The stock of qualifications in Australia

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Publisher's note

About the research

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Formal qualifications are a key mechanism for skilling the Australian workforce and are underpinned by a robust framework that defines intended learning outcomes in terms of knowledge and skills, and their application. Having an overview of the stock of *qualifications* in the economy is therefore an important precursor to understanding the available stock of *skills,* which in turn informs supply- and demand-side issues, such as skills utilisation and skills gaps. Information on qualifications is often collected by labour force surveys or census data, but these statistics typically include only information on the highest level of qualification held, whereby vocational education and training (VET) qualifications are underreported.

This research project estimates and describes the stock of qualifications in the Australian economy using data from the 2018–19 Qualifications and Work survey, compiled by the Australian Bureau of Statistics (ABS). The survey includes data on up to five qualifications per person. Accompanying the report is a suite of infographics summarising the key findings from the analysis, as well as six case study occupations, these highlighting the dynamics of qualifications in different employment contexts. A support document in the form of a literature review provides a broad overview of approaches to measuring the stock of skills in an economy, beyond the analysis of qualifications presented in the main report.

Key messages

- In 2018-19, out of an estimated population of 16.1 million working-age Australians, 10.2 million people reported holding 15.4 million qualifications, including 3.8 million people holding two or more qualifications.

- VET qualifications outnumbered higher education qualifications by almost one million. Certificates III/IV were particularly prevalent.

- Around three-quarters of the qualifications held by employed people were in the same field as, or were relevant to, the worker's job. Among the 3.3 million people with two or more qualifications who were employed at the time of the survey, about a third held at least one qualification that was not at all relevant to their job; often the most relevant qualification to the worker's job was either not their highest or their most recent qualification.

- Different qualification profiles were evident in different occupational contexts. Some occupations have more diverse entry pathways than others, with regulation playing a role in some of these pathways.

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Executive summary

In this paper, we use data from the Qualifications and Work survey, compiled by the Australian Bureau of Statistics (ABS), to estimate the stock of qualifications in Australia, with a particular focus on vocational education and training (VET). There are several reasons why measuring the stock of qualifications and skills could be useful; for example, in terms of planning, the information gained has the potential to highlight gaps between the demand for and supply of qualifications and skills in an occupation (Gasskov 2018). Such gaps might indicate that more workers with particular qualifications and skills are required in an occupation; or, alternatively, that demand is low in an occupation, enabling the qualifications and skills for that occupation to be used elsewhere.

The analysis focuses on weighted survey estimates for the 16.1 million people aged 15—64 in Australia in 2018—19. Of these, 79% were in the labour force (that is, either employed or unemployed), and 75.1% were employed. Although qualifications are only a proxy for actual skills in the economy, the analysis takes stock of qualifications by level and field of education and other factors, and hence provides some initial insights into the distribution and utilisation of skills in the workforce.

Overall, VET qualifications outnumbered higher education qualifications (7.8 million and 6.9 million, respectively). Certificates III and IV were particularly widespread, at 4.6 million. Overall, management and commerce was by far the most prevalent field of education, at 4.0 million (followed by society and culture, and engineering and related technologies). However, these dynamics varied according to different factors; for example, food, hospitality and personal services; architecture and building; engineering and related technologies; and agriculture, environmental and related studies were all VET-dominant, whereas higher education qualifications outnumbered VET qualifications in natural and physical sciences; education; and health. Sex was also important: females held more qualifications than males overall (52%), and in fields including education; health; and society and culture. Males held many more qualifications than females in engineering and related technologies; architecture and building; and information technology.

An important finding from the analysis is that the number of non-school qualifications far exceeded the number of qualified people, highlighting that many people held more than one qualification. While most other data sources focus only on the highest non-school qualification held, the Qualifications and Work survey provides data on up to five. Including up to five qualifications in the analysis scope increased the estimated number of qualifications held by 34% (30.6% for higher education qualifications and 35.1% for VET qualifications). This approach gives a much more complete picture of the stock of skills acquired through formal qualifications, with these potentially available to the labour force.

Most workers with a completed non-school qualification were either working in the same field as their qualification or considered it to be relevant to their job. This was the case regardless of whether the qualification was at a VET or higher education level (74.9% and 84.7%, respectively). However, almost a third of workers with two or more qualifications reported that at least one was not at all relevant to their job. For many people, their highest qualification was not the most relevant, and for many, their most recent qualification was not the most relevant. Together, these findings point to indirect pathways into work.

While the focus of the analysis was mainly on those employed, the results also showed that many qualifications were held by people who were not working (not in the labour force or unemployed). Accounting for 17.1% of qualified people, this group reflects a diverse yet important cohort for which skills were underutilised in the labour market, emphasising the importance of supporting qualified people who are entering the labour force for the first time or re-engaging with the labour force after a period of absence.

The analysis also demonstrated that many people who did not hold a non-school qualification were employed across occupations at all skill levels, indicating that completed qualifications are just one potential source of skills. Some limited analysis is also included on those currently studying and those with incomplete non-school qualifications, both of which also contribute to the stock of skills.

The report includes case studies of six occupation groups to demonstrate how the distribution and relevance of qualifications varies by occupation. The main point of difference is that some occupation groups had diverse qualification profiles, which suggests multiple pathways to entry (for example, contract, program and project administrators), compared with others with tighter entry requirements (for example, metal fitters and machinists). This finding aligns with previous research showing that trade occupations tend to have a better match to qualifications than occupations with a more 'generalist' set of skills (for example, business/management; Wibrow 2014). Some of the case study occupations capture a broader range of jobs than others, meaning that a larger variety of skills may be applicable (particularly in the case of ICT professionals, which was analysed at the ANZSCO 2-digit level). Some occupations have regulations associated with them, either implicit or explicit. This includes construction managers; metal fitters and machinists (which has specific entry requirements); and child carers (regulations relating to the qualifications required for workers).

Background

This section highlights some of the main approaches for measuring the stock of qualifications and skills in an economy. A more comprehensive review is available in the support document accompanying this report, *Estimating the stock of skills in Australia: What data are needed?* The concept map (figure 1) displays the types of elements we need to consider when measuring skills supply and demand. Associated with this are the possible data sources, of which there are many, available for information on those elements. Notably, each of these data sources has their strengths and limitations.

Figure 1   Concept diagram

SKILLS INPUTS			Possible data sources
Formal learning (AQF qualifications)	**Formal non-qualification learning**	**Informal learning**	ABS Census ABS Multi-Agency Data Integration Project ABS Survey of Qualifications and Work ABS Survey of Education and Work NCVER Total VET Activity administrative collection DESE Higher Education Internet Management System
Schooling Vocational education and training Higher education	Non-completed qualifications Skill sets Work-related training	On-the-job learning Personal interest learning	
Depreciation of skills			ABS Survey of Qualifications and Work NCVER Total VET Activity administrative collection ABS Work-related Training and Adult Learning survey

Possible data sources
Jobs and Education Data Infrastructure project (JEDI): skills by qualification and by unit of competency   PIAAC

SKILLS SUPPLY

Possible data sources
ABS Labour force survey   ABS Multi-Agency Data Integration Project   ABS Survey of Qualifications and Work   ABS Survey of Education and Work
Burning Glass - skills by occupation   Adzuna job ad database

SKILLS DEMAND		
Occupation prevalence	**Skills employers require for occupations**	**Job vacancies**

Several approaches to measuring the supply and demand for qualifications and skills appear in the list of data sources given in figure 1, which are further detailed in the support document, together with all the relevant references and sources. However, the main approaches are summarised in table 1.

