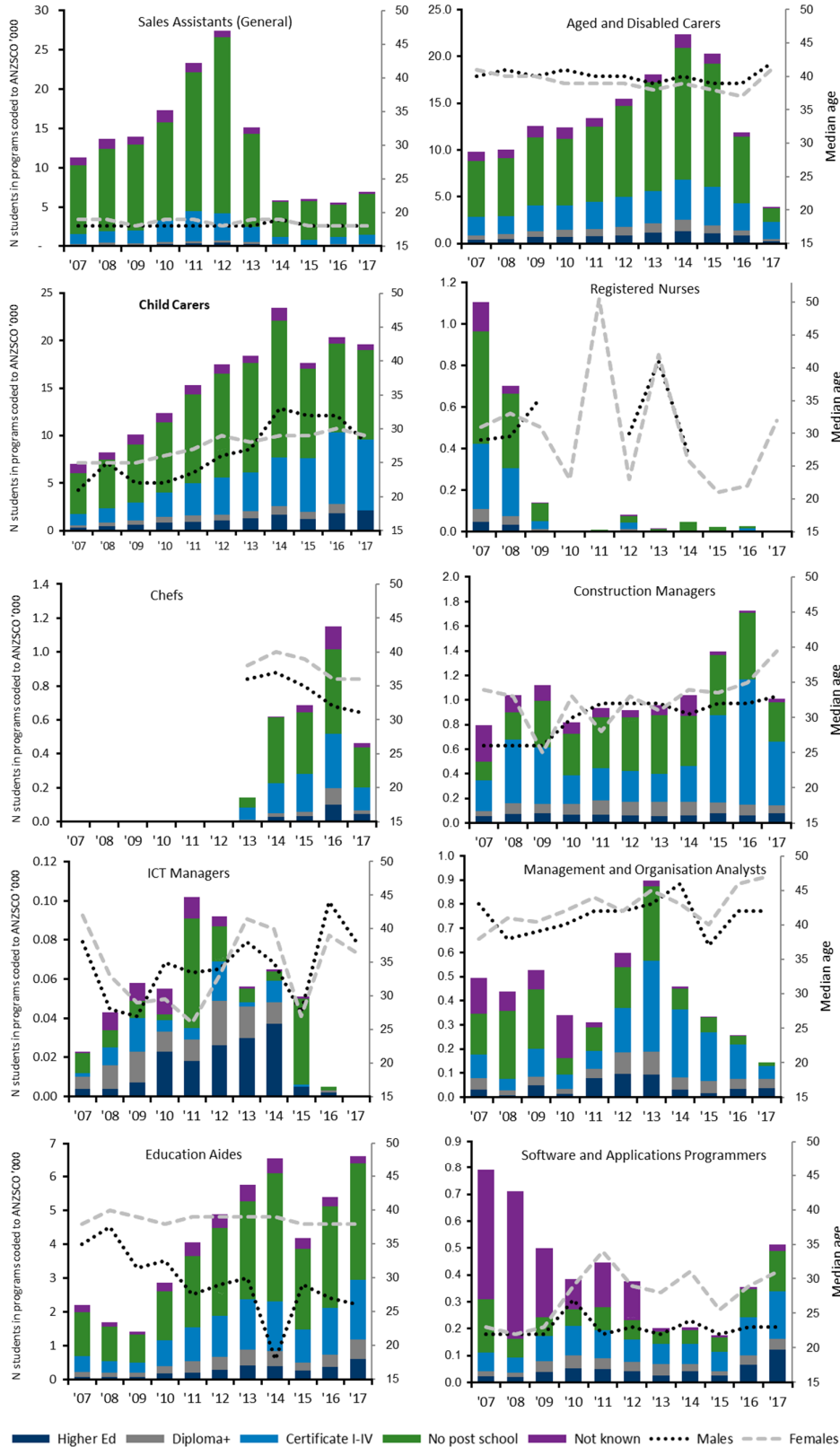
Figure A1 Number of government-funded VET program completions coded to ANZSCO (2007–17) and number of persons employed in 20 occupations with largest absolute growth (2006, 2011, 2016)[†] (continued)



[†] Bar attendants and baristas were in the 20 occupations with the largest absolute growth but program completions data were not available and only available for chefs from 2013.

Source: NCVET National VET Provider Collection 2018, unpublished data; ABS (2006b, 2011, 2016b).

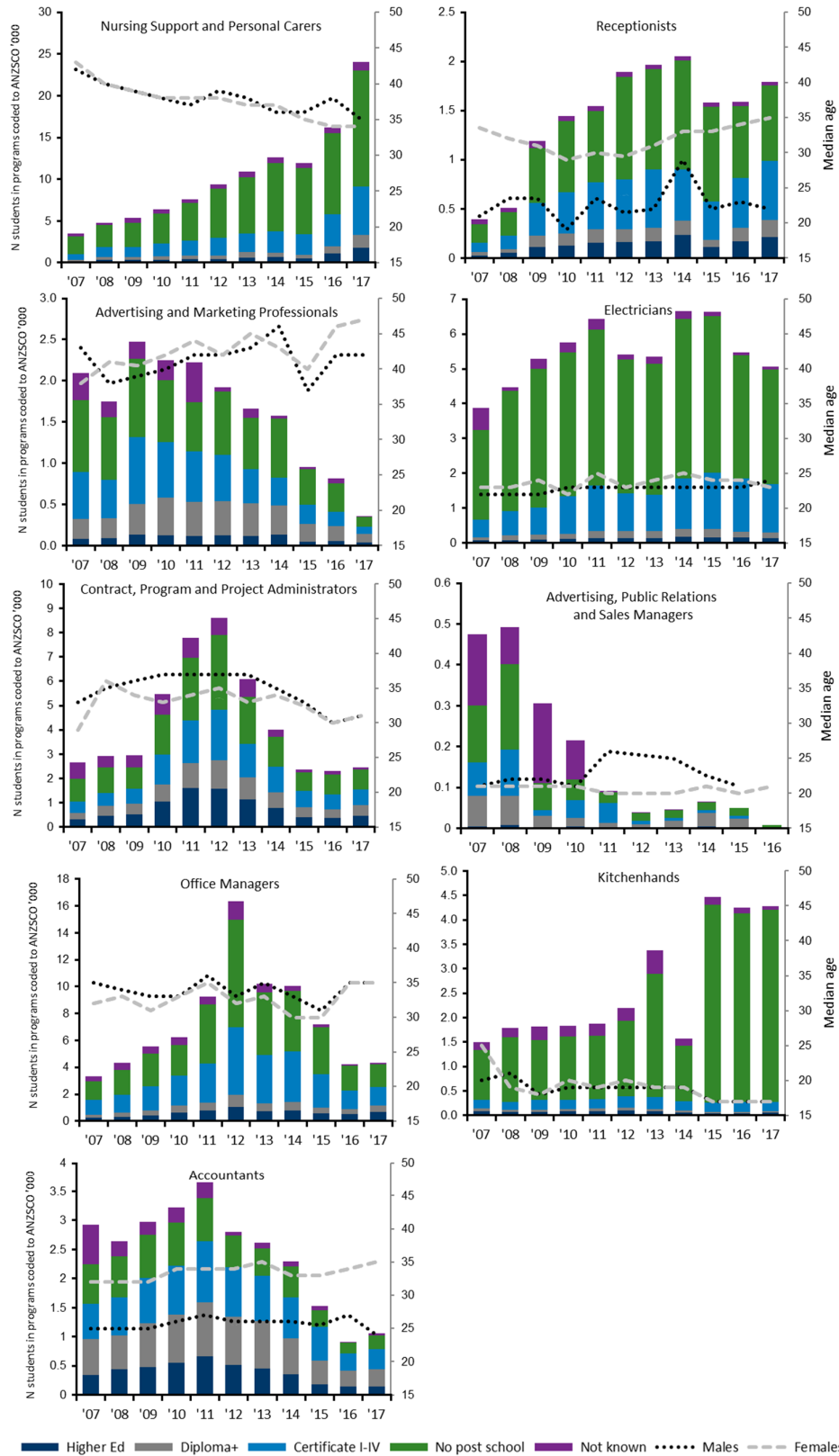
Figure A2 Prior level of education for government-funded VET program completions coded to ANZSCO and median age of completed students by gender for 20 occupations with largest absolute growth, 2007–17[‡]



[‡] Bar attendants and baristas were in the 20 occupations with the largest absolute growth but program completions data were not available and only available for chefs from 2013.

Source: NCVET National VET Provider Collection 2018, unpublished data.

Figure A2 Prior level of education for government-funded VET program completions coded to ANZSCO and median age of completed students by gender for 20 occupations with largest absolute growth, 2007–17[‡] (continued)



[‡] Bar attendants and baristas were in the 20 occupations with the largest absolute growth but program completions data were not available and only available for chefs from 2013.

Source: NCVET National VET Provider Collection 2018, unpublished data.

