

An analysis of 'micro-credentials' in VET

Bryan Palmer



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This document should be attributed as Bryan Palmer 2021, *An analysis of 'micro-credentials' in VET*, NCVER, Adelaide.

This work has been produced by NCVER on behalf of the Australian Government and state and territory governments, with funding provided through the Australian Government Department of Education, Skills and Employment.

COVER IMAGE: GETTY IMAGES

ISBN 978-1-925717-67-9

TD/TNC 144.01

Published by NCVER, ABN 87 007 967 311

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About the research

An analysis of 'micro-credentials' in VET

Bryan Palmer

Short-course training, often referred to as micro-credentials, is being seen as an increasingly important form of training, particularly as the world comes to terms with the effects of the COVID-19 pandemic. In the vocational education and training (VET) sector, training package skill sets and accredited courses are recognised forms of short-course training.

Nevertheless, a surprising amount of other, shorter, non-qualification training occurs in the VET sector, officially known as enrolments in subjects not part of a nationally recognised program (course). This report refers to them as 'subject bundles'. This is construed in this paper as a student enrolling in a 'bundle' of subjects at a single registered training organisation (RTO), termed here 'RTO-student pairs'¹. Indeed, in 2019, there were about 2.6 million students who enrolled in these subject bundles, by comparison with 76 565 students enrolled in training package skill sets and 93 555 in accredited courses. But what are they actually training for and why?

This report contributes to the information already available on the largest segment of the VET sector, by analysing these subject bundles and their salient features. We found that engagement in subject bundles was found to be typically short, with bundles of three subjects or fewer accounting for 89.5% of RTO-student pairs. Furthermore, engagement was focused on a small number of bundles (with 601 of around 50 000 bundles accounting for 90% of the RTO-student pairs) and with a relatively small number of RTOs (with 456 RTOs registering 90% of student activity).

Of particular interest is determining the role these subject bundles are fulfilling and, by extension, identifying opportunities to further expand the role of this segment of the VET sector.

Key messages

- The analysis clearly indicates that subject bundles are mainly concerned with regulation and skills maintenance, either explicitly or implicitly. This activity can be grouped under the broad headings of workplace safety, emergency preparedness and authority to operate.
- This segment is largely a 'private' market – more than 93% of subject bundles were funded on a fee-for-service basis – with relatively little government intervention. The fact that the employer or the individual is prepared to pay for the training in many cases is due to a regulatory requirement, but also implies that the training is seen as having value as a (micro) credential in the marketplace.
- There is an opportunity for governments to stimulate 'non-regulatory' subject-bundle activity focused on emerging/persistent skill needs and on increasing labour market participation.
- The noticeable differences between the states and territories in subject bundles can be largely attributed to differences in regulatory requirements, funding regimes and the economic structure of the state/territory.

Simon Walker

Managing Director, NCVER

¹ The term 'RTO-student pair' has been adopted here in instances where a student enrolls in a 'bundle' of subjects at a single registered training organisation (RTO). Each subject bundle in this analysis relates to an RTO-student pair. Where a student has been enrolled at more than one RTO, we have bundled their subjects for each RTO separately.

Acknowledgments

I am thankful for the outstanding support I received from NCVET in the development of this report. In particular, I want to acknowledge the insights and suggestions from John Stanwick, Patrick Lim and Adrian Ong on earlier drafts of this report. This report would have been a lesser product without their feedback. I also want to thank the Managing Director of the NCVET, Mr Simon Walker, for his support of this project.

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Executive summary

In recent years, there has been substantial interest in micro-credentials in post-secondary education. In November 2019, Australian skills ministers agreed to fast-track work exploring micro-credentials in the national vocational education and training (VET) system, with the aim of ensuring that the system responds more effectively to the needs of students and employers (COAG Skills Council 2019). In February 2020, Skills Senior Officials released a discussion paper on micro-credentials, seeking views on how micro-credentials should be defined (Skills Senior Officials 2020).

The COVID-19 pandemic has further focused attention on the role micro-credentials can play in the VET landscape. TAFE Queensland, for example, is offering a range of micro-credentials and skill sets in response to the pandemic, including:

- COVID safe for dining (micro-credential)
- COVID safe for beauty therapy, nail salons, tanning, tattoo parlours and spas (micro-credential)
- Infection control skill set (Retail) (HLTSS00065)
- Infection control skill set (Food Handling) (HLTSS00066)
- Infection control skill set (Transport and Logistics) (HLTSS00067).

In the context of this national activity, this paper explores the *Total VET Students and Courses* data from 2019, collected by the National Centre for Vocational Education Research (NCVER) and released on 17 August 2020 (NCVER 2020a). The data collection is also referred to as total vet activity (TVA).

Focusing on those subjects *not* studied as part of a nationally recognised program in Australia's VET system, this paper analyses the groupings of common subjects taken by students, which will, for the purposes of this paper, be called 'subject bundles'. The term 'RTO-student pair' has been adopted here in instances where a student enrolls in a 'bundle' of subjects at a single registered training organisation (RTO). Each subject bundle in this analysis relates to an RTO-student pair. Where a student has been enrolled at more than one RTO, we have bundled their subjects for each RTO separately.

The intent is to uncover the extent of skill sets or micro-credentials being undertaken by students in 2019, irrespective of whether they were recognised as such by the Australian VET system. Furthermore, this paper groups and analyses these subject bundles by their salient features.

The subject-bundle sector is the largest sector of the VET market in Australia by student engagement. In 2019 more than 2.6 million students engaged with VET by enrolling in subject bundles, representing 62.7% of all students that year (noting that some of these students may be enrolled in programs as well).

The analysis found that their typical engagement was:

- short, with bundles of three subjects or fewer accounting for 89.5% of RTO-student pairs, and four subjects or fewer accounting for 94.5%
- focused on a small number of subject bundles (or programs of study), where 97 subject bundles accounted for 80% of the RTO-student pairs, and 601 subject bundles accounted for 90% of the RTO-student pairs
- on a fee-for-service basis (93.3% of subjects)
- comprised of national training package units/subjects (98.3% of all units, and 98.5% of all RTO-student pairs)
- undertaken at a private training provider (74.7% of the RTO-student pairs) or a community education provider (13.9%)

- with only a relatively small proportion of all RTOs: 241 RTOs account for 80% of students and 456 RTOs account for 90% of students
- successfully completed by 94.6% of RTO-student pairs.

Based on a comparison of subject bundles in 2018 and 2019, it appears that most of the most popular subject bundles do not change substantially from year to year.

High student engagement in some subject bundles is driven by the regulatory requirements for people to refresh and update their skills from time to time; for example, the largest subject bundle, associated with the provision of cardiopulmonary resuscitation, is only valid for 12 months.

Many of the top subject bundles were mandated and exist to ensure that people:

- are able to work safely in the workplace (safety)
- are able to respond to an emergency if necessary (emergency preparedness)
- who operate certain equipment or work in certain industries where there is the potential risk for harm have the necessary capabilities and authority to do so (authorisation).

In the number of subject bundles delivered in each state, marked state-by-state differences exist. The factors that appear to influence the extent of delivery by state and the subject bundles delivered in those states include the:

- degree to which state governments directly fund subject-bundle enrolments
- differences in state government regulatory requirements
- differences in government funding for mainstream VET
- differences in the structure of the economy and the labour market in each state.

Notwithstanding the high demand for the top subject bundles as identified in this report, remarkably few of them are actually designated as skill sets in the formal VET system. Only 10% of the top 97 bundles (80% of the RTO-student pairs) were recognised as a training package skill set. Slightly under 4% of the top 600 subject bundles are recognised as a skill set. It can be argued therefore that subject-bundle enrolments represent a more important form of short-form study (or micro-credential) than nationally recognised skill sets.

Nonetheless, with such large numbers studying each of the top subject bundles they are effectively operating as micro-credentials. Many of them are identified in regulatory requirements or industry practices as being essential for working in that sector, their importance further underlined by the large number of them funded through a fee-for-service arrangement.

Areas where TVA data collections could be improved

The findings from the analysis reveal a couple of areas where more information relating to the data would have been useful. As such, senior VET officials could give consideration to two potential improvements to the TVA collection:

- For those students who are enrolled on a fee-for service basis, the provider could be asked to report who actually paid the fee: whether it was the student, their employer/business, or a third-party agent (such as an employment services provider).
- For those students undertaking a VET subject, the collection could capture the purpose for enrolling in the subject: for skills development or skills maintenance (or skill-refreshing) purposes.