Table 1   Summary of approaches to measuring supply and demand for qualifications and skills

Approach	Explanation	Main advantages and limitations
Human capital accounting	Measures stock and flows of human capital. Within this the main approaches are income-based accounting approaches that look at nominal lifetime earnings of an individual and cost-based accounting approaches that look at streams of past investments in education and training by individuals, households, employers and governments.	Advantage: accounts for the sorts of elements that should be considered in estimating the stock of skills Limitation: not concerned with skills per se but rather accounting for qualifications and other inputs in earnings or alternatively investments
Indicator measures	Three categories of measures: Direct indicators such as psychometric tests of job applicants on the supply side and job advertisements on the demand side	Advantage: tests can provide actual information on skills, or skill shortages in case of job advertisements Limitations: cost, timeliness, narrowness of skills covered for tests and assumptions about vacancies for job advertisements
	Indirect indicators of skills such as educational attainment and occupation of employment	Advantage: data readily available, reliable and regular Limitation: no information on actual skills
	Self-report measures by people of their skills or by employers of skills demanded	Advantage: can provide information on actual skills/skill needs Limitation: may contain response bias, conducted only intermittently or once off and/or be limited in scope
Skills framework-based	Facilitate skills measurement by providing a framework or taxonomy of skills, which is available, for example, at the occupational level.	Advantage: provide actual skills information. In addition, provides an organising framework or taxonomy for skills. The information in the skills framework can be linked to other sources of data e.g., at the occupation level. Limitation: can be fairly generic skills information, which applies to many jobs. Do not generally provide skills supply or demand information on their own. They need to be linked to other data sources. There can be issues in translating skills frameworks to other countries' contexts.
Data-harvesting techniques	Provides information on skills employers want for specific jobs (occupations) or on (potential) employees' skills by harvesting 'big data'.	Advantage: access to timely and granular-level data. Can be a cost-effective and efficient way of linking skills to jobs/occupations. Limitations: developers of data-harvesting techniques tend to use their own skill classifications so there is no one common classification system, skills can be exaggerated, there can be inherent bias in the data as not all employers post online, and information can be used out of context or not actually be skills, or be misclassified.

Sources: Boarini, d'Ercole & Liu (2012); Brahmin & Tobin (2020); Eurostat (2016), Siekmann & Fowler (2017); Wei (2004, 2008).

Although a variety of approaches are available, as seen in table 1, for practical reasons (that is, data availability), this paper focuses on an indicator approach to measuring the stock of qualifications and skills, specifically an analysis of the ABS Qualifications and Work survey. The benefit of this survey, above other surveys on qualifications, is that it provides information based on up to five qualifications per survey respondent, rather than merely the highest level of qualification held. It also provides information on the relevance of those qualifications to the person's job.

The stock of qualifications in Australia

Background to survey

The analysis that follows explores the stock of qualifications held by working-age Australians (15 to 64 years), based on the 2018—19 Qualifications and Work survey.[1] The survey includes information on up to five completed non-school qualifications per individual, although it does not cover training that is not nationally recognised. The survey data do not provide specific details on qualifications beyond the Australian Standard Classification of Education (ASCED) level of education and main field of education. For employed people, data are also provided on their occupation, using the Australian and New Zealand Standard Classification of Occupations (ANZSCO), and on the relevance of each non-school qualification to their occupation, based on field of education.

For the purposes of this report, we focus on the 15 to 64-year-old age bracket, to be consistent with ABS reporting on this survey. We explore three key age groups: new entrants to the labour force (15 to 24-year-olds), prime-age workers (25 to 49-year-olds), and older workers (50 to 64-year-olds). In considering level of education, we broadly compare higher education qualifications with VET qualifications, with the latter including certificate levels I—IV, certificates not further defined, and diplomas and advanced diplomas (which are predominantly VET but which may also capture some higher education qualifications). We also explore VET qualifications in more depth by means of three key groupings: certificates I and II, certificates III and IV, and diplomas and advanced diplomas.[2] In considering the relevance of non-school qualification/s to the current job, we broadly compare those that are not at all relevant to the current job with those that are relevant to the current job. The latter includes non-school qualifications in the same field as the current job as well as those not in the same field but are either highly relevant, relevant, or somewhat relevant to the current job. This is also consistent with ABS reporting in the Qualifications and Work survey.

Overview of working-age Australians

To set the scene for the analysis that follows, we look at the survey data by age, sex,[3] labour force status and study status. From the 2018—19 Qualifications and Work survey, the Australian working-age population was estimated at 16.1 million people, of which an estimated 79% were in the labour force (that is, either employed or unemployed).[4] In total, 12.1 million people were in either part-time or full-time employment, in jobs with diverse requirements across skill specialisations and skill levels.

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1 The Qualifications and Work survey was conducted in 2018—19 over a continuous 12-month period, from July to June, as part of the Multi-Purpose Household Survey component of the monthly ABS Labour Force Survey. Due to survey sampling, the data are weighted estimates and have associated estimation errors. Estimates with a relative standard error of 25% or greater are considered unreliable and have been excluded from the analysis, figures and tables. In addition, the analysis was conducted using the ABS TableBuilder tool, where survey estimates are randomly adjusted to preserve confidentiality, and for this reason cell values may not sum to the totals presented in the tables.

2 Certificate levels are grouped at the ASCED narrow level to avoid high standard errors, which would result from fewer survey respondents at finer levels of granularity.

3 The survey includes the demographic variable 'Sex' with categories of 'Male' and 'Female' only.

4 This differs from participation rates published by the ABS based on the monthly Labour Force Survey, which has a broader scope, including the civilian population aged 15 and over.

As shown in figure 2, 15 to 24-year-olds had the lowest participation rate (employed and unemployed; 68.7%). This is partly attributable to the group's engagement with education, with 60.1% studying at an educational institution (including 26.2% attending secondary school), reducing their availability for employment. Unsurprisingly, prime-age workers had the highest participation rate (85.6%, 62.4% in full-time work). Older workers had the lowest level of unemployment (2.7%) but an increasing proportion who had left the labour force (26.4%). This highlights some potential untapped skills, should these individuals choose to re-engage with the workforce.