Table A2 The 20 occupations with the largest proportions of VET qualifications in 2016

Occupation		2006		2016			Difference 2006–16	
		<i>n</i>	%	<i>n</i>	%	% point difference	% change in proportion	
<i>Enrolled and mothercraft nurses</i>								
Higher education		1 313	7.5	2 911	8.8	1.3	17.7	
VET	Diplomas	5 158	29.5	21 899	66.5	37.0	125.4	
	Certs I–IV	9 426	53.9	6 836	20.8	-33.1	-61.5	
	Total	14 584	83.4	28 735	87.2	3.8	4.6	
No post-school qualification		1 590	9.1	1 293	3.9	-5.2	-56.8	
n		17 487	100	32 939	100			
<i>Electrical distribution trades workers</i>								
Higher education		51	0.8	157	2.1	1.4	179.3	
VET	Diplomas	125	1.9	278	3.8	1.9	101.8	
	Certs I–IV	4 747	70.8	6 142	83.2	12.3	17.4	
	Total	4 872	72.7	6 420	86.9	14.2	19.6	
No post-school qualification		1 779	26.5	809	11.0	-15.6	-58.7	
n		6 702	100	7 386	100			
<i>Automotive electricians</i>								
Higher education		29	0.5	123	1.8	1.3	275.1	
VET	Diplomas	58	1.0	160	2.4	1.4	144.0	
	Certs I–IV	4 758	79.4	5 712	84.3	4.9	6.2	
	Total	4 816	80.4	5 872	86.7	6.3	7.8	
No post-school qualification		1 147	19.1	780	11.5	-7.6	-39.9	
n		5 992	100	6 775	100			
<i>Metal fitters and machinists</i>								
Higher education		1 152	1.5	1 780	2.3	0.8	53.8	
VET	Diplomas	2 602	3.3	4 042	5.1	1.8	54.6	
	Certs I–IV	60 980	77.5	63 857	80.8	3.3	4.2	
	Total	63 582	80.8	67 899	85.9	5.1	6.3	
No post-school qualification		13 924	17.7	9 367	11.9	-5.9	-33.1	
n		78 658	100	79 046	100			
<i>Hairdressers</i>								
Higher education		298	0.6	857	1.6	1.0	150.5	
VET	Diplomas	889	1.9	3 610	6.8	4.9	253.7	
	Certs I–IV	36 118	77.9	41 729	78.4	0.5	0.6	
	Total	37 007	79.8	45 339	85.2	5.4	6.7	
No post-school qualification		9 053	19.5	7 032	13.2	-6.3	-32.3	
n		46 358	100	53 228	100			
<i>Aircraft maintenance engineers</i>								
Higher education		612	4.6	1 095	8.8	4.1	89.8	
VET	Diplomas	1 474	11.1	2 130	17.1	5.9	53.3	
	Certs I–IV	9 487	71.7	8 299	66.5	-5.2	-7.2	
	Total	10 961	82.8	10 429	83.5	0.8	0.9	
No post-school qualification		1 667	12.6	959	7.7	-4.9	-39.0	
n		13 240	100	12 483	100			

Occupation	2006		2016			Difference 2006–16	
	n	%	n	%	% point difference	% change in proportion	
<i>Electricians</i>							
Higher education	1 197	1.4	2 937	2.6	1.2	90.8	
VET							
Diplomas	3 362	3.8	6 382	5.6	1.8	47.6	
Certs I–IV	67 424	76.1	88 516	77.6	1.6	2.1	
Total	70 786	79.9	94 898	83.2	3.4	4.2	
No post-school qualification	16 645	18.8	16 165	14.2	-4.6	-24.5	
n	88 628	100	114 000	100			
<i>Toolmakers and engineering patternmakers</i>							
Higher education	135	2.0	115	4.2	2.2	113.4	
VET							
Diplomas	435	6.3	435	15.8	9.5	150.5	
Certs I–IV	4 995	72.6	1 838	66.9	-5.7	-7.8	
Total	5 430	78.9	2 273	82.8	3.9	4.9	
No post-school qualification	1 315	19.1	358	13.0	-6.1	-31.8	
n	6 880	100	2 746	100			
<i>Panelbeaters</i>							
Higher education	55	0.4	99	0.9	0.5	106.0	
VET							
Diplomas	81	0.7	177	1.6	1.0	150.1	
Certs I–IV	9 454	76.2	8 565	79.0	2.8	3.7	
Total	9 535	76.8	8 742	80.6	3.8	4.9	
No post-school qualification	2 819	22.7	2 001	18.5	-4.3	-18.8	
n	12 409	100	10 842	100			
<i>Motor mechanics</i>							
Higher education	617	0.8	1 731	2.0	1.3	159.6	
VET							
Diplomas	1 035	1.3	3 839	4.5	3.2	243.2	
Certs I–IV	58 002	73.8	64 584	76.1	2.2	3.0	
Total	59 037	75.1	68 423	80.6	5.5	7.3	
No post-school qualification	18 911	24.1	14 744	17.4	-6.7	-27.9	
n	78 565	100	84 898	100			
<i>Plumbers</i>							
Higher education	389	0.7	740	1.1	0.4	50.7	
VET							
Diplomas	827	1.5	1 628	2.3	0.8	55.9	
Certs I–IV	41 176	74.6	53 835	77.3	2.7	3.6	
Total	42 003	76.1	55 463	79.6	3.5	4.6	
No post-school qualification	12 815	23.2	13 485	19.4	-3.9	-16.6	
n	55 207	100	69 688	100			
<i>Airconditioning and refrigeration mechanics</i>							
Higher education	220	1.5	475	2.6	1.1	75.2	
VET							
Diplomas	476	3.2	905	4.9	1.7	54.3	
Certs I–IV	10 273	68.4	13 401	72.4	4.0	5.9	
Total	10 749	71.6	14 306	77.3	5.7	8.0	
No post-school qualification	4 054	27.0	3 733	20.2	-6.8	-25.3	
n	15 023	100	18 514	100			

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point difference	% change in proportion
<i>Structural steel and welding trades workers</i>						
Higher education	508	0.9	1 098	1.9	1.0	116.3
VET Diplomas	794	1.4	1 748	3.0	1.7	120.3
Certs I–IV	38 047	66.1	42 429	73.7	7.7	11.6
Total	38 841	67.5	44 177	76.8	9.3	13.8
No post-school qualification	18 231	31.7	12 262	21.3	-10.4	-32.7
n	57 580	100	57 537	100		
<i>Electrical engineering and draftspersons and technicians</i>						
Higher education	516	7.4	1 083	13.2	5.8	77.6
VET Diplomas	1 433	20.7	1 960	23.9	3.3	15.7
Certs I–IV	4 053	58.5	4 310	52.6	-5.9	-10.0
Total	5 486	79.2	6 270	76.6	-2.6	-3.3
No post-school qualification	926	13.4	834	10.2	-3.2	-23.8
n	6 928	100	8 187	100		
<i>Carpenters and joiners</i>						
Higher education	958	1.1	2 215	2.2	1.1	95.0
VET Diplomas	1 669	2.0	3 116	3.1	1.1	57.4
Certs I–IV	58 634	69.5	73 448	73.4	3.9	5.6
Total	60 303	71.4	76 564	76.5	5.0	7.1
No post-school qualification	23 149	27.4	21 325	21.3	-6.1	-22.3
n	84 410	100	100 104	100		
<i>Vehicle painters</i>						
Higher education	42	0.5	88	1.0	0.5	111.8
VET Diplomas	77	0.8	145	1.6	0.7	90.3
Certs I–IV	6 232	66.8	6 773	73.4	6.6	9.8
Total	6 309	67.6	6 918	75.0	7.3	10.8
No post-school qualification	2 978	31.9	2 224	24.1	-7.8	-24.5
n	9 329	100	9 230	100		
<i>Sheetmetal trades workers</i>						
Higher education	37	0.5	87	1.7	1.1	215.5
VET Diplomas	67	1.0	106	2.0	1.1	112.3
Certs I–IV	4 291	61.4	3 687	70.8	9.4	15.3
Total	4 358	62.4	3 793	72.8	10.5	16.8
No post-school qualification	2 591	37.1	1 327	25.5	-11.6	-31.3
n	6 986	100	5 207	100		
<i>Marine transport professionals</i>						
Higher education	837	13.5	1 347	18.1	4.6	34.1
VET Diplomas	1 796	28.9	2 265	30.4	1.5	5.1
Certs I–IV	2 539	40.9	3 046	40.9	0.0	0.0
Total	4 335	69.8	5 311	71.3	1.5	2.1
No post-school qualification	1 035	16.7	789	10.6	-6.1	-36.5
n	6 207	100	7 447	100		

Occupation	2006		2016			Difference 2006–16	
	<i>n</i>	%	<i>n</i>	%	% point difference	% change in proportion	
<i>Cabinetmakers</i>							
Higher education	332	1.5	581	2.8	1.3	85.1	
VET							
Diplomas	404	1.9	617	3.0	1.1	61.5	
Certs I–IV	13 682	62.9	13 965	67.9	5.0	7.9	
Total	14 086	64.7	14 582	70.9	6.1	9.5	
No post-school qualification	7 338	33.7	5 408	26.3	-7.4	-22.1	
<i>n</i>	21 756	100	20 571	100			
<i>Diversional therapists</i>							
Higher education	507	13.5	742	16.9	3.4	25.2	
VET							
Diplomas	831	22.1	1 075	24.4	2.3	10.6	
Certs I–IV	1 506	40.0	1 994	45.3	5.3	13.2	
Total	2 337	62.1	3 069	69.8	7.6	12.3	
No post-school qualification	918	24.4	588	13.4	-11.0	-45.2	
<i>n</i>	3 762	100	4 399	100			

Source: ABS (2006b, 2016b).