Key observations and findings

Background

Using total VET activity data, this report examines what is known about micro-credentials. Rather than define micro-credentials, this paper uses the notion of ‘subject bundles’ – a ‘bundle’ of subjects in which a single student, studying at a particular RTO, was enrolled during the 2019 calendar year. Where a student was enrolled at more than one RTO, we have bundled their subjects for each RTO separately. Consequently, each subject bundle in this analysis relates to an ‘RTO-student pair’.

In part, this is a convenience, as the data available for analysis are organised in terms of the subjects (units of competency and/or accredited units) that have been registered with the National Register of VET (also known as training.gov.au or TGA). It reflects the assumption that, where a student was enrolled in subjects at more than one RTO, it is possible that they were studying with different purposes in mind at each RTO. Furthermore, the data do not allow for the analysis of students who have partially studied a subject, notwithstanding that partial subjects fit within some definitions of a micro-credential.

Support document

This report is accompanied by a support document. While this report outlines the key observations and findings from the analysis of subject-bundle enrolments, the support document provides a technical discussion of how the raw data were extracted and transformed for analytical purposes; it also reports on the key descriptive statistics relating to subject-bundle enrolments.

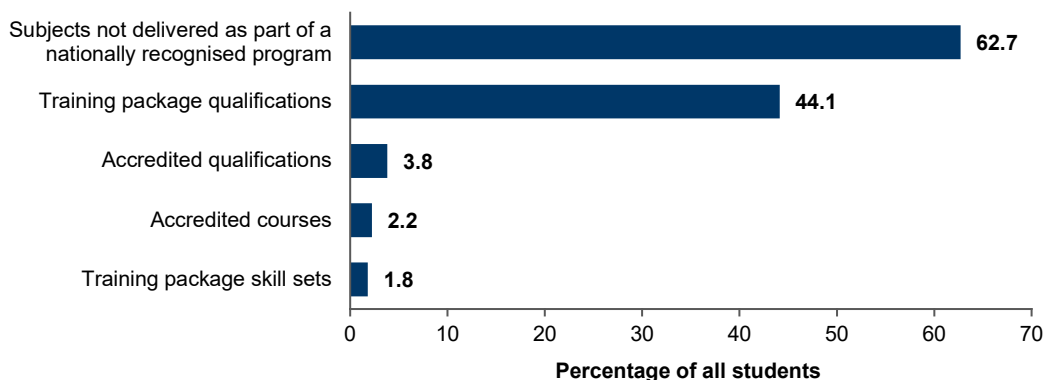
Key points

- Subject-bundle enrolments account for the majority of VET students, with a small number of bundles accounting for most of the activity.
- The vast majority of subject bundles are funded on a fee-for-service basis.
- Some form of regulation or licensing prompts the majority of the training for these subject bundles.

Subject-bundle enrolments account for the majority of VET students

In terms of student engagement, subject-only enrolments form the largest segment of the VET market in Australia (figure 1). In 2019, 2 633 122 students enrolled in VET subjects outside a recognised program, qualification, course or skill set, meaning that some 62.7% of VET students had enrolled in a bundle of one or more subjects.

Figure 1 Students enrolled in nationally recognised training, 2019 (%)

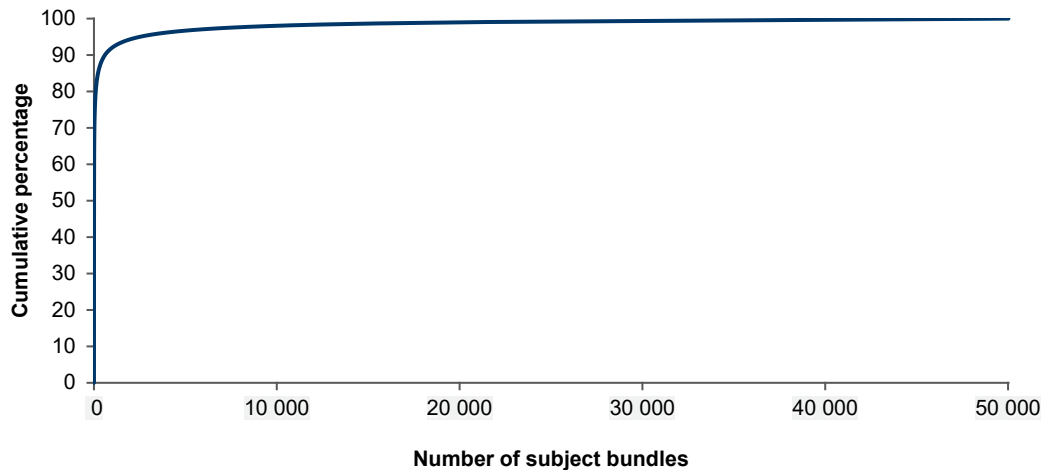


Note: Since some students were enrolled in more than one subject, percentages sum to more than 100%.

A small number of subject bundles account for most of the students

To determine what these students were studying, the subjects for each student at each RTO were bundled. The most striking feature of these subject bundles is the extent to which this distribution is skewed; that is, a large proportion of the students are in a relatively small number of subject bundles (figure 2). While there were just a little more than 50 000 unique subject bundles in 2019, 97 bundles accounted for 80% of the RTO-student pairs, while 601 bundles accounted for 90% of the RTO-student pairs.² Much of our analysis focuses on these two sub-populations. The top subject bundles, which account for 90% of the RTO-student pairs, are listed in appendix A of the support document.

Figure 2 Cumulative distribution of RTO-student pairs by subject bundles, 2019 (%)

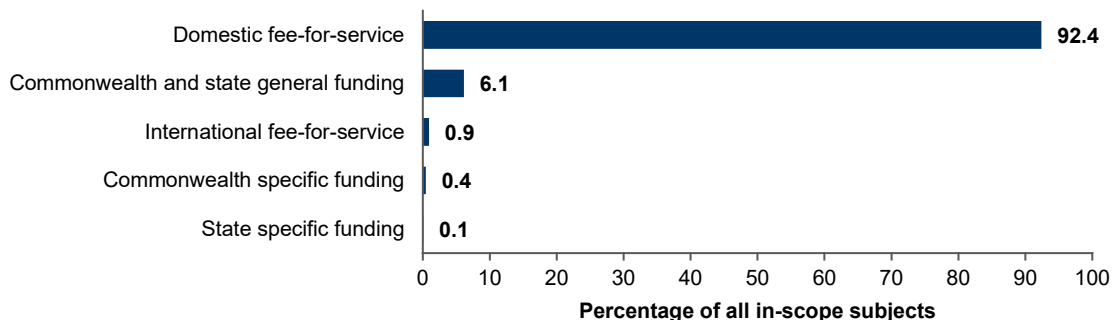


The Gini coefficient of 0.97 indicates that the distribution of RTO-student pairs across subject bundles is particularly uneven. A Gini coefficient of zero would occur if every subject bundle had the same number of student enrolments. A Gini coefficient of one would occur if all of the students were enrolled in just one subject bundle.

Largely a private market

The subject-only bundle enrolments sector is largely a private market and operates with very little government funding (figure 3). Of the subjects provided, 92.4% were provided on a domestic fee-for-service basis; 6.1% were provided with Commonwealth and state general funding; 0.9% were delivered on an international fee-for-service basis.

Figure 3 Subjects by funding source, 2019 (%)



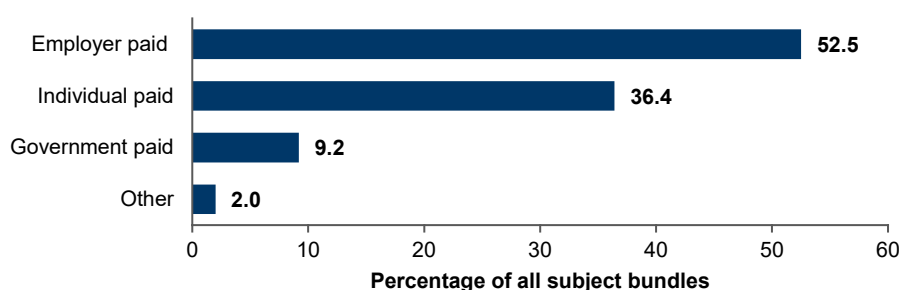
² There was a tie for the 601st place in terms of the number of students taking this bundle. So, elsewhere in this report we analyse the top 602 subject bundles, to account for the tie.

Unfortunately, these data do not tell us whether the fees in these fee-for-service arrangements were paid by the student, their employer, a business, or another agent on behalf of the student (such as an employment services provider). For those already employed and where the training is a requirement of their job, it would be reasonable to assume that the costs would have been met by the employer. For others (such as those unemployed), the training may be a precursor to a job; for example, responsible service of alcohol training and ‘white card’ training (for the construction industry). In other instances, the training could be part of their community service or volunteer work; for example, first aid related training, including CPR.