Figure 2   Labour force status by age, 2018–19 (%)
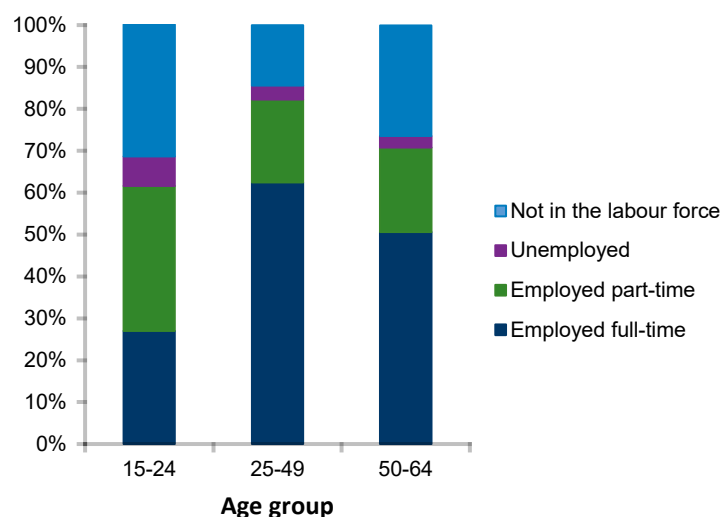
Note: Full-time and part-time status refers to employment in all jobs or businesses.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Figure 3 shows labour force status by sex. More males than females were in the labour force (84.2% vs 73.9%) and within this more males than females were employed (80% vs 70.4%). While males had a higher rate of full-time employment than females (66.1% vs 38.9%), they had a lower rate of part-time employment (13.9% vs 31.4%).

Figure 3   Labour force status by sex, 15 to 64-year-olds, 2018–19 (%)
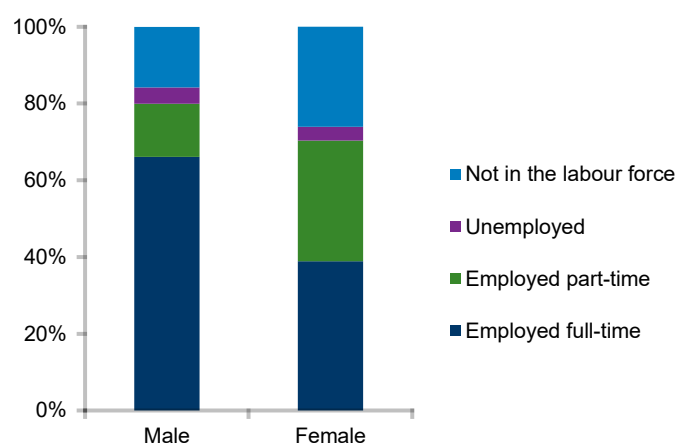
Note: Full-time and part-time status refers to employment in all jobs or businesses.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Current study is an important consideration in the skills equation, particularly in the context of future skills demand. In addition to the 60.1% of the younger age group highlighted above, 10.3% of 25 to 49-year-olds and 3.1% of 50 to 64-year-olds were currently studying (figure 4). Unfortunately, the Qualifications and Work survey does not provide information on the level or field of education of current study, so this information is very limited.

Figure 4   Current study by age, 2018–19 (%)
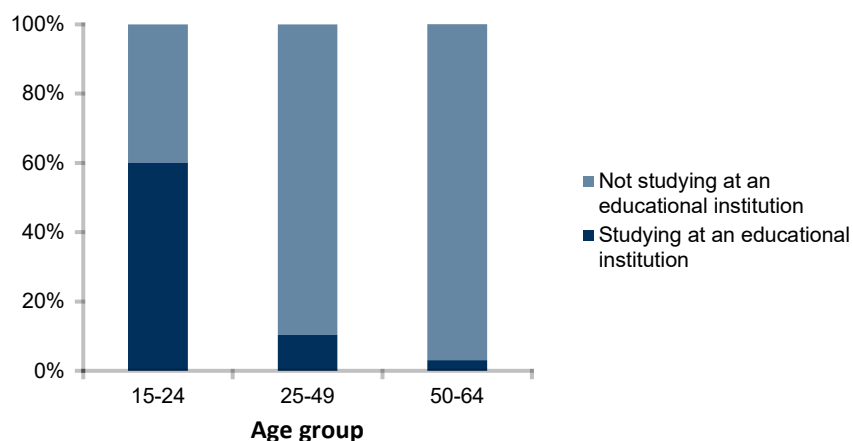
Note: Educational institution includes secondary school.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Numbers of completed qualifications

Taking qualifications as a proxy for skills, this section provides an indicator of the supply of skills (albeit an imperfect one) in the economy. As noted earlier, the most granular detail on qualifications available from the Qualifications and Work survey is for the level and main field of education. It would also be useful to understand how qualifications relate to occupations more directly than field of education, and this issue is considered to some extent in the later section on the case studies of occupation groups.

Table 2 shows the total numbers of completed non-school qualifications among 15 to 64-year-olds. Importantly, this analysis includes up to five completed non-school qualifications for each person surveyed.

Table 2   Estimated distribution of completed non-school qualifications in the labour force, by level of education and field of education, 15 to 64-year-olds, 2018–19

Main field of education	Level of education					Total qualifications**
	Higher education	VET*	VET			
			Diploma and advanced diploma	Certificate III and IV	Certificate I and II	
Natural and physical sciences	83.3%	11.0%	4.9%	4.3%	-	611 500 (100%)
Information technology	58.6%	34.9%	18.0%	10.9%	5.7%	615 700 (100%)
Engineering and related technologies	26.5%	67.8%	9.2%	53.0%	4.8%	2 137 500 (100%)
Architecture and building	17.1%	78.2%	11.2%	62.2%	-	803 700 (100%)
Agriculture, environmental and related studies	29.9%	65.7%	13.3%	34.6%	14.8%	343 600 (100%)
Health	60.7%	34.1%	17.7%	14.2%	1.5%	1 652 900 (100%)
Education	77.9%	18.8%	9.1%	8.3%	-	1 029 600 (100%)
Management and commerce	42.1%	54.5%	20.9%	26.1%	5.6%	3 953 900 (100%)
Society and culture	49.0%	46.6%	15.6%	28.0%	2.5%	2 495 300 (100%)
Creative arts	50.4%	45.6%	23.6%	16.3%	4.1%	728 500 (100%)
Food, hospitality and personal services	-	94.8%	19.6%	62.0%	13.3%	787 400 (100%)
Total qualifications*	**6 895 000** (44.7%)	**7 847 000** (50.8%)	*2 430 500* (15.7%)	*4 561 200* (29.5%)	*695 100* (4.5%)	**15 436 000** (100%)

Notes: * VET includes 'Certificate not further defined'; **Total qualifications (row totals) include those with 'Level not determined';
***Total qualifications (column totals) include those where the main field of education is 'Mixed field programmes' or 'Field information inadequate'; Cells marked - have been suppressed due to high relative standard errors.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Cumulatively, working-age Australians held 15 436 000 qualifications, with vocational qualifications outnumbering higher education qualifications (7.8 million and 6.9 million respectively). These qualifications were held by 10.2 million people (5.9 million people had not completed a non-school qualification).

At the vocational level, certificates III and IV were the most prevalent. A little under a half of these were in two fields of education: engineering and related technologies (which includes entry pathways into many trade occupations) and management and commerce (which is prevalent at all levels).

Within the higher education sector, management and commerce; society and culture; and health were the three largest fields, accounting for over a half of all higher education qualifications.

While some fields were higher education-dominant (for example, natural and physical sciences; education; health) and some were VET-dominant (for example, food, hospitality and personal services; architecture and building; engineering and related technologies; agriculture, environmental and related studies), other fields catered for both higher education and VET-level qualifications (for example, society and culture; creative arts).