Table A3 Occupations (ANZSCO 4-digit) with the largest percentage point increase in proportion of VET qualifications, 2006–16

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point difference	% change in proportion
<i>Railway track workers</i>						
Higher education	45	1.5	141	3.6	2.1	142.3
VET Diplomas	56	1.8	197	5	3.1	172
Certs I–IV	657	21.4	1 484	37.5	16	74.7
Total	713	23.3	1 681	42.4	19.2	82.3
No post-school qualification	2 305	75.3	2 139	54	-21.3	-28.2
n	3 063	100	3 961	100		
<i>Recycling and rubbish collectors</i>						
Higher education	45	1.2	100	4.7	3.5	280
VET Diplomas	58	1.6	93	4.4	2.8	174.2
Certs I–IV	569	15.7	618	29.2	13.5	85.7
Total	627	17.3	711	33.6	16.3	93.9
No post-school qualification	2 950	81.4	1 307	61.7	-19.7	-24.2
n	3 622	100	2 118	100		
<i>Shearers</i>						
Higher education	29	0.8	21	0.8	0	4.1
VET Diplomas	45	1.2	54	2	0.8	72.5
Certs I–IV	736	19.1	918	34.2	15.1	79.3
Total	781	20.2	972	36.2	16	78.9
No post-school qualification	3 051	79	1 693	63	-16	-20.2
n	3 861	100	2 686	100		
<i>Train and tram drivers</i>						
Higher education	380	4.3	760	7.1	2.8	65.7
VET Diplomas	276	3.1	675	6.3	3.2	102.6
Certs I–IV	2 904	32.6	4 70	44.4	11.8	36.1
Total	3 180	35.7	5 445	50.7	15	41.8
No post-school qualification	5 336	60	4 534	42.2	-17.8	-29.6
n	8 896	100	10 739	100		
<i>Veterinary nurses</i>						
Higher education	506	9.1	1 023	11.4	2.2	24.4
VET Diplomas	576	10.4	1 079	12	1.6	15.3
Certs I–IV	2 315	41.7	4 925	54.7	12.9	30.9
Total	2 891	52.1	6 004	66.6	14.5	27.8
No post-school qualification	2 149	38.7	1 984	22	-16.7	-43.2
n	5 546	100	9 011	100		
<i>Electrical distribution trades workers</i>						
Higher education	51	0.8	157	2.1	1.4	179.3
VET Diplomas	125	1.9	278	3.8	1.9	101.8
Certs I–IV	447	70.8	6 142	83.2	12.3	17.4
Total	4 872	72.7	6 420	86.9	14.2	19.6
No post-school qualification	1 779	26.5	809	11	-15.6	-58.7
n	6 702	100	7 386	100		
<i>Education aides</i>						
Higher education	5 017	9.6	13 231	16.2	6.6	68.7
VET Diplomas	6 367	12.2	12 723	15.6	3.4	27.8
Certs I–IV	1 5 18	30.1	33 242	40.8	10.6	35.3
Total	22 085	42.4	45 965	56.4	14	33.1
No post-school qualification	25 037	48	22 323	27.4	-20.6	-43
n	52 139	100	81 519	100		

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point difference	% change in proportion
<i>Caretakers</i>						
Higher education	263	5.9	467	7.8	1.9	31.4
VET Diplomas	256	5.8	503	8.4	2.6	45.4
Certs I–IV	1 264	28.6	2 370	39.7	11.1	38.8
Total	1 520	34.4	2 873	48.1	13.7	39.9
No post-school qualification	2 638	59.7	2 633	44.1	-15.6	-26.1
n	4 421	100	5 973	100		
<i>Aged and disabled carers</i>						
Higher education	6 688	9.4	18 558	14.5	5.1	54.4
VET Diplomas	6 379	9	18 458	14.5	5.5	61
Certs I–IV	28 173	39.7	61 097	47.9	8.2	20.6
Total	34 552	48.7	79 555	62.4	13.7	28.1
No post-school qualification	29 721	41.9	29 440	23.1	-18.8	-44.9
n	70 961	100	127 553	100		
<i>Concreters</i>						
Higher education	246	1	412	1.6	0.5	53.4
VET Diplomas	385	1.6	604	2.3	0.7	43.7
Certs I–IV	6 594	27.2	10 599	40	12.8	47.2
Total	6 979	28.8	11 203	42.3	13.5	47
No post-school qualification	17 046	70.2	14 889	56.2	-14.1	-20
n	24 271	100	26 504	100		
<i>Crane, hoist and lift operators</i>						
Higher education	101	1.4	197	2.1	0.7	49.8
VET Diplomas	164	2.2	338	3.6	1.3	58.3
Certs I–IV	2 335	31.9	4 181	43.9	12	37.5
Total	2 499	34.2	4 519	47.5	13.3	38.9
No post-school qualification	4 710	64.4	4 801	50.4	-14	-21.7
n	7 310	100	9 517	100		
<i>Dental assistants</i>						
Higher education	754	5.9	2 463	11.7	5.8	97.9
VET Diplomas	1 220	9.6	2 339	11.1	1.5	16.1
Certs I–IV	5 204	40.9	10 839	51.6	10.7	26.2
Total	6 424	50.5	13 178	62.7	12.2	24.2
No post-school qualification	5 548	43.6	5 370	25.6	-18	-41.4
n	12 726	100	21 011	100		
<i>Aquaculture workers</i>						
Higher education	37	6.7	44	8	1.3	18.7
VET Diplomas	27	4.9	27	4.9	0	-0.2
Certs I–IV	110	19.9	176	31.8	11.9	59.7
Total	137	24.8	203	36.7	11.9	47.9
No post-school qualification	378	68.5	306	55.3	-13.1	-19.2
n	552	100	553	100		
<i>Paving and surfacing labourers</i>						
Higher education	59	0.9	96	1.7	0.7	79.8
VET Diplomas	112	1.7	167	2.9	1.1	64.7
Certs I–IV	1 491	23.3	1 973	34	10.7	46.2
Total	1 603	25	2 140	36.9	11.9	47.5
No post-school qualification	4 747	74.1	3 565	61.5	-12.6	-17
n	6 409	100	5 801	100		
<i>Plastics and rubber production machine operators</i>						
Higher education	364	4.2	326	5.2	1	23.4
VET Diplomas	344	3.9	334	5.3	1.3	33.8
Certs I–IV	2 025	23.2	2 132	33.7	10.5	45.1
Total	2 369	27.2	2 466	39	11.8	43.4
No post-school qualification	5 981	68.6	3 533	55.9	-12.8	-18.6
n	8 714	100	6 325	100		

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point difference	% change in proportion
<i>Indigenous health workers</i>						
Higher education	89	9.7	160	12.8	3.1	31.8
VET						
Diplomas	154	16.8	289	23.1	6.3	37.6
Certs I–IV	310	33.8	489	39.1	5.3	15.7
Total	464	50.5	778	62.1	11.6	22.9
No post-school qualification	365	39.8	314	25.1	-14.7	-36.9
n	918	100	1 252	100		
<i>Child carers</i>						
Higher education	6 520	8.2	26 921	19.7	11.5	140.7
VET						
Diplomas	18 623	23.4	41 692	30.5	7.1	30.5
Certs I–IV	20 355	25.5	40 837	29.9	4.3	17
Total	38 978	48.9	82 529	60.3	11.5	23.5
No post-school qualification	34 238	42.9	27 303	20	-23	-53.5
n	79 736	100	136 753	100		
<i>Forestry and logging workers</i>						
Higher education	98	3.1	152	7.8	4.6	147.8
VET						
Diplomas	94	3	106	5.4	2.4	80.1
Certs I–IV	638	20.4	574	29.4	8.9	43.7
Total	732	23.5	680	34.8	11.4	48.4
No post-school qualification	2 290	73.4	1 121	57.4	-16	-21.8
n	3 120	100	1 953	100		
<i>Deck and fishing hands</i>						
Higher education	169	2.9	310	5.8	2.9	102.6
VET						
Diplomas	363	6.1	391	7.3	1.2	19
Certs I–IV	1 923	32.4	2 274	42.4	9.9	30.6
Total	2 286	38.6	2 665	49.7	11.1	28.8
No post-school qualification	3 472	58.6	2 390	44.5	-14	-24
n	5 927	100	5 365	100		
<i>Motor vehicle parts and accessories fitters</i>						
Higher education	64	0.7	179	1.7	1	148.6
VET						
Diplomas	152	1.6	271	2.6	0.9	58.5
Certs I–IV	2 825	30.1	4 244	40.1	10.1	33.5
Total	2 977	31.7	4 515	42.7	11	34.8
No post-school qualification	6 355	67.6	5 877	55.6	-12	-17.8
n	9 396	100	10 571	100		

Source: ABS (2006b, 2016b).