Who pays for the training?

While the administrative data do not tell us who paid for the training, NCVET’s 2020 National Student Outcomes Survey (SOS; NCVET 2020b) has a question regarding who paid for the training. The data for this question were linked to the subject bundles derived for this report.³ The actual question and its categorisations are in appendix. For the purposes of the analysis here, we use four categories: employer pays, individual pays, government pays, and community or other pays.

Figure 4 Distribution of ‘who pays’ for subject bundles, 2019 (%)



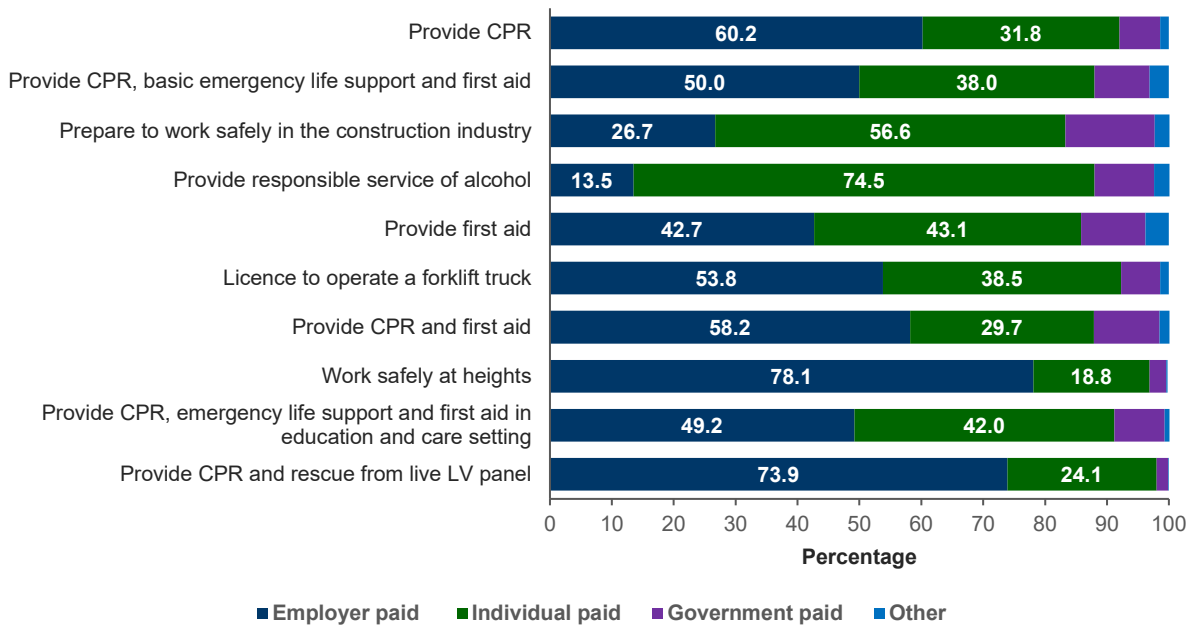
Note: The data exclude those who provided a not stated or missing response.

Figure 4 shows that the employer paid for the training for over half of the students. This is consistent with other information from the Student Outcomes Survey, which shows that a high proportion of the students were employed before training (86.2%) and that the reason for study for 50.2% was that it was a requirement of their employment.

These data also suggest that 9.2% of this training was paid by the government. While not a large percentage, it is somewhat higher than that suggested by the administrative data used for this project (6.7%). Reasons for this phenomenon include that the data sources are different and they are collected differently, resulting in some variation. In addition, it is also possible that some of the fee-for-service funding recorded in the administrative data may have indirectly and initially come from the government.

³ The data linkage was a proxy linkage as the national Student Outcomes Survey only asked the subject completers to evaluate their training experience based on selected subjects undertaken during 2019. Additionally, as the survey is not intended to survey the students according to the subject bundles, some degree of confounding bias effects exist; therefore, the resulting survey estimates have not been calculated as they would in a randomised survey.

Figure 5 Distribution of who pays for the top 10 subject bundles, 2019 (%)

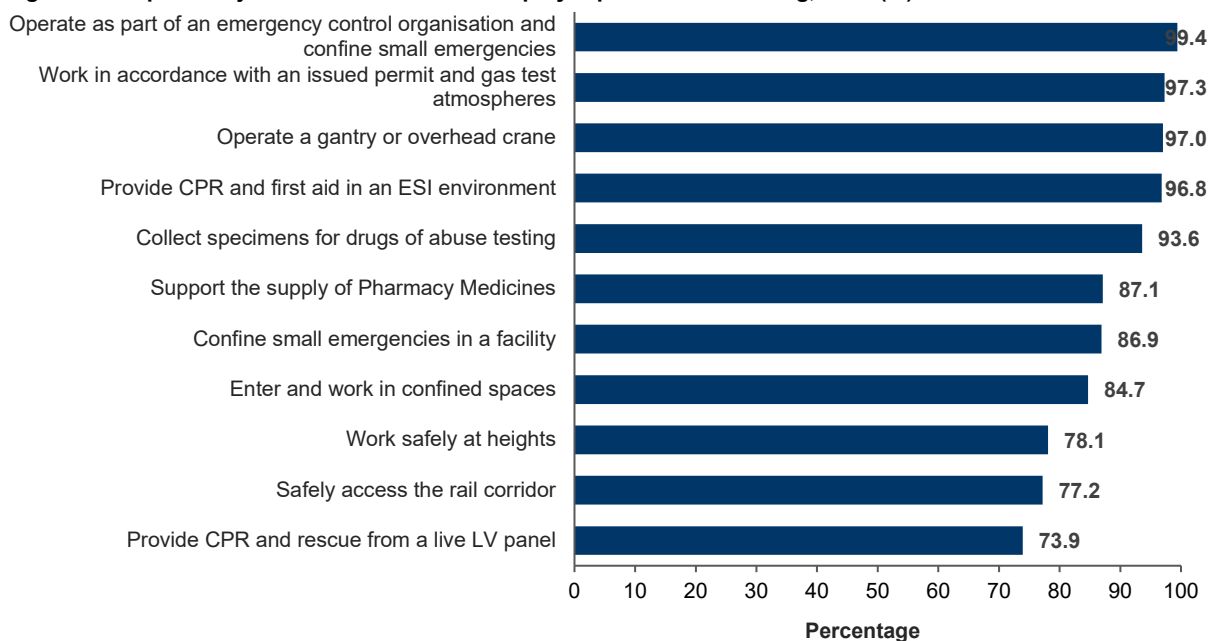


Note: The data exclude those who provided a not stated or missing response.

Figure 5 quite clearly shows a variation in breakdown of what essentially constitutes fee-for-service (employer pays or individual pays). The subject bundle with the highest proportion paid by the individual was responsible service of alcohol (74.5%), followed by prepare to work safely in the construction industry (56.6%). This is not surprising, as these ‘tickets’ are needed to access employment in the area. Indeed, the most common reason for study of these two bundles was to get a job (38% and 31% respectively).

For six of the bundles, the employer paid for half or more of the students in that bundle. For these bundles, substantial proportions reported that they undertook the course as a requirement of their job.

Figure 6 Top 10 subject bundles where the employer paid for the training, 2019 (%)



Note: The data exclude those who provided a not stated or missing response.

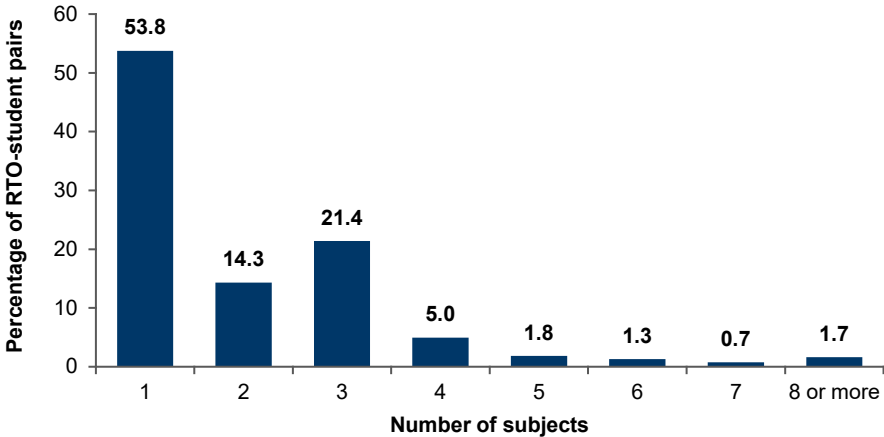
For the purposes of representation on a chart, the names of subjects constituting the subject bundles have been shortened/summarised.