The number of qualifications was clearly higher than the number of qualified people, highlighting that many people had two or more qualifications. The estimate of all qualifications was 34% higher (an additional 5 247 500 qualifications) than if only the highest qualification had been counted for each person (as is the case for many data sources on qualifications), as shown in table 3. In the context of the stock of qualifications, this is a critical aspect of the Qualifications and Work survey, since considering only the highest qualification is clearly a significant underestimate of all the qualifications held by the working-age population. In the case of VET, including qualifications that were not the highest increased the estimate by 35.1%, or 2 754 900 qualifications. Further discussion of people who held multiple qualifications is included in later sections of this report.

Table 3   Comparison of number of qualifications when considering highest qualification only or all qualifications, 15 to 64-year-olds, 2018–19

			Level of education			
	Higher education	VET*	VET			Total qualifications**
			Diploma and advanced diploma	Certificate III and IV	Certificate I and II	
Highest qualification	4 783 100 (69.4%)	5 092 100 (64.9%)	1 649 000 (67.8%)	3 022 700 (66.3%)	353 500 (50.9%)	10 188 500 (66.0%)
Other qualification	2 111 900 (30.6%)	2 754 900 (35.1%)	781 500 (32.2%)	1 538 500 (33.7%)	341 600 (49.1%)	5 247 500 (34.0%)
Total qualifications	**6 895 000 (100%)**	**7 847 000 (100%)**	**2 430 500 (100%)**	**4 561 200 (100%)**	**695 100 (100%)**	**15 436 000 (100%)**

Note: * VET includes 'Certificate not further defined'; **Total qualifications (row totals) include those with 'Level not determined'.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Figure 5 shows a comparison of the distribution of higher education and VET qualifications for males and females. Overall, females held 52% of all qualifications, including 56.3% of all higher education qualifications, and males held 51.5% of VET qualifications.

Figure 5   Completed non-school qualifications by field and level of education, and by sex, 15 to 64-year-olds, 2018–19
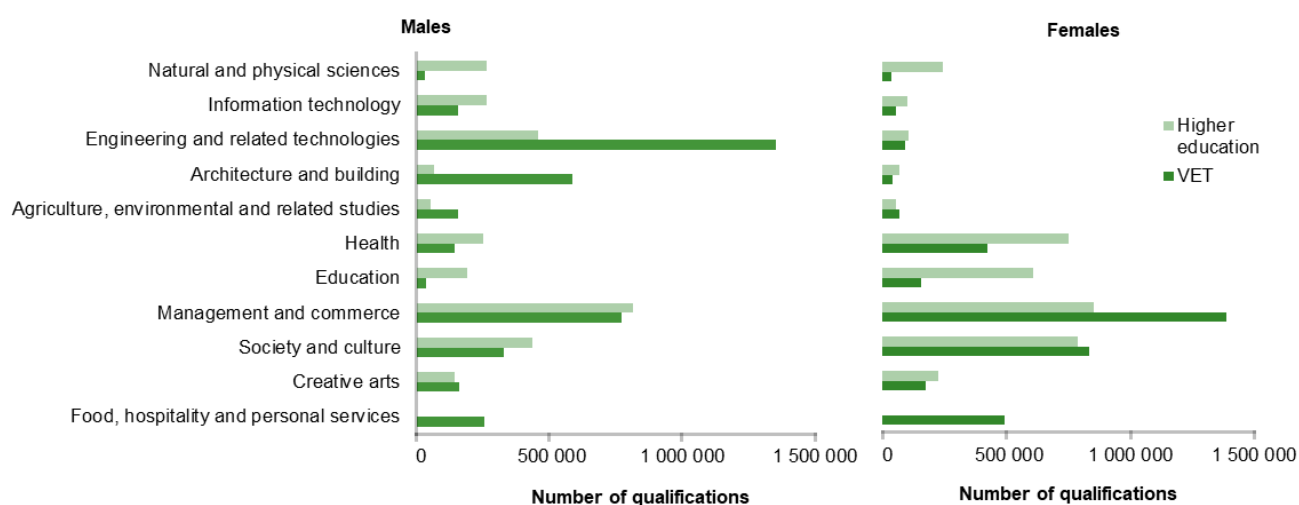
Note: VET includes 'Certificate not further defined'; Estimates of higher education qualifications in food, hospitality and personal services have been suppressed due to high relative standard errors.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

More males than females had completed qualifications in engineering and related technologies; architecture and building; and information technology — generally fields where VET qualifications were more prevalent than higher education qualifications. On the other hand, females held more qualifications than males in education; health; society and culture; and food, hospitality and personal services. Males also held more VET qualifications in agriculture, environmental and related studies than females, and females held more VET qualifications in management and commerce than males.

People and their qualifications

As noted earlier, there were 16.1 million working-age Australians, and the qualifications examined above were held by 10.2 million of this base: 36.7% did not hold a non-school qualification, 29.7% had completed a higher education qualification, and 31.7% had a vocational qualification as their highest non-school qualification. Overall, more people aged 15—64 had a VET qualification (6.1 million, 37.7%) than a higher education qualification (4.8 million, 29.7%). In addition, 3.8 million 15 to 64-year-olds (23.7%) held two or more qualifications, of which 971 200 held qualifications at both the VET and higher education levels (6% of all 15 to 64-year-olds, 9.5% of all qualified 15 to 64-year-olds, and 25.5% of all 15 to 64-year-olds with two or more completed non-school qualifications).

Differences in labour force status by highest level of non-school qualification were identified: 33.0% of people without a non-school qualification were not in the labour force, compared with 16.1% of people with VET as their highest qualification and 11.7% of people with a higher education qualification (figure 6).

Figure 6   Labour force status by highest level of non-school qualification, 15 to 64-year-olds, 2018–19
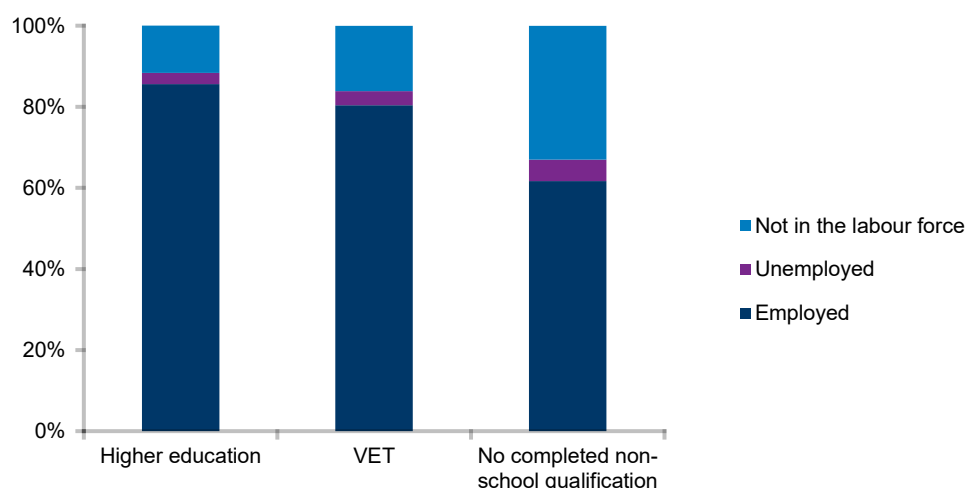
Note: VET includes 'Certificate not further defined'.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

In addition to completed qualifications, people may gain skills from qualifications they do not complete. Despite not meeting the requirements for a formal qualification, a student may nevertheless have completed one or more units of competency and gained sufficient skills to secure employment. This scenario is particularly relevant to students who enrol in qualifications without the intention of completing the full qualification, instead using it as a means of accessing only those units of competency in which they are interested (for example, skill sets and micro-credentials).