Table A4 Occupations (ANZSCO 4-digit) with the largest percentage point decrease in proportion of VET qualifications, 2006–16

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point	% change in proportion
<i>Ambulance officers and paramedics</i>						
Higher education	2 474	28.4	7 420	55.6	27.2	95.7
VET Diplomas	3 892	44.7	4 153	31.1	-13.6	-30.4
Certs I–IV	1 268	14.6	1 065	8.0	-6.6	-45.2
Total VET	5 160	59.2	5 218	39.1	-20.2	-34.0
No post-school qualification	1 077	12.4	713	5.3	-7.0	-56.8
n	8 711		13 351			
<i>Dental hygienists, technicians and therapists</i>						
Higher education	519	11.2	2 177	33.2	22.0	195.5
VET Diplomas	2 089	45.3	2 952	45.1	-0.2	-0.4
Certs I–IV	1 667	36.1	1 135	17.3	-18.8	-52.0
Total VET	3 756	81.4	4 087	62.4	-19.0	-23.3
No post-school qualification	341	7.4	288	4.4	-3.0	-40.5
n	4 616		6 552			
<i>Medical imaging professionals</i>						
Higher education	6 583	66.3	13 021	83.4	17.0	25.6
VET Diplomas	2 981	30.0	2 233	14.3	-15.7	-52.4
Certs I–IV	225	2.3	126	0.8	-1.5	-64.4
Total VET	3 206	32.3	2 359	15.1	-17.2	-53.3
No post-school qualification	134	1.4	242	1.5	0.2	14.7
n	9 923		15 622			
<i>Podiatrists</i>						
Higher education	1 495	72.8	3 217	88.1	15.3	21.0
VET Diplomas	494	24.1	373	10.2	-13.8	-57.6
Certs I–IV	41	2.0	34	0.9	-1.1	-53.4
Total VET	535	26.1	407	11.1	-14.9	-57.2
No post-school qualification	23	1.1	28	0.8	-0.4	-31.6
n	2 053		3 652			
<i>Electrical engineers</i>						
Higher education	5 587	64.0	10 593	77.9	13.9	21.7
VET Diplomas	1 450	16.6	1 578	11.6	-5.0	-30.1
Certs I–IV	1 325	15.2	953	7.0	-8.2	-53.8
Total VET	2 775	31.8	2 531	18.6	-13.2	-41.5
No post-school qualification	371	4.2	481	3.5	-0.7	-16.8
n	8 733		13 605			

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point	% change in proportion
<i>Early childhood (pre-primary school) teachers</i>						
Higher education	9 172	61.7	20 006	74.8	13.1	21.2
VET						
Diplomas	4 776	32.1	4 327	16.2	-16.0	-49.7
Certs I–IV	387	2.6	1 479	5.5	2.9	112.3
Total VET	5 163	34.7	5 806	21.7	-13.0	-37.5
No post-school qualification	531	3.6	945	3.5	0.0	-1.1
n	14 866		26 757			
<i>Telecommunications technical specialists</i>						
Higher education	615	15.4	1 447	30.7	15.3	99.8
VET						
Diplomas	1 095	27.3	1 136	24.1	-3.3	-11.9
Certs I–IV	1 606	40.1	1 471	31.2	-8.9	-22.2
Total VET	2 701	67.5	2 607	55.3	-12.2	-18.1
No post-school qualification	688	17.2	662	14.0	-3.1	-18.3
n	4 004		4 716			
<i>Complementary health therapists</i>						
Higher education	2 611	52.8	4 102	67.1	14.3	27.1
VET						
Diplomas	1 858	37.6	1 676	27.4	-10.1	-27.0
Certs I–IV	217	4.4	156	2.6	-1.8	-41.8
Total VET	2 075	41.9	1 832	30.0	-12.0	-28.6
No post-school qualification	262	5.3	181	3.0	-2.3	-44.1
n	4 948		6 115			
<i>Primary school teachers</i>						
Higher education	98 181	79.3	133 633	91.0	11.7	14.7
VET						
Diplomas	23 092	18.7	10 474	7.1	-11.5	-61.8
Certs I–IV	467	0.4	671	0.5	0.1	21.1
Total VET	23 559	19.0	11 145	7.6	-11.4	-60.1
No post-school qualification	2 006	1.6	2 059	1.4	-0.2	-13.5
n	123 746		146 837			
<i>Electronics engineers</i>						
Higher education	2 043	64.5	3 421	75.4	10.9	16.9
VET						
Diplomas	508	16.0	518	11.4	-4.6	-28.8
Certs I–IV	437	13.8	343	7.6	-6.2	-45.2
Total VET	945	29.8	861	19.0	-10.9	-36.4
No post-school qualification	181	5.7	257	5.7	0.0	-0.9
n	3 169		4 539			
<i>Registered nurses</i>						
Higher education	101 982	64.9	164 659	77.0	12.0	18.5
VET						
Diplomas	32 933	21.0	30 683	14.3	-6.6	-31.6
Certs I–IV	14 450	9.2	11 578	5.4	-3.8	-41.2
Total VET	47 383	30.2	42 261	19.8	-10.4	-34.5
No post-school qualification	7 666	4.9	6 959	3.3	-1.6	-33.4
n	157 031		213 879			

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point	% change in proportion
<i>Telecommunications engineering professionals</i>						
Higher education	3 669	51.0	5 848	66.6	15.6	30.5
VET Diplomas	1 290	17.9	1 212	13.8	-4.1	-23.1
Certs I–IV	1 210	16.8	972	11.1	-5.8	-34.2
Total VET	2 500	34.7	2 184	24.9	-9.9	-28.5
No post-school qualification	1 027	14.3	755	8.6	-5.7	-39.8
n	7 196		8 787			
<i>Land economists and valuers</i>						
Higher education	4 669	47.6	7 596	63.1	15.5	32.5
VET Diplomas	2 047	20.9	1 746	14.5	-6.4	-30.5
Certs I–IV	1 213	12.4	1 096	9.1	-3.3	-26.4
Total VET	3 260	33.2	2 842	23.6	-9.6	-29.0
No post-school qualification	1 885	19.2	1 608	13.3	-5.9	-30.5
n	9 814		12 046			
<i>Industrial, mechanical and production engineers</i>						
Higher education	9 270	63.4	15 952	75.8	12.4	19.5
VET Diplomas	1 899	13.0	2 012	9.6	-3.4	-26.4
Certs I–IV	2 409	16.5	2 166	10.3	-6.2	-37.5
Total VET	4 308	29.5	4 178	19.9	-9.6	-32.6
No post-school qualification	1 038	7.1	911	4.3	-2.8	-39.0
n	14 616		21 041			
<i>Massage therapists</i>						
Higher education	1 285	16.9	3 586	24.9	8.0	47.3
VET Diplomas	4 031	53.1	7 586	52.7	-0.3	-0.7
Certs I–IV	1 532	20.2	1 620	11.3	-8.9	-44.2
Total VET	5 563	73.2	9 206	64.0	-9.3	-12.6
No post-school qualification	747	9.8	1 596	11.1	1.3	12.8
n	7 595		14 388			
<i>Graphic and web designers, and illustrators</i>						
Higher education	11 305	39.8	19 145	53.2	13.4	33.7
VET Diplomas	7 606	26.8	8 613	23.9	-2.8	-10.6
Certs I–IV	4 262	15.0	3 813	10.6	-4.4	-29.4
Total VET	11 868	41.8	12 426	34.5	-7.3	-17.4
No post-school qualification	5 242	18.4	4 432	12.3	-6.1	-33.3
n	28 415		36 003			
<i>Financial investment advisers and managers</i>						
Higher education	14 601	50.5	19 654	63.6	13.1	25.9
VET Diplomas	8 300	28.7	7 304	23.6	-5.1	-17.7
Certs I–IV	1 583	5.5	1 250	4.0	-1.4	-26.1
Total VET	9 883	34.2	8 554	27.7	-6.5	-19.0
No post-school qualification	4 411	15.3	2 684	8.7	-6.6	-43.1
n	28 895		30 892			

Occupation	2006		2016		Difference 2006–16	
	n	%	n	%	% point	% change in proportion
<i>Fashion, industrial and jewellery designers</i>						
Higher education	2 478	41.7	3 846	52.6	10.8	25.9
VET						
Diplomas	1 415	23.8	1 586	21.7	-2.2	-9.1
Certs I–IV	893	15.0	791	10.8	-4.2	-28.1
Total VET	2 308	38.9	2 377	32.5	-6.4	-16.4
No post-school qualification	1 150	19.4	1 094	15.0	-4.4	-22.8
n	5 936		7 317			
<i>Special education teachers</i>						
Higher education	11 105	83.0	17 862	89.2	6.2	7.4
VET						
Diplomas	1 721	12.9	1 232	6.2	-6.7	-52.2
Certs I–IV	215	1.6	411	2.1	0.4	27.7
Total VET	1 936	14.5	1 643	8.2	-6.3	-43.3
No post-school qualification	336	2.5	522	2.6	0.1	3.8
n	13 377		20 027			
<i>Physiotherapists</i>						
Higher education	10 867	90.0	19 705	96.1	6.1	6.8
VET						
Diplomas	1 048	8.7	542	2.6	-6.0	-69.5
Certs I–IV	37	0.3	34	0.2	-0.1	-45.9
Total VET	1 085	9.0	576	2.8	-6.2	-68.7
No post-school qualification	122	1.0	216	1.1	0.0	4.3
n	12 074		20 497			

Source: ABS (2006b, 2016b).