For four of these subject bundles, the employer paid for virtually all of the training. All pertain to licensing or regulation and tend to be associated with a very high percentage of students employed before training and stating their reason for study as a requirement of employment. For example, for ‘Work in accordance with an issued permit and gas test atmospheres’, 98.4% of the students were employed before training, while 93.9% reported ‘requirement of the job’ as the study reason.

Most subject bundles were small and drawn from training package units

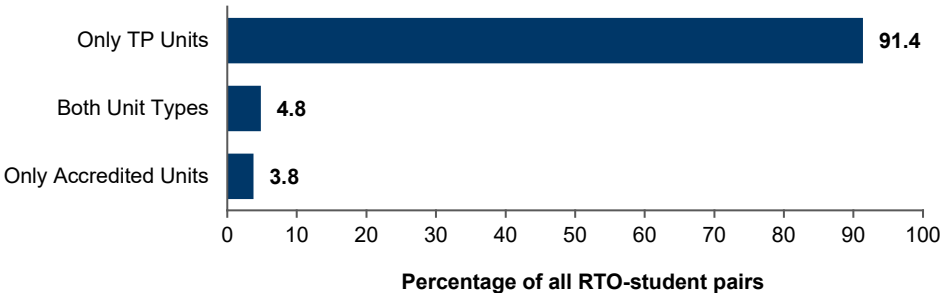
While the number of subjects in these bundles ranged from one to 54 subjects, subject bundles of three subjects or fewer accounted for 89.5% of RTO-student pairs, and four subjects or fewer accounted for 94.5% (figure 7).

Figure 7 Subject bundle size by proportion of RTO-student pairs, 2019 (%)



Of the RTO-student pairs, 91.4% were studying subject bundles comprised exclusively of training package (TP) units (figure 8).

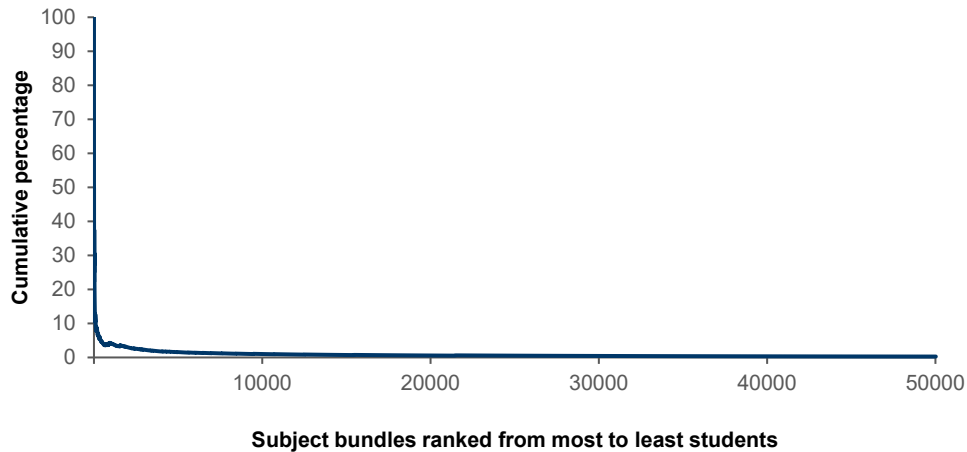
Figure 8 Subject type by proportion of RTO-student pairs, 2019 (%)



Subject-bundle enrolments are far more prolific than training package skill sets

The numbers of students engaged in training package skill sets (the formal mechanism for micro-credentials in the Australian VET system) are far exceeded by the number of students undertaking short programs of study through subject-bundle engagements. (Only 132 of the 50 023 subject bundles uncovered in this analysis are recognised as training package skill sets, figure 9.) This is attributable to, in many cases, the bundle of subjects being studied not being a recognised skill set.

Figure 9 Cumulative proportion of subject bundles equivalent to a training package skill set, 2019 (%)



Nonetheless, even when a subject bundle was a recognised skill set, in many cases it was not recorded as a formal skill set enrolment, which may be due to the skill set not being considered relevant to the student. For example, cardiopulmonary resuscitation is a recognised skill set in transmission, distribution or rail work functions (UETSS00040). However, the cardiopulmonary resuscitation unit is also used in many other workplaces (that are not part of the transmission, distribution or rail work occupations) and in these situations is not a recognised skill set in the VET sector. It may also be that having a *skill set* recognised on a statement of attainment provides no additional value over the recognition of the successfully *completed units* on the statement of attainment.

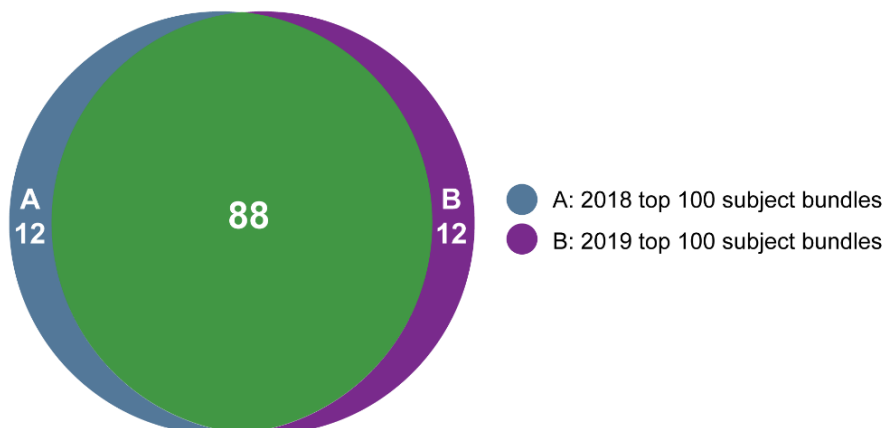
These findings are consistent with earlier work by Stanwick and Siekmann (2019), which showed that training package skill sets are not particularly well utilised in the Australian VET market.

More generally, these statistics bring into question the usefulness of training package skill sets, and whether there is a compelling need for their use in guiding short-course programs of study or annotating statements of attainment.

The most popular subject bundles are relatively stable from year to year

The specific subject bundles utilised are fairly well entrenched, with many of the same bundles appearing in 2019 as in 2018, at least for those bundles with larger numbers of enrolments. An examination of the top 100 subject bundles in 2019 reveals that 88 of these bundles were in the top 100 bundles in 2018 (figure 10), while, of the top 100 bundles in 2019, 99 were in the top 200 from 2018.

Figure 10 Overlap between the top 100 subject bundles in 2018 and 2019



Skills maintenance is an important stream of activity

A number of subjects maintain their currency for a limited period of time. People who need these skills in their workplace are expected to take refresher programs from time to time. This process of re-enrolment in particular units of competency has been referred to as ‘skills maintenance’ (as opposed to skills development for new skills). For example:

- Cardiopulmonary resuscitation (the most undertaken subject bundle) should be refreshed annually, and the first aid certificate (the second most undertaken subject bundle) should be refreshed every three years.⁴
- Construction industry induction – also known as the white card – (the third most undertaken subject bundle) should be updated every two years for people with periods of absence from the construction industry.⁵
- The responsible service of alcohol subject bundle (the fourth most undertaken bundle) should be refreshed periodically; however, the refresh requirements and their associated timeframes vary between the states and territories.
- Annual refresher requirements for rescue and resuscitation skills apply to people working with live electrical panels and switchboards (including the tenth most undertaken bundle).⁶

As a result of these time limits, it would be expected that some of these bundles include a sizable proportion of ‘repeat’ students engaged in skills maintenance rather than skills development.

Independent unpublished analysis from NCVER shows that 44% of students in the top 10 subject bundles in 2019 had previously completed at least one of the subjects in their bundle between 2015 and 2018. The ‘repeated’ subject rates for the top 10 bundles can be seen in table 1.