Looking to the Qualifications and Work survey data, of all the people who held no non-school qualification, the employment rate was higher for those who had begun one or more qualifications but not completed them (excluding current study) than for those who had never started a qualification (69% and 60.5% respectively; figure 7). For qualified people, on the other hand, the employment rate was slightly lower for individuals who had started but not completed a qualification than for those who had completed all the qualifications they had begun (81.1% and 83.2%).

Figure 7   Labour force status by incomplete qualifications, for people with and without a non-school qualification, 15 to 64-year-olds, 2018–19
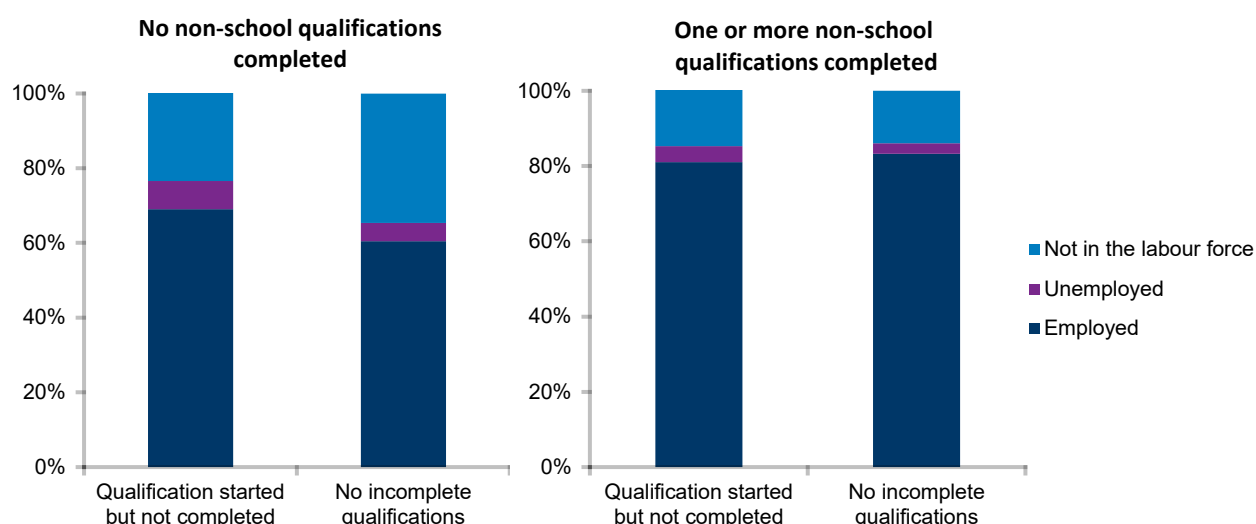
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Relevance of qualifications to employment

Importantly, the skills gained through qualifications address labour force demand only insofar as they are relevant to a worker's job. There are, however, varying degrees of mismatch and overskilling in the working-age population. Although the broad issue of skills utilisation is not the focus of this report, the Qualifications and Work survey does provide data on the relevance of non-school qualifications to a worker's current job, giving some insight into the match between qualifications and employment.

First, we consider the match between workers' qualifications and their employment. Table 4 provides detail of the relevance of all non-school qualifications held by employed people, considering higher education and VET qualifications separately. Overall, most qualifications held by employed people were relevant to their work (74.9% of VET qualifications and 84.7% of higher education qualifications). Pooling all non-school qualifications, the fields of education with the lowest overall rates of relevance were food, hospitality and personal services (57.3%); creative arts (68.7%); and agriculture, environmental and related studies (69.4%), whereas the highest rates of relevance were for education (91.3%); health (86.2%); and management and commerce (83.3%).

Table 4   Relevance of completed non-school qualifications to current employment, by level of education and field of education, 15 to 64-year-olds, 2018–19

Main field of education	Relevance of qualification to current employment				
	Not at all relevant	Relevant	Relevant		Total qualifications*
			In the same field	*In a different field, but relevant*	
VET					
Natural and physical sciences	-	50.3%	*33.1%*	*-*	**52 300 (100%)**
Information technology	25.2%	70.9%	*52.8%*	*19.3%*	**184 300 (100%)**
Engineering and related technologies	20.4%	76.5%	*61.0%*	*15.6%*	**1 262 800 (100%)**
Architecture and building	16.1%	82.8%	*75.1%*	*7.2%*	**566 400 (100%)**
Agriculture, environmental and related studies	29.0%	66.2%	*58.6%*	*-*	**191 900 (100%)**
Health	20.0%	77.4%	*63.3%*	*14.2%*	**470 300 (100%)**
Education	12.1%	85.1%	*73.2%*	*15.1%*	**150 100 (100%)**
Management and commerce	17.7%	79.2%	*60.2%*	*18.9%*	**1 751 000 (100%)**
Society and culture	21.7%	75.3%	*62.3%*	*13.1%*	**921 800 (100%)**
Creative arts	36.0%	59.5%	*42.2%*	*17.3%*	**250 600 (100%)**
Food, hospitality and personal services	37.4%	57.8%	*50.2%*	*8.1%*	**573 600 (100%)**
Total VET qualifications**	**21.9%**	**74.9%**	***60.3%***	***14.5%***	**6 463 400 (100%)**
Higher education					
Natural and physical sciences	20.7%	79.7%	*59.6%*	*19.5%*	**418 400 (100%)**
Information technology	14.8%	80.0%	*72.0%*	*9.0%*	**328 400 (100%)**
Engineering and related technologies	18.8%	80.1%	*62.2%*	*17.7%*	**502 500 (100%)**
Architecture and building	-	86.0%	*77.8%*	*-*	**115 900 (100%)**
Agriculture, environmental and related studies	-	77.5%	*61.6%*	*16.7%*	**87 300 (100%)**
Health	8.6%	90.6%	*80.9%*	*9.8%*	**906 300 (100%)**
Education	7.1%	92.5%	*83.6%*	*9.0%*	**685 700 (100%)**
Management and commerce	11.4%	88.0%	*70.9%*	*17.5%*	**1 441 600 (100%)**
Society and culture	17.8%	81.7%	*57.2%*	*24.4%*	**1 009 000 (100%)**
Creative arts	24.6%	72.7%	*50.8%*	*21.7%*	**314 300 (100%)**
Food, hospitality and personal services	-	-	*-*	*-*	**-**
Total higher education qualifications**	**14.4%**	**84.7%**	***68.4%***	***16.3%***	**5 941 000 (100%)**

Note: *Total qualifications (row totals) include those with 'relevance not stated'; **Total VET qualifications and total higher education qualifications (column totals) include those where the main field of education is 'Mixed field programmes' or 'Field information inadequate'; Cells marked - have been suppressed due to high relative standard errors.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

A little under a quarter of employed people with a non-school qualification had at least one qualification that was not at all relevant to their current job, suggesting a degree of underutilisation (table 5). This rate was higher for those who had two or more non-school qualifications, raising interesting questions about the dynamics of relevance among these multiple qualifications.