Table A5 Occupations with the largest percentage point increase in the proportion of VET qualifications by broad age group, 2006–16

Occupation	% workforce				Difference 2006–16			
	25–44 years		45–64 years		25–44 years	45–64 years	25–44 years	45–64 years
	2006	2016	2006	2016	% points	% points	% change	% change
<i>Railway track workers</i>								
Higher education	1.4	4.7	1.4	2.0	3.3	0.6	235.7	42.9
VET Diplomas	2.4	5.1	1.7	6.2	2.7	4.5	112.5	264.7
Certs I–IV	23.4	44.1	20.4	31.6	20.7	11.2	88.5	54.9
Total VET	25.8	49.2	22.1	37.8	23.4	15.7	90.7	71.0
No post-school qualification	72.8	46.1	76.5	60.2	-26.7	-16.3	-36.7	-21.3
n	1 340	1 831	1 389	1 800				
<i>Recycling and rubbish collectors</i>								
Higher education	1.5	4.8	1.4	1.6	3.3	0.2	220.0	14.3
VET Diplomas	1.3	4.5	2.7	3.9	3.2	1.2	246.2	44.4
Certs I–IV	17.9	30.9	20.0	33.0	13.0	13.0	72.6	65.0
Total VET	19.2	35.4	22.7	36.9	16.2	14.2	84.4	62.6
No post-school qualification	79.3	59.8	75.9	61.5	-19.5	-14.4	-24.6	-19.0
n	1 658	726	1 129	984				
<i>Shearers</i>								
Higher education	1.0	1.4	0.0	0.4	0.4	0.4	40.0	-
VET Diplomas	1.4	1.9	1.1	1.7	0.5	0.6	35.7	54.5
Certs I–IV	20.8	40.8	14.0	24.0	20.0	10.0	96.2	71.4
Total VET	22.2	42.7	15.1	25.7	20.5	10.6	92.3	70.2
No post-school qualification	76.7	55.9	85.0	73.9	-20.8	-11.1	-27.1	-13.1
n	2 073	1 233	1 124	931				
<i>Train and tram drivers</i>								
Higher education	5.2	9.1	3.6	5.8	3.9	2.2	75.0	61.1
VET Diplomas	3.6	8.0	2.6	5.4	4.4	2.8	122.2	107.7
Certs I–IV	36.9	54.2	29.2	39.8	17.3	10.6	46.9	36.3
Total VET	40.5	62.2	31.8	45.2	21.7	13.4	53.6	42.1
No post-school qualification	54.3	28.7	64.5	49.0	-25.6	-15.5	-47.1	-24.0
n	3658	3840	4842	6209				
<i>Veterinary nurses</i>								
Higher education	11.8	14.4	8.2	8.0	2.6	-0.2	22.0	-2.4
VET Diplomas	14.2	14.7	11.8	16.9	0.5	5.1	3.5	43.2
Certs I–IV	47.6	57.9	34.4	52.1	10.3	17.7	21.6	51.5
Total VET	61.8	72.6	46.2	69.0	10.8	22.8	17.5	49.4
No post-school qualification	26.4	12.9	45.7	23.0	-13.5	-22.7	-51.1	-49.7
n	2 793	5 054	576	1 159				
<i>Electrical distribution trades workers</i>								
Higher education	0.7	2.4	0.4	1.9	1.7	1.5	242.9	375.0
VET Diplomas	2.1	4.2	1.9	3.6	2.1	1.7	100	89.5
Certs I–IV	78.6	86.5	77.2	85.6	7.9	8.4	10.1	10.9
Total VET	80.7	90.7	79.1	89.2	10.0	10.1	12.4	12.8
No post-school qualification	18.6	7.0	20.4	8.9	-11.6	-11.5	-62.4	-56.4
n	3 342	4 023	2 279	2 571				
<i>Education aides</i>								
Higher education	10.2	21.1	9.0	13.7	10.9	4.7	106.9	52.2
VET Diplomas	12.2	17.2	12.8	15.9	5.0	3.1	41.0	24.2
Certs I–IV	32.5	41.5	29.4	43.2	9.0	13.8	27.7	46.9
Total VET	44.7	58.7	42.2	59.1	14.0	16.9	31.3	40.0
No post-school qualification	45.2	20.2	48.8	27.3	-25.0	-21.5	-55.3	-44.1
n	23 269	29 723	25 253	43 372				

Occupation	% workforce				Difference 2006–16			
	25–44 years		45–64 years		25–44	45–64	25–44	45–64
	2006	2016	2006	2016	years % points	years % points	years % change	years % change
<i>Caretakers</i>								
Higher education	7.1	15.7	5.2	5.6	8.6	0.4	121.1	7.7
VET Diplomas	6.6	10.3	6.0	8.2	3.7	2.2	56.1	36.7
Certs I–IV	32.7	36.9	28.2	42.9	4.2	14.7	12.8	52.1
Total VET	39.3	47.2	34.2	51.1	7.9	16.9	20.1	49.4
No post-school qualification	53.7	37.1	60.6	43.3	-16.6	-17.3	-30.9	-28.5
n	943	1 024	2 686	3 564				
<i>Aged and disabled carers</i>								
Higher education	11.3	22.6	8.2	10.2	11.3	2.0	100	24.4
VET Diplomas	9.4	16.6	9.3	14.0	7.2	4.7	76.6	50.5
Certs I–IV	42.7	44.1	39.4	52.2	1.4	12.8	3.3	32.5
Total VET	52.1	60.7	48.7	66.1	8.6	17.4	16.5	35.7
No post-school qualification	36.5	16.6	43.1	23.6	-19.9	-19.5	-54.5	-45.2
n	25 978	45 550	37 696	64 621				
<i>Concreters</i>								
Higher education	1.4	1.9	0.7	1.4	0.5	0.7	35.7	100
VET Diplomas	1.9	2.9	1.3	2.0	1.0	0.7	52.6	53.8
Certs I–IV	31.3	44.5	26.6	39.7	13.2	13.1	42.2	49.2
Total VET	33.2	47.4	27.9	41.7	14.2	13.8	42.8	49.5
No post-school qualification	65.4	50.7	71.5	56.9	-14.7	-14.6	-22.5	-20.4
n	13 115	14 098	6 158	7 469				
<i>Crane, hoist and lift operators</i>								
Higher education	1.3	2.7	0.7	1.1	1.4	0.4	107.7	57.1
VET Diplomas	1.8	4.4	1.5	2.7	2.6	1.2	144.4	80.0
Certs I–IV	36.8	46.6	28.3	42.9	9.8	14.6	26.6	51.6
Total VET	38.6	51.0	29.8	45.6	12.4	15.8	32.1	53.0
No post-school qualification	60.1	46.3	69.5	53.4	-13.8	-16.1	-23.0	-23.2
n	3 347	4 329	3 260	4 290				
<i>Dental assistants</i>								
Higher education	7.8	16.1	7.1	9.2	8.3	2.1	106.4	29.6
VET Diplomas	11.2	11.9	17.8	15.5	0.7	-2.3	6.3	-12.9
Certs I–IV	45.2	54.7	34.8	51.2	9.5	16.4	21.0	47.1
Total VET	56.4	66.6	52.6	66.7	10.2	14.1	18.1	26.8
No post-school qualification	35.9	17.3	40.2	24.1	-18.6	-16.1	-51.8	-40.0
n	5 915	10 694	2 035	4 410				
<i>Aquaculture workers</i>								
Higher education	6.7	8.7	3.2	5.6	2.0	2.4	29.9	75.0
VET Diplomas	7.5	6.6	0.0	9.4	-0.9	9.4	-12.0	-
Certs I–IV	17.3	41.0	29.8	27.2	23.7	-2.6	137.0	-8.7
Total VET	24.8	47.6	29.8	36.6	22.8	6.8	91.9	22.8
No post-school qualification	68.6	43.7	67.0	57.8	-24.9	-9.2	-36.3	-13.7
n	255	229	94	180				
<i>Paving and surfacing labourers</i>								
Higher education	1.1	2.2	0.8	1.9	1.1	1.1	100	137.5
VET Diplomas	2.2	3.5	1.6	3.1	1.3	1.5	59.1	93.8
Certs I–IV	26.0	38.2	23.3	30.8	12.2	7.5	46.9	32.2
Total VET	28.2	41.7	24.9	33.9	13.5	9.0	47.9	36.1
No post-school qualification	70.8	56.1	74.3	64.2	-14.7	-10.1	-20.8	-13.6
n	2 910	2 546	2 498	2 365				