Table 1 Students in the top 10 subject bundles of 2019 with at least one prior enrolment in the same subject bundles between 2015 and 2018

	Unit codes and titles in the top 10 subject bundles of 2019	2019 enrolments	Prior enrolments in same bundle between 2015 and 2018	
		N	n	%
1	HLTAID001 Provide cardiopulmonary resuscitation	588 811	446 411	76%
2	HLTAID001 Provide cardiopulmonary resuscitation; HLTAID002 Provide basic emergency life support; HLTAID003 Provide first aid	525 618	207 565	39%
3	CPCWHS1001 Prepare to work safely in the construction industry	173 387	4 919	3%
4	SITHFAB002 Provide responsible service of alcohol	157 351	11 964	8%
5	HLTAID003 Provide first aid	135 858	44 690	33%
6	TLILIC0003 Licence to operate a forklift truck	75 152	2 938	4%
7	HLTAID001 Provide cardiopulmonary resuscitation; HLTAID003 Provide first aid	74 715	32 280	43%
	RIIWS204D Work safely at heights	64 856	16 168	25%
9	HLTAID001 Provide cardiopulmonary resuscitation; HLTAID002 Provide basic emergency life support; HLTAID003 Provide first aid; HLTAID004 Provide an emergency first aid response in an education and care setting	58 793	35 659	61%
10	HLTAID001 Provide cardiopulmonary resuscitation; UETDRRF06 Perform rescue from a live LV panel	48 191	39 413	82%

4 Safe Work Australia, First aid in the workplace: Code of Practice, states that ‘Refresher training in CPR should be carried out annually and first aid qualifications should be renewed every three year’, <https://www.safeworkaustralia.gov.au/system/files/documents/1908/code_of_practice_-_first_aid_in_the_workplace_0_0.pdf>.

5 Regulations 316–17, Commonwealth Work Health and Safety Regulations 2011, <<https://www.legislation.gov.au/Details/F2020C00693>>.

6 Regulation 161(4), Commonwealth Work Health and Safety Regulations 2011, <<https://www.legislation.gov.au/Details/F2020C00693>>.

Having the capacity to identify whether a subject was undertaken for the purpose of new skills development or for skills maintenance would seem to be a useful additional feature for future TVA collections.

A suggested area for further research would be the identification of all those VET subjects that are required by a legislative instrument as well as those VET subjects which may indicate that workers have attained appropriate competencies in areas where a lack of proper training could lead to fines on employers and site supervisors.

The majority of subject bundles are ‘mandated’

The majority of subject bundles appear to be either required in legislation, or in codes of practice for particular jobs, or they are strongly ‘encouraged’, with substantial penalties for the employer when staff are found not to have been appropriately trained. This paper has identified three regulatory purposes or roles for subject bundles. They are mandated to ensure people are:

- safe in the workplace (*workplace safety*)
- able to respond to an emergency should one occur (*emergency preparedness*)
- authorised to operate certain equipment or work in certain industries where potential risks of harm exist (*authority to operate*).

Although these purposes are not mutually exclusive, and a bundle may be applicable to more than one purpose, they provide a useful framework for considering the different bundles and the broad role they serve in the labour market.

To group subject bundles under their various purposes, we developed a process to enable us to match patterns in the text appearing in the units of the subject bundles, for example, in the unit code or title. In this way we can identify items for inclusion in our list of one or more of the three ‘purposes’. This pattern-matching approach should be viewed as an indicative categorisation, rather than as definitive: it will miscategorise some units and omit others. Nonetheless, it provides an overall sense of the scale of the categories.

To be included in the *workplace safety* category, the bundle must include:

- a unit code with one of the following prefixes: RIIWHS, MSMWHS, HLTWHS, BSBWHS, ICTWHS, PUAWHS, and PMAWHS (all of which have WHS as their specialisation code) or
- a unit title which includes any of the following phrases: ‘workplace health and safety’, ‘WHS’, ‘occupational health and safety’, ‘OHS’, ‘work health and safety’, ‘safe operation’, ‘safe work practices’, ‘safely access’, ‘safety critical’, ‘food safety’, ‘handle food safely’, ‘safe food handling’, ‘transport and store chemicals’, ‘work in accordance with an issued permit’, ‘undertake manual handling’, ‘hazard analysis’, and ‘HACCP’.⁷

To be included in the *emergency preparedness* category, the bundle must include:

- a unit code with one of the following prefixes: HLTAID, PUAFIR, PUASAR, PUAFER, and PUAEME or
- a unit title which includes any of the following phrases: ‘resuscitation’, ‘life support’, ‘first aid’, ‘defibrillator’, ‘administer oxygen’, ‘breathing apparatus’, ‘firefighting’, ‘fire extinguishers’, ‘recognise and respond to crisis situations’, ‘escape from hazard’, ‘EWP rescue’, ‘rescue from a live LV panel’, and ‘water rescue’.

⁷ Hazard analysis critical control point.

Determining whether a unit functions as an authorisation or licence is more challenging (and may vary across the Commonwealth and eight state and territory jurisdictions) and necessarily requires a substantial amount of time to undertake meticulous regulatory research. Nonetheless, an indicative pattern-matching exercise can be undertaken.

Perhaps most important in this regard is the model Work Health and Safety (WHS) Regulations. Workers cannot perform high-risk work (HRW) unless they are over 18 years and hold the correct HRW licence (for example, scaffolding, dogging, rigging, certain cranes/hoists, forklift operator, reach stacker, certain elevating platforms, boilers and steam engines etc.)⁸. These are linked to VET units that can be studied as a subject-bundle enrolment.

Although the 2011 national WHS law removed some ticket-to-work requirements for low-risk work, it placed a responsibility on the 'person conducting a business or undertaking' (PCBU: typically, a site-level supervisor) for ensuring that staff are properly trained in the operation of plant and equipment and for ensuring worker and public safety. Many PCBUs rely on/require RTO/VET statements of attainment to assure themselves that a worker can, for example, safely use an excavator, without risk to themselves, property or the general public. The WHS legislation includes substantial penalties for corporations and PCBUs if workers are not properly trained. Because of these large penalties, we have included a range of plant and equipment items in this category.

We have also included the units SITHGAM001 (provide responsible gambling services) and SITHFAB002 (provide responsible service of alcohol), as these are regulatory requirements.

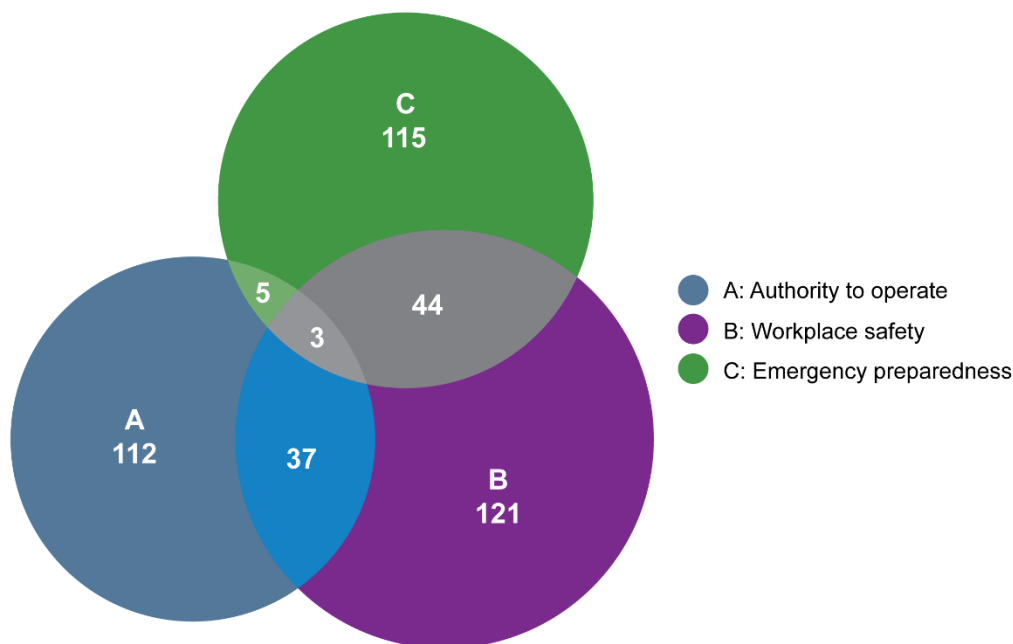
To be included in the *authority to operate* category, the subject bundle must include one or more of:

- a unit that is described as a licence, such as 'licence to operate', 'licence to drive', 'licence to perform', 'licence to erect', or a 'licence to transport'
- a unit that mentions high-risk equipment: 'scaffolding', 'dogging', 'rigging', 'crane', 'hoist', 'forklift', 'elevating work platform'
- a unit that mentions other plant or equipment: 'excavator', 'dozer', 'grader', 'roller', 'front end loader', 'wheel loader', 'skid steer loader', 'backhoe/loader', 'load and unload goods', 'heavy rigid vehicle', 'multi-combination vehicle', 'medium rigid vehicle', 'light vehicle', 'heavy combination vehicle', 'articulated haul truck', 'rigid haul truck', 'quad bikes', 'four wheel drive', '4WD', 'trailer', 'side by side utility vehicle', 'telescopic materials handler', 'pilot or escort oversized and/or overmassed loads', 'operate vehicles in the field', 'chainsaw', 'mobile chipper/mulcher'
- related matters such as 'asbestos', 'firearms', 'weld', 'blasting', 'underground lifting operations', 'control traffic with stop-slow bat', 'traffic management plans'
- the responsible alcohol or gambling services units 'SITHFAB002', or 'SITHGAM001'.