Table 5   Proportion of people with at least one non-school qualification not at all relevant to the current job, by level of education and number of qualifications, 15 to 64-year-olds, 2018–19 (%)

|	Higher education	VET*	All qualifications**
One non-school qualification	15.5	19.0	**17.7**
Two or more non-school qualifications	20.4	34.0	**31.9**
All employed people with a non-school qualification	**18.0**	**24.7**	**23.2**

Note: *VET includes 'Certificate not further defined'; **All qualifications include those with 'Level not determined'.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

In total, 3 270 800 workers (27% of all employed people aged 15−64) held two or more non-school qualifications. In terms of level of education, the highest qualification was not the most relevant to the current job for a third of these workers (33.1%), compared with those where the highest was the most relevant (59.3%). If we look only at employed people who held both VET and higher education qualifications (847 300 workers), we see that nearly a third (32.9%) identified their VET qualification as most relevant to their current job, that is, more relevant than their higher education qualification(s). In addition, for almost a third (30.8%) of workers with more than one qualification, the most recent qualification was not the most relevant, compared with 61.8%, where the most recent was the most relevant. Although this hints at indirect pathways into skilled work, the limitations associated with survey sampling preclude more detailed analysis here.

Next, we consider people with a non-school qualification who were not engaged with the labour force or who were unemployed, which represents another point of potential underutilisation of skills. Overall, 17.1% of working-age Australians who had a non-school qualification were not working (that is, either unemployed or not in the labour force). For illustrative purposes, we can look more specifically at an example of males and females not in the labour force, by comparison with those who were in the labour force (figure 8). Of the former group, 32.9% were females from households with children under 15 years. This illustrates just one group of qualified individuals who were not engaged in the labour force but who may re-engage later.

Figure 8   Proportion of people with a non-school qualification by sex and whether their household has children under 15 years, by labour force status, 15 to 64-year-olds, 2018–19
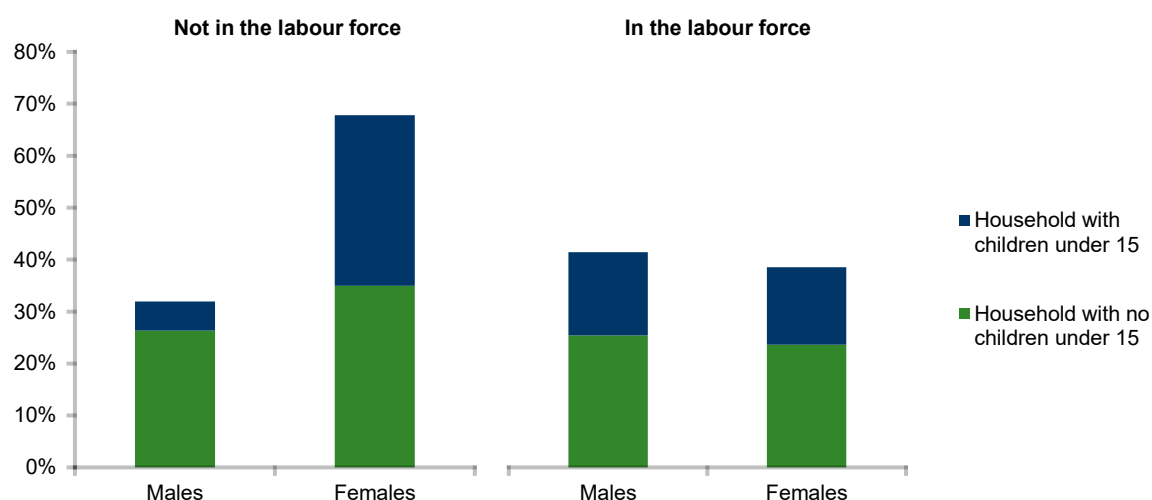
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

Unemployment among people with a non-school qualification was highest for the 15 to 24-year-old age-group (6.3%, compared with 2.8% for prime-age workers and 2.6% for older workers). This is perhaps not surprising as young people are known to be more vulnerable in the workforce (see, for example, Waugh & Circelli, forthcoming). Underemployment[5] among workers with a non-school qualification was also highest among young workers (16.5%, compared with 6.3% for prime-age workers and 6.9% for older workers). In general, underemployment was higher for workers whose highest non-school qualification was a VET qualification (9.3%) than for those with a higher education qualification (5.5%).

Finally, we consider people who were employed in skilled work but did not have a non-school qualification relevant to their job. Table 6 shows the prevalence of workers with and without a relevant qualification, for each indicative skill level. Overall, 9.7% of workers had a non-school qualification but not one that was relevant to their job, and 30.2% were employed but had not completed a non-school qualification. These people without a qualification or relevant qualification were employed in occupations across all ANZSCO skill levels (with the proportion of workers without a relevant qualification decreasing as the indicative skill level increased in complexity), emphasising that formal qualifications are just one possible avenue to skill acquisition.

Table 6   Proportion of workers with and without a relevant non-school qualification, by skill level requirement of current employment, 15 to 64-year-olds, 2018–19

	At least one non-school qualification relevant to current job	No non-school qualification relevant to current job	No non-school qualification relevant to current job		Total workers*
			Has a non-school qualification, but not at all relevant to current job	Does not have a non-school qualification[6]	
Skill level 5	19.3%	75.8%	17.7%	58.0%	1 926 700 (100%)
Skill level 4	41.7%	55.0%	14.2%	40.6%	3 149 800 (100%)
Skill level 3	63.7%	34.4%	5.9%	28.6%	1 671 500 (100%)
Skill level 2	65.1%	33.8%	9.5%	24.1%	1 404 100 (100%)
Skill level 1	85.6%	13.9%	3.4%	10.5%	3 851 800 (100%)
Total workers**	**7 006 400 (57.9%)**	**4 813 300 (39.8%)**	**1 168 000 (9.7%)**	**3 646 800 (30.2%)**	**12 094 600 (100%)**

Note: Columns in italics are subsets of the preceding column; ANZSCO skill levels increase from 5 to 1, with level 5 indicative of up to certificate I, and level 1 with a bachelor's degree or higher qualification, or at least five years of relevant experience; *Total workers (row totals) include those with a qualification with 'Relevance not stated'; **Total workers (column totals) include those employed in a job with 'Skill level undetermined'.
Source: Based on ABS Qualifications and Work survey data, 2018–19, TableBuilder.

5   Underemployed people were those who preferred to and were available for more hours of work than they currently had.
6   Note that the survey questions concerning relevance only apply to people with a non-school qualification.