Occupation	% workforce				Difference 2006–16			
	25–44 years		45–64 years		25–44	45–64	25–44	45–64
	2006	2016	2006	2016	years	years	years	years
				% points		% change		
<i>Plastics and rubber production machine operators</i>								
Higher education	4.4	6.0	4.5	4.8	1.6	0.3	36.4	6.7
VET Diplomas	4.2	6.2	4.2	4.8	2.0	0.6	47.6	14.3
Certs I–IV	23.7	37.9	23.7	30.0	14.2	6.3	59.9	26.6
Total VET	27.9	44.1	27.9	34.8	16.2	6.9	58.1	24.7
No post-school qualification	67.7	49.9	67.6	60.4	-17.8	-7.2	-26.3	-10.7
n	4 422	2 804	3 184	2 788				
<i>Indigenous health workers</i>								
Higher education	7.8	11.1	12.3	14.8	3.3	2.5	42.3	20.3
VET Diplomas	17.8	23.5	18.1	26.3	5.7	8.2	32.0	45.3
Certs I–IV	37.7	42.5	27.7	34.2	4.8	6.5	12.7	23.5
Total VET	55.5	66.0	45.8	60.5	10.5	14.7	18.9	32.1
No post-school qualification	36.7	22.9	41.9	24.7	-13.8	-17.2	-37.6	-41.1
n	501	541	310	567				
<i>Child carers</i>								
Higher education	11.0	26.9	8.8	18.1	15.9	9.3	144.5	105.7
VET Diplomas	30.0	36.0	20.5	34.6	6.0	14.1	20.0	68.8
Certs I–IV	26.1	26.4	22.0	33.7	0.3	11.7	1.1	53.2
Total VET	56.1	62.4	42.5	68.3	6.3	25.8	11.2	60.7
No post-school qualification	32.9	10.7	48.7	13.6	-22.2	-35.1	-67.5	-72.1
n	34 430	64 541	19 630	33 855				
<i>Forestry and logging workers</i>								
Higher education	2.3	10.6	3.0	4.7	8.3	1.7	360.9	56.7
VET Diplomas	3.5	6.0	2.5	5.2	2.5	2.7	71.4	108.0
Certs I–IV	24.0	34.4	18.3	27.6	10.4	9.3	43.3	50.8
Total VET	27.5	40.4	20.8	32.7	12.9	11.9	46.9	57.2
No post-school qualification	70.3	49.0	76.2	62.6	-21.3	-13.6	-30.3	-17.8
n	1 420	773	953	660				
<i>Deck and fishing hands</i>								
Higher education	3.2	8.0	2.6	3.8	4.8	1.2	150.0	46.2
VET Diplomas	6.9	8.9	6.2	7.3	2.0	1.1	29.0	17.7
Certs I–IV	37.2	45.7	32.0	44.4	8.5	12.4	22.8	38.8
Total VET	44.1	54.6	38.2	51.7	10.5	13.5	23.8	35.3
No post-school qualification	52.7	37.4	59.3	44.6	-15.3	-14.7	-29.0	-24.8
n	2 661	2 238	2 042	1 995				
<i>Motor vehicle parts and accessories fitters</i>								
Higher education	0.6	2.5	1.2	1.2	1.9	0.0	316.7	0.0
VET Diplomas	1.8	3.1	1.7	2.5	1.3	0.8	72.2	47.1
Certs I–IV	31.4	44.1	36.2	39.2	12.7	3.0	40.4	8.3
Total VET	33.2	47.2	37.9	41.7	14.0	3.8	42.2	10.0
No post-school qualification	66.3	50.3	60.9	57.1	-16.0	-3.8	-24.1	-6.2
n	4 875	5 502	1 822	2 802				

Source: ABS (2006b, 2016b).

Table A6 Occupations with the largest percentage point decrease in the proportion of VET qualifications by broad age group, 2006–16

Occupation	25–44 years (%)		45–64 years (%)		% point change		% change in proportion	
	2006	2016	2006	2016	25–44 years	45–64 years	25–44 years	45–64 years
<i>Ambulance officers and paramedics</i>								
Higher education	33.8	66.6	17.3	34.7	32.8	17.4	97.0	100.6
VET Diplomas	43.4	24.5	51.9	46.2	-18.9	-5.7	-43.5	-11.0
Certs I–IV	12.5	5.6	17.5	12.0	-6.9	-5.5	-55.2	-31.4
Total VET	55.9	30.1	69.4	58.2	-25.8	-11.2	-46.2	-16.1
No post-school qualification	10.3	3.3	13.2	7.1	-7.0	-6.1	-68.0	-46.2
n	5 406	7 359	2 794	4 892				
<i>Dental hygienists, technicians and therapists</i>								
Higher education	12.2	43.9	7.8	15.4	31.7	7.6	259.8	97.4
VET Diplomas	53.1	44.0	39.1	51.8	-9.1	12.7	-17.1	32.5
Certs I–IV	30.0	8.2	48.8	30.0	-21.8	-18.8	-72.7	-38.5
Total VET	83.1	52.2	87.9	81.8	-30.9	-6.1	-37.2	-6.9
No post-school qualification	4.7	4.0	4.3	2.8	-0.7	-1.5	-14.9	-34.9
n	2 145	2 530	1 738	2 463				
<i>Medical imaging professionals</i>								
Higher education	77.7	95.8	35.9	56.7	18.1	20.8	23.3	57.9
VET Diplomas	21.0	2.7	57.4	40.6	-18.3	-16.8	-87.1	-29.3
Certs I–IV	0.4	0.2	5.6	1.7	-0.2	-3.9	-50.0	-69.6
Total VET	21.4	2.9	62.9	42.4	-18.5	-20.5	-86.4	-32.6
No post-school qualification	0.9	1.3	1.2	0.9	0.4	-0.3	44.4	-25.0
n	5 470	9 495	3 091	4 522				
<i>Podiatrists</i>								
Higher education	79.7	96.4	47.5	67.2	16.7	19.7	21.0	41.5
VET Diplomas	19.2	2.7	46.1	29.8	-16.5	-16.3	-85.9	-35.4
Certs I–IV	0.2	0.0	6.4	2.1	-0.2	-4.3	-100	-67.2
Total VET	19.5	2.7	52.5	32.0	-16.8	-20.5	-86.2	-39.0
No post-school qualification	0.8	0.9	0.0	0.8	0.1	0.8	12.5	#DIV/0!
n	1 372	2 292	438	942				
<i>Electrical engineers</i>								
Higher education	70.8	84.0	56.0	69.8	13.2	13.8	18.6	24.6
VET Diplomas	14.7	8.9	21.8	16.8	-5.8	-5.0	-39.5	-22.9
Certs I–IV	12.0	4.2	20.8	10.9	-7.8	-9.9	-65.0	-47.6
Total VET	26.7	13.1	42.6	27.7	-13.6	-14.9	-50.9	-35.0
No post-school qualification	2.5	2.8	1.5	2.4	0.3	0.9	12.0	60.0
n	4 482	7 911	3 180	4 601				
<i>Early childhood (pre-primary school) teachers</i>								
Higher education	68.8	82.4	54.8	70.4	13.6	15.6	19.8	28.5
VET Diplomas	26.5	11.1	40.8	22.9	-15.4	-17.9	-58.1	-43.9
Certs I–IV	2.0	4.1	1.6	4.7	2.1	3.1	105.0	193.8
Total VET	28.5	15.2	42.4	27.6	-13.3	-14.8	-46.7	-34.9
No post-school qualification	2.8	2.4	2.9	2.0	-0.4	-0.9	-14.3	-31.0
n	7 943	14 757	5 503	9 285				
<i>Telecommunications technical specialists</i>								
Higher education	19.9	44.7	9.9	17.4	24.8	7.5	124.6	75.8
VET Diplomas	27.3	19.4	30.4	31.5	-7.9	1.1	-28.9	3.6
Certs I–IV	36.7	23.2	43.9	37.0	-13.5	-6.9	-36.8	-15.7
Total VET	64.0	42.6	74.3	68.5	-21.4	-5.8	-33.4	-7.8
No post-school qualification	16.1	12.7	15.8	14.0	-3.4	-1.8	-21.1	-11.4
n	1 984	2 302	1 805	2 046				