If we apply this framework to the top 602 subject bundles, we find that almost 73% of these bundles are captured (figure 11). The bundles not captured are largely those related to job skills. We can see the degree of overlap between the categories in the following Venn diagram, where the numbers represent the top 602 subject bundles captured through the pattern-matching approach.

⁸ Safe Work Australia, 'High risk work licences', <<https://www.safeworkaustralia.gov.au/description-high-risk-work-licences>>.

Figure 11 Key purposes for the 602 most used subject bundles in 2019



At its narrowest, it could be argued that the subject-bundle enrolments segment of the Australian VET market exists in large part because governments regulate specific VET requirements for a wide variety of jobs (either directly, or implicitly through substantial penalties if a workplace accident occurs and it transpires that the worker was not fully and appropriately trained). Governments were probably not even aware of this activity occurring until the advent of total VET activity, particularly until the 2018 TVA, when these data were explicitly identified for the first time. This raises questions about the extent of regulatory burden and the costs to industry, which are being driven through subject-bundle enrolments in the VET sector. It also raises equity questions over government funding for VET qualifications versus student self-funding of subject-bundle enrolments, in cases where students pay for the training themselves (figure 4, see page 12).

Nonetheless, the VET sector is well placed in the event of governments deciding to mandate training as a prerequisite to certain jobs or working in certain situations. The key feature here is that both the units taught and the training providers are regulated. But this begs the question of how well the VET system assures itself that the competencies on a statement of attainment have been achieved. The VET regulating body focuses on the market segment that covers nationally recognised VET qualifications, where there is significant government funding. The risk is that the regulator's finite resources may constrain its ability to regulate training aimed at minimising the risks to people and property, given that this training takes place through the largely privately funded VET subject-bundle segment.

The 2016 *Strategic industry audit into units of competency that lead to high-risk work licences in Western Australia* (Western Australian Training Accreditation Council 2016) found high levels of non-compliance with assessment standards, resulting in compromised assessment outcomes. This was of critical concern, given the high-risk nature of the work to which the licences applied and the associated risks to the safety of people and property. Although this review was focused on Western Australia, and it occurred some time ago, it demonstrates the need for appropriate oversight on the mandated subject-bundle enrolments by regulators in the VET sector (especially where they are safety-related).

There is potential for NCVET to collaborate with the Australian Skills Quality Authority (ASQA), the Victorian Registration and Qualifications Authority, and the Training Accreditation Council of Western Australia to identify the extent to which the risk-based approaches used in the regulatory agencies are

sufficient for addressing the regulation of the mandated subject-bundle enrolments segment of the Australian VET market.

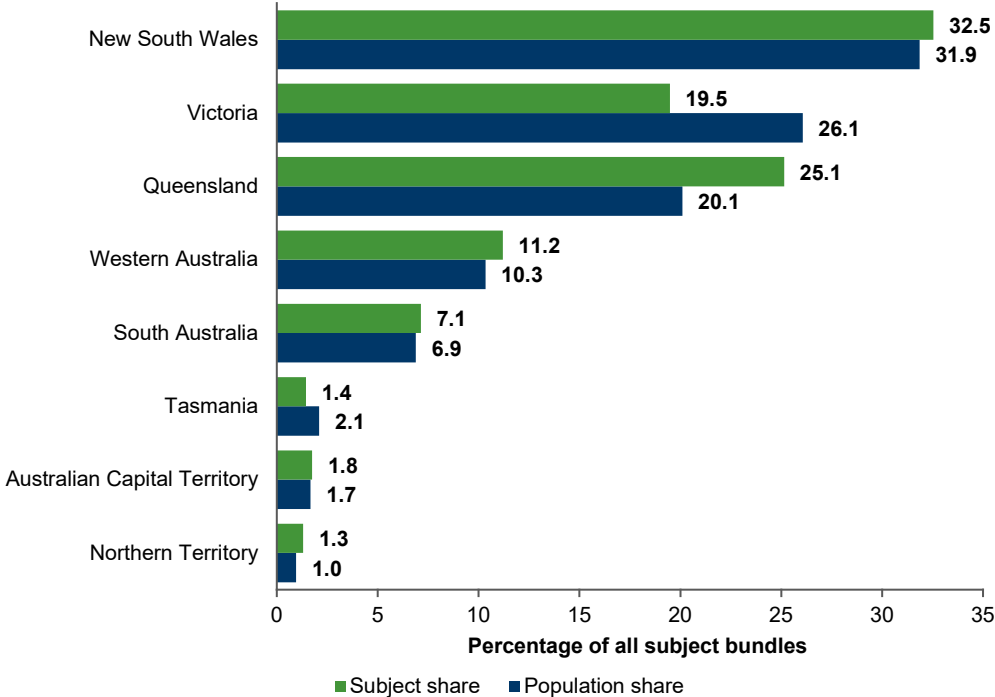
An additional avenue for research would be an international comparison of the extent to which VET systems in other countries are used to deliver subject-bundle enrolments that fulfil mandated safety, emergency preparedness and other authorisation requirements, including an examination of the relative number of student enrolments compared with mainstream VET qualifications. This would answer the question of whether Australia is unique in this regard.

Finally, a corollary of the finding that most units are studied because they are mandated in particular contexts is the observation that many of these subjects do not appear to be central to the skills that are seen to be required for the modern workforce. For instance, in the main, the most popular subject bundles do not appear to be focused on developing new technology and digital literacy skills, nor are they focused on soft skills. There is a role for governments to stimulate training in this area. Of note, under the new \$1b Job Trainer Fund,⁹ funding will be available for accredited courses and short courses. The funding will be prioritised into areas identified by the National Skills Commission as likely to experience job growth. Stanwick and Siekmann (2019) in their analysis of training package skill sets clearly showed that uptake of these courses can be stimulated by an injection of government funds.

State differences in delivery

Setting aside overseas delivery, unknown delivery and delivery in other locations, we can see marked differences in Queensland and Victoria when comparing subject share with population share (figure 12). Queensland students appear to be overrepresented and Victorian students appear to be underrepresented on a per-population basis in the subject-bundle enrolment market for VET.

Figure 12 Comparison of share of subject bundles vs share of population by state/territory, 2019 (%)



⁹ See <<https://www.dese.gov.au/jobtrainer-fund>>.

The structure of the local economy and local labour market has an impact on the subject bundles delivered in a particular state or territory. For example, if we take the Resources and Infrastructure Industry Training Package (training package units beginning with RII in the subject identifier), we can identify 48 RII specialisations that are not delivered in the ACT (which does not have a significant resources industry sector), but which are delivered in at least one other state as a subject-bundle enrolment. In particular, Queensland and Western Australia dominate RII specialisations. This is not surprising, given the size of the resources industry in these two states. By way of example, some of the more popular RII specialisations (as subject-bundle enrolments) are set out in the following count of subject-bundle enrolment units by location of the delivery state (table 2).

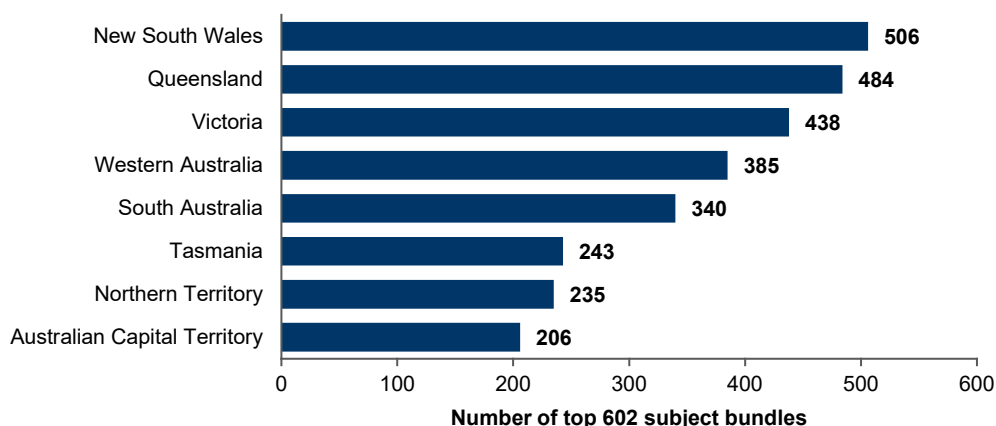
Table 2 Enrolments in resources and infrastructure (RII) related subject bundles by state/territory, 2019

RII specialisation	NSW	VIC.	QLD	SA	WA	TAS	NT	ACT
RIIBEF	137	349	44	114	2 024	14	43	0
RIIBLA	179	432	2 176	0	2 435	0	0	0
RIIERR	5 234	77	30 539	64	5 032	5	164	0
RIIGOV	2 573	31	9 849	10	107	0	0	0
RIIMPO	8 678	6 950	19 122	2 095	8 349	747	597	0
RIIQUA	7	7	23	0	1 961	0	6	0
RIIRTM	1 923	121	128	54	92	28	0	0
RIIUMM	0	0	0	0	2 220	4	0	0
RIIUND	676	0	687	0	732	2	0	0
RIIVEH	414	121	7 360	373	10 523	19	274	0

Conversely, there is only one RII specialisation delivered in the Australian Capital Territory, but which is not delivered in every other state: RIIWMG¹⁰.