Case studies: occupation groups

This section provides an investigation into the characteristics of workers and their qualifications by means of case studies in different occupations:[7] construction managers; metal fitters and machinists; child carers; aged and disabled carers; contract, program and project administrators; and ICT professionals[8]. The specific case studies were chosen as they:
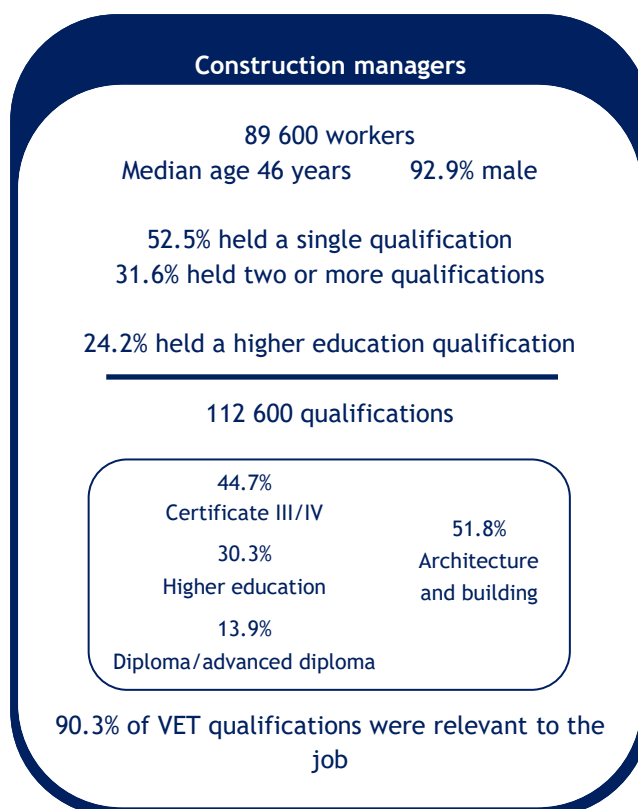
- highlight different aspects of the employment and qualifications landscape

- are relevant to current and future skills demand[9]

- are relevant to the VET sector

- are well represented by the Qualifications and Work survey sample.

As before, the analysis was conducted for people aged 15—64 years. The data presented here are those with sufficiently robust estimates and are therefore indicative rather than being a comprehensive analysis. A summary table of the findings presented in this section is available in table A1 in appendix A.

Construction managers

Construction managers plan, organise, direct, control and coordinate the construction of civil engineering projects, buildings and dwellings, and the physical and human resources involved in building and construction. This unit group includes occupations displaying high skill levels (ANZSCO skill level 1). VET and higher education are both common entry pathways, and registration or licensing may be required.

Future job growth for construction managers is expected to be strong, with employment projections indicating an increase in the number of jobs of 9.2% for the five years ending May 2024 (compared with 8.3% for all jobs).[10]

Construction managers

89 600 workers
Median age 46 years   92.9% male

52.5% held a single qualification
31.6% held two or more qualifications

24.2% held a higher education qualification

112 600 qualifications

44.7%
Certificate III/IV
30.3%
Higher education
13.9%
Diploma/advanced diploma

51.8%
Architecture
and building

90.3% of VET qualifications were relevant to the job

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7   The case studies, including occupation descriptions, are based on ANZSCO. Robust survey sampling was available at the 4-digit level (unit group) for all case studies except ICT professionals, which was analysed at the 2-digit level (sub-major group). Some occupational groups within ANZSCO include more diverse jobs than others.

8   Information technology is one area where non-nationally recognised training is prevalent. Importantly, non-nationally recognised training is not captured by the Qualifications and Work survey and is beyond the scope of this report.

9   According to the National Skills Commission's 2020 *Australian jobs report*, the case study occupations explored at the 4-digit ANZSCO level are all top-five employing occupations within their major group. Within the major group of ICT professionals, the 4-digit unit group software and applications programmers was also a top-five employing occupation.

10 National Skills Commission JobOutlook and Labour Market Information Portal — Occupation projections.

Metal fitters and machinists

Metal fitters and machinists fit and assemble fabricated metal parts into products, set up machining tools, production machines and textile machines, and operate machining tools and machines to shape metal stock and castings. This case study represents a core segment of the VET market (ANZSCO skill level 3), with a certificate III — often completed as part of an apprenticeship — being the typical entry pathway.

Future job growth for metal fitters and machinists is expected to be moderate, with employment projections indicating a 4.3% increase in the number of jobs up to May 2024.

Of the six case studies examined, metal fitters and machinists had the lowest percentage of workers who held two or more non-school qualifications.

Metal fitters and machinists

119 700 workers
Median age 40 years   100% male

63.4% held a single qualification
20.2% held two or more qualifications

134 500 qualifications

81.8%
Certificate III/IV

87.4%
Engineering and related Technologies

Of all VET qualifications, 93.5% were relevant to the job

Child carers

Child carers provide care and supervision for children in residential homes and non-residential childcare centres.

Future job growth is expected to be very strong, with employment projections indicating a 19.8% increase in the number of jobs up to May 2024.

The qualifications held by workers in this unit group were diverse, which is consistent with multiple-entry pathways for child carers.

Child carers

136 100 workers
Median age 36 years   94.2% female

22.3% studying at a non-school institution

53.4% held a single qualification
24.7% held two or more qualifications

22% held a higher education qualification

154 700 qualifications

39.8%
Diploma/advanced diploma

57.4%
Society and culture

32.7%
Certificate III/IV

20.7%
Education

20.2%
Higher education

84.4% of VET qualifications and 72.8% of higher education qualifications were relevant to the job

Aged and disabled carers

Aged and disabled carers provide general household assistance, emotional support, and care and companionship for aged and disabled persons in their own homes.

Future job growth for aged and disabled carers is expected to be very strong, with employment projections indicating a 25.4% increase in the number of jobs up to May 2024.

As for child carers, the data imply diverse entry pathways into this unit group.

Of all the case studies examined, aged and disabled carers had the highest proportion of workers without a non-school qualification, but also a relatively high percentage of workers who held two or more qualifications.

Aged and disabled carers

167 900 workers
Median age 46 years   80.2% female
18.4% studying at a non-school educational institution

47.8% held a single qualification
29.5% held two or more qualifications

14.3% held a higher education qualification

193 200 qualifications

62.1% Certificate III/IV	56.7% Society and culture
14.6% Higher education	15.3% Health
14.4% Diploma/advanced diploma	

Of all VET qualifications, 81.4% were relevant to the job

Contract, program and project administrators

Contract, program and project administrators plan and undertake administration of contracts, organisational programs, special projects and support services. This is another diverse unit group, with many VET and higher education qualifications held by workers.

Future job growth for contract, program and project administrators is expected to be stable, with employment projections indicating a 1.7% increase in the number of jobs up to May 2024.

The three most prevalent fields of education for qualifications held — management and commerce; engineering and related technologies; and society and culture — were the most common across all working-age Australians and highlight the diverse educational backgrounds of workers in this unit group. This case study also had the highest proportion of workers who held two or more non-school qualifications.