Occupation	25–44 years (%)		45–64 years (%)		% point change		% change in proportion	
	2006	2016	2006	2016	25–44 years	45–64 years	25–44 years	45–64 years
<i>Complementary health therapists</i>								
Higher education	58.6	76.4	46.6	60.8	17.8	14.2	30.4	30.5
VET Diplomas	34.6	20.0	41.7	32.8	-14.6	-8.9	-42.2	-21.3
Certs I–IV	3.2	1.5	5.2	3.0	-1.7	-2.2	-53.1	-42.3
Total VET	37.9	21.5	46.9	35.8	-16.4	-11.1	-43.3	-23.7
No post-school qualification	3.5	2.1	6.5	3.4	-1.4	-3.1	-40.0	-47.7
n	2 379	2 597	2 219	2 967				
<i>Primary school teachers</i>								
Higher education	89.9	97.5	66.9	83.0	7.6	16.1	8.5	24.1
VET Diplomas	8.4	1.1	31.6	15.4	-7.3	-16.2	-86.9	-51.3
Certs I–IV	0.3	0.3	0.4	0.6	0.0	0.2	0.0	50.0
Total VET	8.8	1.4	31.9	15.9	-7.4	-16.0	-84.1	-50.2
No post-school qualification	1.3	1.1	1.1	1.0	-0.2	-0.1	-15.4	-9.1
n	58 995	79 512	55 446	55 201				
<i>Electronics engineers</i>								
Higher education	73.0	83.9	54.4	68.1	10.9	13.7	14.9	25.2
VET Diplomas	13.6	6.6	22.0	16.6	-7.0	-5.4	-51.5	-24.5
Certs I–IV	9.2	4.3	19.4	11.1	-4.9	-8.3	-53.3	-42.8
Total VET	22.8	10.9	41.4	27.7	-11.9	-13.7	-52.2	-33.1
No post-school qualification	4.2	5.2	4.3	4.2	1.0	-0.1	23.8	-2.3
n	1 710	2 213	1 198	1 937				
<i>Registered nurses</i>								
Higher education	70.2	87.1	58.5	66.2	16.9	7.7	24.1	13.2
VET Diplomas	18.8	7.4	25.2	22.5	-11.4	-2.7	-60.6	-10.7
Certs I–IV	7.8	3.2	10.5	7.6	-4.6	-2.9	-59.0	-27.6
Total VET	26.6	10.7	35.7	30.1	-15.9	-5.6	-59.8	-15.7
No post-school qualification	3.3	2.2	5.8	3.8	-1.1	-2.0	-33.3	-34.5
n	73 466	102 396	71 640	91 108				
<i>Telecommunications engineering professionals</i>								
Higher education	55.6	75.3	42.0	51.7	19.7	9.7	35.4	23.1
VET Diplomas	17.0	9.9	20.9	22.0	-7.1	1.1	-41.8	5.3
Certs I–IV	14.6	7.2	23.4	17.6	-7.4	-5.8	-50.7	-24.8
Total VET	31.6	17.1	44.2	39.6	-14.5	-4.6	-45.9	-10.4
No post-school qualification	12.7	7.6	13.8	8.8	-5.1	-5.0	-40.2	-36.2
n	4 621	5 458	1 985	2 842				
<i>Land economists and valuers</i>								
Higher education	63.4	77.8	32.2	50.9	14.4	18.7	22.7	58.1
VET Diplomas	14.4	7.9	29.9	21.9	-6.5	-8.0	-45.1	-26.8
Certs I–IV	7.8	5.8	17.4	11.7	-2.0	-5.7	-25.6	-32.8
Total VET	22.2	13.7	47.3	33.6	-8.5	-13.7	-38.3	-29.0
No post-school qualification	14.4	8.5	20.5	15.5	-5.9	-5.0	-41.0	-24.4
n	4 636	5 997	4 094	4 512				
<i>Industrial, mechanical and production engineers</i>								
Higher education	73.6	85.4	49.3	61.9	11.8	12.6	16.0	25.6
VET Diplomas	10.4	5.9	19.5	17.1	-4.5	-2.4	-43.3	-12.3
Certs I–IV	11.6	5.8	25.5	17.8	-5.8	-7.7	-50.0	-30.2
Total VET	22.0	11.7	45.0	34.9	-10.3	-10.1	-46.8	-22.4
No post-school qualification	4.3	2.8	5.6	3.1	-1.5	-2.5	-34.9	-44.6
n	8 379	12 747	4 509	6 188				
<i>Massage therapists</i>								
Higher education	19.4	30.4	16.4	19.1	11.0	2.7	56.7	16.5
VET Diplomas	52.2	48.9	52.9	58.8	-3.3	5.9	-6.3	11.2
Certs I–IV	20.7	9.8	20.2	12.1	-10.9	-8.1	-52.7	-40.1
Total VET	72.9	58.7	73.1	70.9	-14.2	-2.2	-19.5	-3.0
No post-school qualification	7.7	10.9	10.5	10.0	3.2	-0.5	41.6	-4.8
n	4 037	7 801	2 635	5 277				

Occupation	25–44 years (%)		45–64 years (%)		% point change		% change in proportion	
	2006	2016	2006	2016	25–44 years	45–64 years	25–44 years	45–64 years
<i>Graphic and web designers, and illustrators</i>								
Higher education	44.2	58.2	27.2	39.6	14.0	12.4	31.7	45.6
VET Diplomas	26.9	24.4	25.4	24.9	-2.5	-0.5	-9.3	-2.0
Certs I–IV	14.0	8.6	22.1	17.6	-5.4	-4.5	-38.6	-20.4
Total VET	40.9	33.0	47.5	42.5	-7.9	-5.0	-19.3	-10.5
No post-school qualification	14.8	8.9	25.3	17.9	-5.9	-7.4	-39.9	-29.2
n	18 784	24 550	4 511	7 290				
<i>Financial investment advisers and managers</i>								
Higher education	58.6	71.7	41.0	55.8	13.1	14.8	22.4	36.1
VET Diplomas	25.9	18.5	36.0	31.3	-7.4	-4.7	-28.6	-13.1
Certs I–IV	4.1	3.3	5.9	4.2	-0.8	-1.7	-19.5	-28.8
Total VET	30.0	21.8	41.9	35.5	-8.2	-6.4	-27.3	-15.3
No post-school qualification	11.3	6.5	17.1	8.7	-4.8	-8.4	-42.5	-49.1
n	15 490	16 477	10 144	11 323				
<i>Fashion, industrial and jewellery designers</i>								
Higher education	48.3	59.8	26.0	35.5	11.5	9.5	23.8	36.5
VET Diplomas	22.7	21.4	24.9	23.5	-1.3	-1.4	-5.7	-5.6
Certs I–IV	12.6	7.8	23.0	19.3	-4.8	-3.7	-38.1	-16.1
Total VET	35.4	29.1	47.9	42.7	-6.3	-5.2	-17.8	-10.9
No post-school qualification	16.3	11.0	26.1	21.8	-5.3	-4.3	-32.5	-16.5
n	3 772	4 706	1 311	1 811				
<i>Special education teachers</i>								
Higher education	89.3	93.7	79.0	87.1	4.4	8.1	4.9	10.3
VET Diplomas	6.2	2.1	17.9	8.7	-4.1	-9.2	-66.1	-51.4
Certs I–IV	1.9	1.8	1.1	2.2	-0.1	1.1	-5.3	100
Total VET	8.1	3.9	19.1	10.9	-4.2	-8.2	-51.9	-42.9
No post-school qualification	2.5	2.4	1.9	2.0	-0.1	0.1	-4.0	5.3
n	5 283	8 604	7 498	9 961				
<i>Physiotherapists</i>								
Higher education	97.4	98.7	75.7	92.7	1.3	17	1.3	22.5
VET Diplomas	1.7	0.4	22.7	6	-1.3	-16.7	-76.5	-73.6
Certs I–IV	0.1	0.1	0.8	0.4	0	-0.4	0	-50
Total VET	1.7	0.5	23.5	6.4	-1.2	-17.1	-70.6	-72.8
No post-school qualification	0.9	0.7	0.9	0.9	-0.2	0	-22.2	0
n	7083	12775	3584	5331				

Source: ABS (2006b, 2016b).

Table A7 The 20 largest occupations by qualification level and gender, 2006–16

	2006		2016		Difference in percentage points 2006–16		Percentage change 2006–16	
	Female	Male	Female	Male	Female	Male	Female	Male
<i>Sales assistants (general)</i>								
Higher education	5.6	7.7	10.2	12.9	2.8	4.1	83.7	67.1
VET Diplomas	5.2	5.1	7.4	6.6	0.9	1.1	43.7	30.1
Certs I–IV	11.0	14.7	14.9	16.2	1.2	1.0	35.8	10.5
Total VET	16.2	19.8	22.4	22.8	2.1	2.1	38.3	15.2
No post-school qualification	78.3	72.5	67.4	64.3	-23.2	-8.2	-13.9	-11.4
n	295 098	125652	346 519	166 102				
<i>Registered nurses</i>								
Higher education	64.8	66.1	76.6	79.9	11.8	13.8	18.2	20.9
VET Diplomas	21.1	20.2	14.6	12.3	-6.5	-7.9	-30.7	-39.2
Certs I–IV	9.3	8.4	5.5	4.4	-3.7	-4.0	-40.3	-47.9
Total VET	30.3	28.6	20.1	16.7	-10.2	-11.9	-33.6	-41.7
No post-school qualification	4.8	5.3	3.2	3.4	-1.6	-1.9	-33.2	-35.5
n	142 212	14 829	190 572	23 306				
<i>General clerks</i>								
Higher education	11.5	20.1	17.9	30.7	6.4	10.6	55.2	52.8
VET Diplomas	9.9	9.3	14.3	11.9	4.4	2.6	44.1	28.2
Certs I–IV	18.1	17.2	23.1	17.5	5.0	0.2	27.7	1.4
Total VET	28.0	26.5	37.4	29.3	9.4	2.9	33.5	10.8
No post-school qualification	60.4	53.4	44.7	40.0	-15.8	-13.5	-26.1	-25.2
n	163 512	29 589	180 516	32 508				
<i>Retail managers</i>								
Higher education	11.2	11.8	17.8	20.5	6.6	8.7	58.6	73.4
VET Diplomas	10.4	7.9	14.4	11.5	4.0	3.6	38.9	46.1
Certs I–IV	16.7	24.3	21.2	23.3	4.4	-1.1	26.6	-4.3
Total VET	27.1	32.2	35.5	34.8	8.5	2.6	31.3	8.0
No post-school qualification	61.7	56.0	46.7	44.7	-15.0	-11.3	-24.3	-20.1
n	81 246	97 283	88 820	91 061				
<i>Receptionists</i>								
Higher education	7.4	17.9	12.1	26.5	4.7	8.5	63.3	47.6
VET Diplomas	9.5	10.7	12.6	11.3	3.1	0.5	32.0	5.0
Certs I–IV	19.8	16.6	25.1	16.6	5.2	0.0	26.4	0.0
Total VET	29.4	27.3	37.7	27.9	8.3	0.5	28.2	2.0
No post-school qualification	63.2	54.7	50.3	45.6	-13.0	-9.1	-20.5	-16.6
n	115 620	4 896	142 117	7 903				
<i>Truck drivers</i>								
Higher education	3.4	1.0	5.2	2.5	1.8	1.5	52.2	158.3
VET Diplomas	5.2	1.6	7.8	3.6	2.5	2.0	48.6	125.1
Certs I–IV	16.0	24.5	25.7	29.3	9.7	4.8	60.7	19.6
Total VET	21.2	26.0	33.4	32.8	12.2	6.8	57.7	26.1
No post-school qualification	75.4	73.0	61.4	64.7	-14.0	-8.3	-18.6	-11.4
n	3 104	118 756	4 693	138 667				
<i>Primary school teachers</i>								
Higher education	78.8	82.5	90.9	91.9	12.1	9.4	15.3	11.4
VET Diplomas	19.3	15.0	7.4	5.3	-11.9	-9.7	-61.4	-64.7
Certs I–IV	0.4	0.5	0.4	0.5	0.1	0.0	26.8	5.8
Total VET	19.7	15.5	7.9	5.8	-11.8	-9.7	-59.9	-62.6
No post-school qualification	1.5	2.0	1.2	2.3	-0.3	0.3	-19.6	13.7
n	104 604	19 136	125 219	21 616				