Furthermore, of the top 602 subject bundles, which represent 90% of the RTO-student pairs, their availability varies by state: 506 are delivered in New South Wales, 484 are delivered in Queensland, 438 are delivered in Victoria, 385 are delivered in Western Australia, 340 are delivered in South Australia, 243 are delivered in Tasmania, 235 are delivered in the Northern Territory and 206 are delivered in the Australian Capital Territory (figure 13).

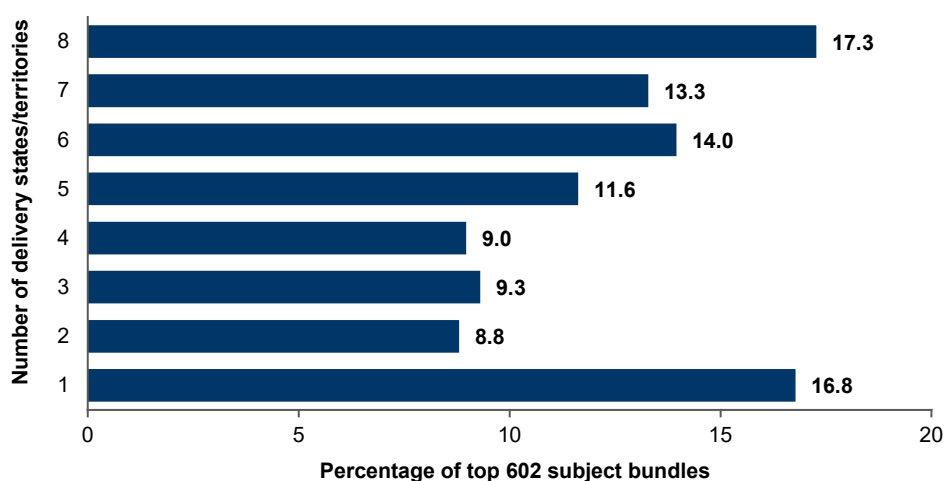
Figure 13 Top 602 subject bundles delivered in each state/territory, 2019



Of the top 602 subject bundles, 16.8% (101) were delivered in just one state, 8.8% (53) in two states, 9.3% (56) in three states, 9.0% (54) in four states, 11.6% (70) in five states, 14.0% (84) in six states, 13.3% (80) in seven states, and 17.3% (104) were delivered in all eight Australian states and territories (figure 14).

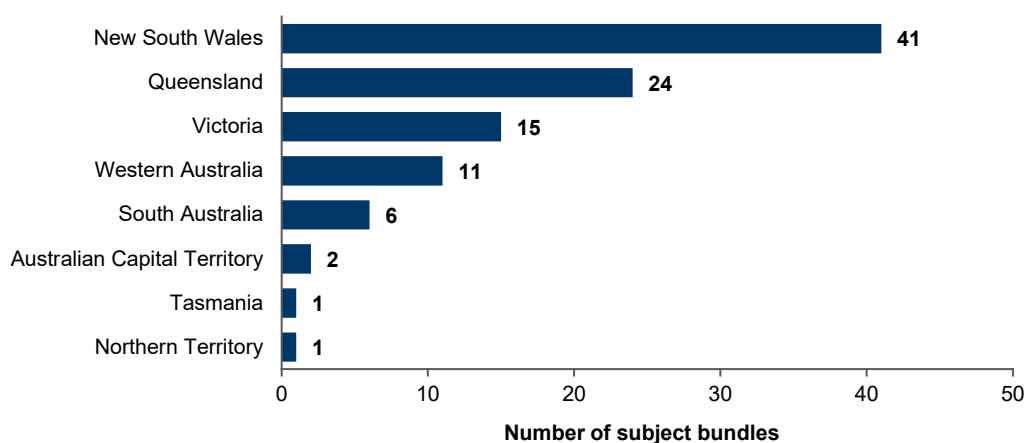
¹⁰ This specialisation was not delivered in South Australia and Tasmania.

Figure 14 The number of delivery states/territories for the top 602 subject bundles, 2019 (%)



If we look at the 101 subject bundles delivered in only one state or territory, 41 are delivered in New South Wales, 24 in Queensland, 15 in Victoria, 11 in Western Australia, six in South Australia, two in the Australian Capital Territory, and one each in Tasmania and the Northern Territory (figure 15).

Figure 15 Numbers of subject bundles delivered in only one state/territory, by state/territory, 2019



In the remainder of this paper, we will explore the following drivers for the following state-by-state differences:

- direct state government funding for subject-bundle enrolments
- different regulatory requirements in some states/territories
- differences in mainstream VET qualifications funding
- differences in state economies and labour markets.

State government funding plays a small but important role

While government funding is not large by comparison with private funding, there are a small number of subject bundles where governments are the only funder, or they are the predominant funder. First, however, an examination of where the government-funded subject-bundle enrolments are delivered is warranted. Figure 16 looks at Commonwealth and state general funding (which is administered by state governments) and state specific funding: 64.9% of government-funded subject bundles are delivered in New South Wales, with 14.1% in Victoria and 5.3% in Western Australia.

Figure 16 Proportion of all government-funded subject bundles by state/territory, 2019 (%)

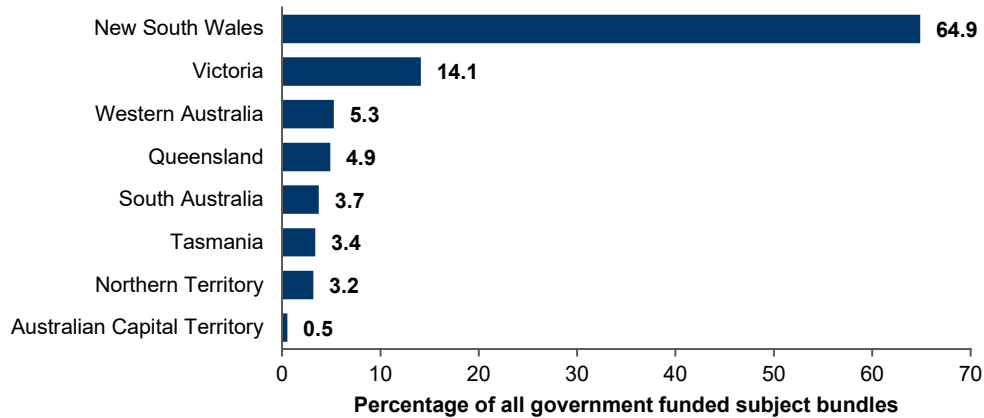
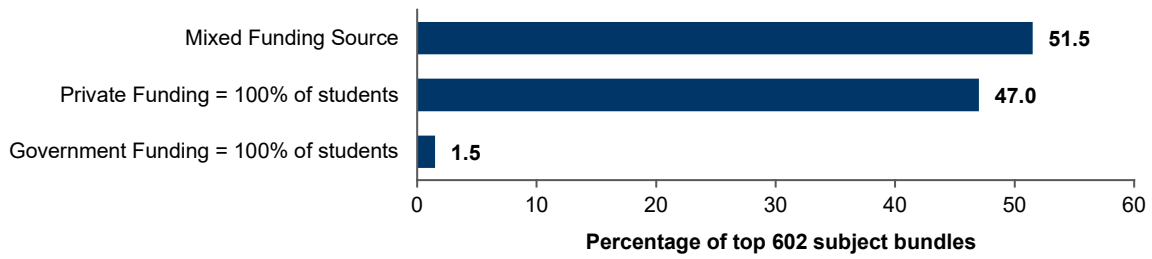