Contract, program and project administrators

136 800 workers
Median age 43 years   53.6% female

45.2% held a single qualification
38.9% held two or more qualifications

54% had a higher education qualification
11.5% had both a VET and a higher education qualification

188 100 qualifications

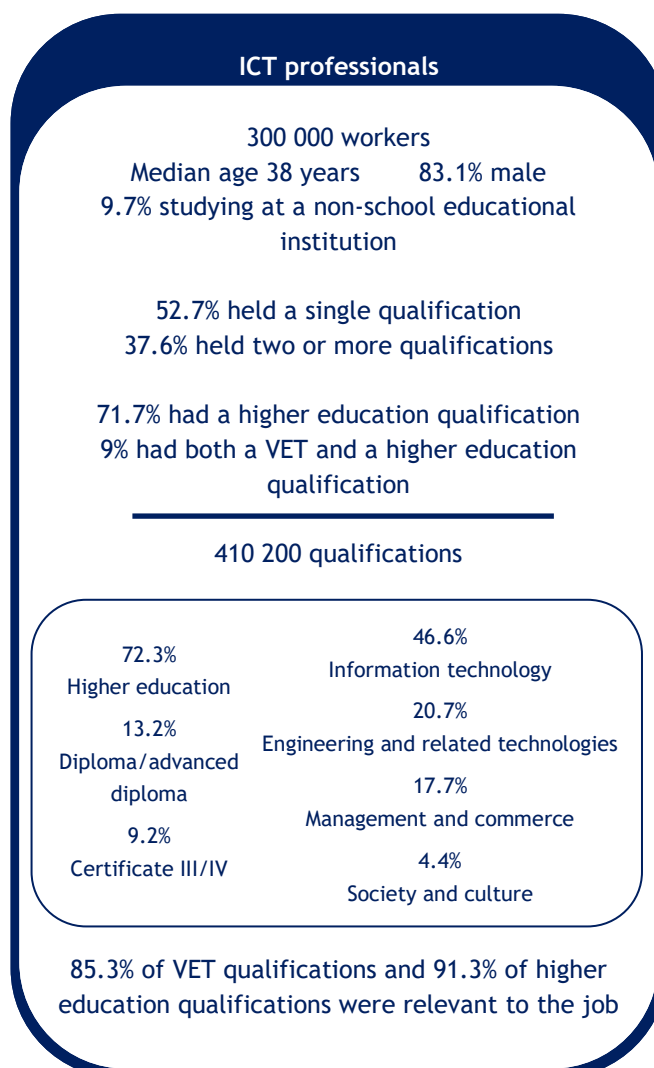|	
56.3% Higher education	40.2% Management and commerce
17.8% Certificate III/IV	17.8% Engineering and related technologies
16.7% Diploma/advanced diploma	17.6% Society and culture

83% of VET qualifications and 88.7% of higher education qualifications were relevant to the job

ICT professionals

ICT professionals perform analytical, conceptual and practical tasks to support the efficient and secure provision of information and communication technology (ICT) services to government, commercial and industrial organisations, and individuals. This case study was examined at the 2-digit ANZSCO level (sub-major group) and therefore covers a broader range of jobs than the case studies examined above. These include business and systems analysts; programmers; database and system administrators; ICT security specialists; and ICT network and support professionals. Vendor certification is widely available and may substitute for formal qualification in many cases.

Employment projections indicate a 20.2% increase in the number of jobs up to May 2024, showing that ICT professionals are a key area of future skills demand.

Higher education qualifications again dominated in this case study; however, we note that a significant area of skilling for ICT professionals comes from unaccredited training (see, for example, White, De Silva & Rittie 2018), which is not captured in the Qualifications and Work survey. Qualifications from a range of fields of education again highlight the diverse backgrounds of this broad case study.

ICT professionals

300 000 workers
Median age 38 years   83.1% male
9.7% studying at a non-school educational institution

52.7% held a single qualification
37.6% held two or more qualifications

71.7% had a higher education qualification
9% had both a VET and a higher education qualification

410 200 qualifications

72.3%
Higher education

13.2%
Diploma/advanced diploma

9.2%
Certificate III/IV

46.6%
Information technology

20.7%
Engineering and related technologies

17.7%
Management and commerce

4.4%
Society and culture

85.3% of VET qualifications and 91.3% of higher education qualifications were relevant to the job

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Appendix A

Table A1 Comparison matrix of case study occupation groups

	Construction managers	Metal fitters and machinists	Child carers	Aged and disabled carers	Contract, program and project administrators	ICT professionals[11]
ANZSCO indicative skill level	1	3	3/4	4	2	1
Number of workers	89 600	119 700	136 100	167 900	136 800	300 000
Median age	46 years	40 years	36 years	46 years	43 years	38 years
Sex						
▪ Females	-	-	94.2%	80.2%	53.6%	16.6%
▪ Males	92.9%	100%	-	20.6%	44.1%	83.1%
Numbers of qualifications	112 600	134 500	154 700	193 200	188 100	410 200
Qualifications by level of education						
▪ Higher education	30.3%	-	20.2%	14.6%	56.3%	72.3%
▪ Diploma/advanced diploma	13.9%	-	39.8%	14.4%	16.7%	13.2%
▪ Certificate III/IV	44.7%	81.8%	32.7%	62.1%	17.8%	9.2%
▪ Certificate I/II	-	-	-	-	-	-
Qualifications by field of education	Architecture and building 51.8%	Engineering and related technologies 87.4%	Society and culture 57.4% Education 20.7%	Society and culture 56.7% Health 15.3%	Management and commerce 40.2% Engineering and related technologies 17.8% Society and culture 17.6%	Information technology 46.6% Engineering and related technologies 20.7% Management and commerce 17.7% Society and culture 4.4%
Number of qualifications held						
▪ At least one	81%	82.4%	82%	75.9%	86.5%	88.1%
▪ Two or more	31.6%	20.2%	24.7%	29.5%	38.9%	37.6%
▪ None	-	-	21%	22.6%	13%	11.3%
▪ Both VET and higher education	-	-	-	-	11.5%	9%
Currently studying	-	-	22.3%	18.4%	-	9.7%

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11 ICT professionals were analysed at the 2-digit (sub-major group) ANZSCO level, whereas all other case studies were analysed at the 4-digit (unit group) level.

	Construction managers	Metal fitters and machinists	Child carers	Aged and disabled carers	Contract, program and project administrators	ICT professionals
Relevance of qualification to current job • Proportion of VET qualifications that are relevant	90.3%	93.5%	84.4%	81.4%	83%	85.3%
• Proportion of higher education qualifications that are relevant	-	-	72.8%	-	88.7%	91.3%
JobOutlook future growth predictions	Strong	Moderate	Very strong	Very strong	Stable	Not available
Employment projections to 2025	9.2%	4.3%	19.8%	25.4%	1.7%	20.2%

Note: The term *qualification* refers to a completed non-school qualification; Cells marked - have been suppressed due to high relative standard errors; The unit of analysis is the worker for data on sex, number of qualifications held, and currently studying. The unit of analysis is the qualification for data on qualifications by level and field of education and relevance of qualification to current job.

Sources: ABS ANZSCO Version 1.3; ABS Qualifications and Work 2018–19 survey data, National Skills Commission JobOutlook and Labour Market Information Portal – Occupation projections.