	2006		2016		Difference in percentage points 2006–16		Percentage change 2006–16	
	Female	Male	Female	Male	Female	Male	Female	Male
<i>Accountants</i>								
Higher education	68.1	76.3	80.3	85.9	12.2	9.6	18.0	12.7
VET Diplomas	12.1	11.0	8.2	6.3	-3.9	-4.8	-32.5	-43.3
Certs I–IV	5.0	3.7	3.4	1.8	-1.7	-1.9	-32.8	-51.7
Total VET	17.1	14.8	11.6	8.1	-5.6	-6.7	-32.6	-45.4
No post-school qualification	14.8	9.0	8.1	6.0	-6.7	-2.9	-45.1	-32.8
n	55 395	63 407	74 252	69 138				
<i>Child carers</i>								
Higher education	8.1	11.4	19.8	17.5	11.7	6.1	145.8	53.2
VET Diplomas	23.9	11.8	31.3	14.4	7.5	2.6	31.3	21.8
Certs I–IV	25.8	17.7	30.2	23.8	4.3	6.1	16.7	34.4
Total VET	49.7	29.6	61.5	38.2	11.8	8.7	23.7	29.4
No post-school qualification	42.3	59.0	18.7	44.3	-23.5	-14.7	-55.7	-25.0
n	76 448	3 282	130 046	6 686				
<i>Secondary school teachers</i>								
Higher education	90.9	90.9	95.3	95.1	4.4	4.2	4.8	4.7
VET Diplomas	7.4	7.1	3.2	2.9	-4.2	-4.2	-56.8	-58.5
Certs I–IV	0.3	0.5	0.3	0.4	0.0	-0.1	-13.1	-25.9
Total VET	7.7	7.6	3.5	3.3	-4.3	-4.3	-54.9	-56.3
No post-school qualification	1.4	1.5	1.2	1.5	-0.1	0.1	-11.0	3.9
n	68 551	48 258	84 054	52 007				
<i>Aged and disabled carers</i>								
Higher education	8.4	14.9	12.7	21.9	4.3	7.0	51.0	47.0
VET Diplomas	8.8	10.0	14.3	15.3	5.5	5.2	62.0	52.3
Certs I–IV	39.9	38.5	49.6	41.3	9.6	2.8	24.2	7.2
Total VET	48.7	48.5	63.8	56.5	15.1	8.0	31.0	16.5
No post-school qualification	42.9	36.6	23.5	21.6	-19.4	-15.0	-45.2	-41.1
n	59 766	11 215	101 877	25 654				
<i>Commercial cleaners</i>								
Higher education	3.1	6.9	8.8	15.1	5.7	8.3	186.9	120.2
VET Diplomas	3.5	4.4	6.1	7.5	2.7	3.1	76.6	69.4
Certs I–IV	10.6	19.2	17.1	20.0	6.5	0.8	61.9	4.3
Total VET	14.1	23.6	23.3	27.5	9.2	3.9	65.5	16.5
No post-school qualification	82.9	69.5	67.9	57.4	-14.9	-12.1	-18.0	-17.5
n	64 982	39 051	69 178	51 715				
<i>Office managers</i>								
Higher education	12.8	18.9	18.8	30.3	6.0	11.5	47.0	61.0
VET Diplomas	13.5	12.0	17.5	14.3	4.0	2.3	29.4	19.5
Certs I–IV	19.9	25.7	22.8	22.0	2.9	-3.7	14.5	-14.3
Total VET	33.4	37.6	40.3	36.3	6.9	-1.3	20.5	-3.5
No post-school qualification	53.8	43.5	40.9	33.4	-12.9	-10.2	-23.9	-23.4
n	74 782	11 973	99 374	13 256				
<i>Electricians</i>								
Higher education	4.8	1.3	8.0	2.5	3.3	1.2	68.1	91.4
VET Diplomas	6.5	3.8	8.9	5.5	2.3	1.8	35.9	47.6
Certs I–IV	39.7	76.5	51.5	78.0	11.8	1.5	29.7	2.0
Total VET	46.3	80.3	60.4	83.6	14.1	3.3	30.6	4.1
No post-school qualification	48.9	18.4	31.5	13.9	-17.4	-4.5	-35.6	-24.5
n	1 024	87 600	1 653	112 339				

	2006		2016		Difference in percentage points 2006–16		Percentage change 2006–16	
	Female	Male	Female	Male	Female	Male	Female	Male
<i>Advertising, public relations and sales managers</i>								
Higher education	49.8	34.6	59.1	42.1	9.3	7.5	18.7	21.8
VET Diplomas	14.1	12.7	14.0	14.6	-0.1	1.9	-0.7	14.9
Certs I–IV	8.9	18.9	8.6	16.4	-0.3	-2.6	-3.2	-13.6
Total VET	23.0	31.7	22.6	31.0	-0.4	-0.7	-1.7	-2.2
No post-school qualification	27.2	33.8	18.3	26.9	-8.9	-6.9	-32.8	-20.3
n	28 173	55 835	44 853	64 321				
<i>Kitchenhands</i>								
Higher education	3.9	6.8	8.7	11.7	4.8	5.0	125.0	73.2
VET Diplomas	3.6	3.5	6.0	5.3	2.4	1.8	67.0	50.6
Certs I–IV	11.4	8.5	17.0	11.7	5.5	3.2	48.3	38.1
Total VET	15.1	12.0	23.0	17.0	7.9	5.0	52.8	41.8
No post-school qualification	81.1	81.2	68.3	71.2	-12.8	-10.0	-15.8	-12.3
n	48 943	32 267	58 346	48 089				
<i>Storepersons</i>								
Higher education	4.8	4.0	9.7	8.3	4.8	4.3	99.9	108.4
VET Diplomas	4.9	3.9	7.4	6.4	2.5	2.5	52.3	64.2
Certs I–IV	13.0	19.3	19.8	24.0	6.8	4.7	52.2	24.1
Total VET	17.9	23.2	27.2	30.4	9.3	7.2	52.2	30.9
No post-school qualification	77.3	72.8	63.1	61.4	-14.2	-11.5	-18.3	-15.7
n	14 509	76 920	21 524	83 739				
<i>Contract, program and project administrators</i>								
Higher education	36.1	42.5	46.7	51.1	10.6	8.6	29.3	20.3
VET Diplomas	12.6	15.3	16.0	16.2	3.4	0.9	26.9	5.9
Certs I–IV	16.6	21.6	15.3	18.5	-1.4	-3.1	-8.2	-14.2
Total VET	29.2	36.9	31.2	34.7	2.0	-2.2	6.9	-5.9
No post-school qualification	34.7	20.6	22.1	14.2	-12.6	-6.4	-36.3	-31.3
n	45 466	35 482	58 514	47 679				
<i>Waiters</i>								
Higher education	8.3	12.7	14.9	17.6	6.6	4.9	79.9	38.2
VET Diplomas	6.8	9.2	7.9	9.0	1.1	-0.1	16.5	-1.6
Certs I–IV	12.8	11.9	13.5	11.4	0.7	-0.5	5.7	-4.2
Total VET	19.5	21.1	21.4	20.4	1.9	-0.6	9.5	-3.1
No post-school qualification	72.2	66.2	63.7	62.0	-8.5	-4.2	-11.8	-6.4
n	64 859	17 249	78 812	25 174				
<i>Accounting clerks</i>								
Higher education	13.5	22.8	22.6	39.4	9.1	16.6	66.9	72.9
VET Diplomas	12.2	12.8	15.2	12.9	3.0	0.1	25.0	0.8
Certs I–IV	17.2	24.2	20.8	20.1	3.6	-4.1	20.8	-16.8
Total VET	29.4	37.0	36.0	33.0	6.6	-4.0	22.5	-10.7
No post-school qualification	57.1	40.3	41.4	27.6	-15.7	-12.6	-27.5	-31.3
n	68 757	16 470	81 474	19 481				

Source: ABS (2006b, 2016b).



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