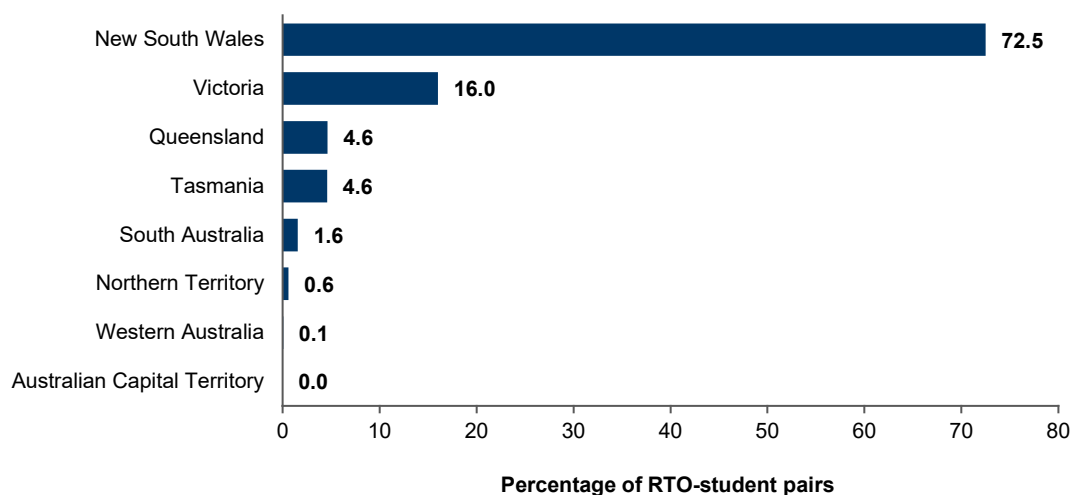
Figure 17 looks at the proportion of subject bundles in which governments are the sole or are a large majority funder of the students undertaking those bundles. Governments are the sole funder of 1.5% of the top 602 subject bundles.

Figure 17 Top 602 subject bundles by funding source, 2019 (%)



Focusing on the subject bundles where 90% or more of the students undertaking that bundle were government-funded: 28 such subject bundles appeared in the top 602 bundles. These 28 bundles had 9643 RTO-student pairs: 72.5% of these RTO-student pairs received training delivered in New South Wales, 16.0% in Victoria, 4.6% in Queensland, 4.6% in Tasmania and 1.6% in South Australia. Less than 1% each were delivered in the Northern Territory and Western Australia (figure 18). There were none in the Australian Capital Territory. Only New South Wales and Tasmania had RTO-student pairs in these subject bundles in excess of their population share.

Figure 18 RTO-student pairs by state/territory for top 28 subject bundles that were 90% or more government-funded, 2019 (%)



Looking at the subject bundles that attracted 90% or more government funding, we can see that they span the following domains, noting in particular the number of bundles that relate to foundation skills and basic work skills:

- foundation skills and basic work skills (bundles: 222¹¹, 260, 344, 373, 392, 496, 511, 535, 548, 564, 574)
- mental health (250, 495)
- road accidents (340)
- workplace safety (401)
- medical records (412)
- agriculture (425)
- hospitality (439, 505, 575)
- accounting (469, 556)
- aviation (486)
- beauty (530)
- automotive (561)
- information technology (571, 580)
- leadership (590).

Importantly, when a state government is the primary funder of a subject bundle, all of the students taking that subject bundle will typically be in the state making that decision (table 3). This indicates that government funding plays a small but important role in specifying the make-up of some of the high-use subject bundles.

Table 3 Subject bundles where 90% or more of the students in the bundle were government-funded and where the training was delivered primarily in only one state/territory, 2019 (%)

BUNDLE_ID	Primary decision-making jurisdiction	Per cent RTO-student pairs delivered in state
222	Victoria	100.0
250	New South Wales	100.0
260	New South Wales	100.0
340	New South Wales	100.0
344	New South Wales	100.0
373	Commonwealth	-
392	Tasmania	100.0
401	New South Wales	100.0
412	New South Wales	100.0
425	New South Wales	100.0
439	New South Wales	100.0
469	New South Wales	97.4
486	New South Wales	100.0
495	New South Wales	100.0
496	Victoria	100.0
505	New South Wales	100.0
511	New South Wales	100.0

¹¹ See the appendix in the support document for details accompanying the subject bundle number.

BUNDLE_ID	Primary decision-making jurisdiction	Per cent RTO-student pairs delivered in state
530	New South Wales	99.6
535	Commonwealth	-
548	New South Wales	100.0
556	New South Wales	96.8
561	New South Wales	100.0
564	Victoria	100.0
571	New South Wales	100.0
574	Commonwealth	-
575	New South Wales	100.0
580	New South Wales	100.0
590	New South Wales	72.3

State differences in regulatory requirements

Variation in state regulatory arrangements also drives enrolments in subject bundles.

For example, while most states require workers in gaming venues to complete a unit of competency in responsible gaming services, South Australia also requires them to complete a unit called ‘attend gaming machines’ as part of ‘basic gaming training’. As a consequence, the bundle of two subjects – comprising provide responsible gambling services and attend gaming machines – is only delivered in South Australia.¹² Another example can be found in real estate unit requirements. In 2019, to be an assistant real estate agent required five units of competency in New South Wales, three in Victoria, and seven in Queensland.¹³

A further example is firearms requirements in Queensland, where a number of subject bundles are predominately, or only, delivered in Queensland because of training requirements under the *Queensland Weapons Act 1990*. Completion of accredited units is required before a range of weapons licences can be issued in Queensland.¹⁴

State differences in VET qualifications funding

Differences in mainstream VET qualification funding also appears to play a role. Again, if we look at the real estate units (SUBJECT_IDs beginning with the prefix CPPDSM or CPPREP), we can see substantial differences in the state-by-state VET markets, including how this affects subject-bundle enrolments:

- Governments funded 30% of the real estate subjects studied in New South Wales (70% were privately funded), and subject-bundle enrolments accounted for 9% of the real estate subjects studied in the state (N = 124 233 subjects)
- Governments funded 33% of the real estate subjects studied in Victoria, and subject-bundle enrolments accounted for 33% of the subjects studied in the state (N = 38 243)

12 <<https://www.ceg.net.au/basic-gaming/>>; <<https://www.chts222.com.au/basic-training---gaming.html>>.

13 <<https://www.service.nsw.gov.au/transaction/apply-property-certificate-registration>>; <<https://www.consumer.vic.gov.au/licensing-and-registration/estate-agents/agents-representatives>>; <<https://www.qld.gov.au/law/laws-regulated-industries-and-accountability/queensland-laws-and-regulations/regulated-industries-and-licensing/regulated-industries-licensing-and-legislation/property-industry-regulation>>; <<https://www.qld.gov.au/law/laws-regulated-industries-and-accountability/queensland-laws-and-regulations/regulated-industries-and-licensing/regulated-industries-licensing-and-legislation/property-industry-regulation/get-a-property-industry-licence-or-registration/real-estate-agent-licence-or-registration/register-as-a-real-estate-salesperson>>.

14 <<https://training.gov.au/Training/Details/10618NAT>>; see subject bundles 113, 216 and 504 in appendix A in the support document>.

- In Queensland (the state with the largest number of real estate subjects studied in 2019), government funded less than 1% of real estate subjects, and subject-bundle enrolments accounted for 46% of the real estate subjects studied in Queensland (N = 156 616).

A further explanation might be that our focus on the top 602 bundles disadvantages the smaller states. An idiosyncratic approach (see gaming example in South Australia above) to regulation or funding in a small state is less likely to result in a subject bundle being reported in the top 602 bundles nationally when compared with an idiosyncratic approach in a larger state.

These subject bundles are micro-credentials

The NCVET paper 'Focus on micro-credentials' (2018) describes micro-credentials as blocks of learning that are smaller than the volume of learning associated with a degree, diploma, certificate or other lengthy accredited training. By this definition, the subject bundles constructed from subject-bundle enrolments are micro-credentials.

Of note, most of these bundles are being funded by the private sector, either by the students themselves or by their employer. Some, however, maybe indirectly funded through government. For example, it is possible that an independent agent such as an employment service provider paid for the training (which would appear as fee-for-service), even though they would have originally received funding from the government for these services. Another example are the training levies collected by the construction industry in some states and used for training; these would appear as fee-for-service. While these levies are collected from businesses operating in the construction industry, it is ultimately the consumer who pays them (through the cost of the project) and in this sense these can be seen as a tax. The revenues raised are then distributed as a subsidy to individuals and firms undertaking training.

While only a few of these popular subject bundles have been recognised as a VET skill set, it would appear that industry actors and/or individual students already see many of these bundles as a 'credential' of value, one for which they are willing to pay.

Many subject bundles are backed by a legislative requirement, where state/territory and Commonwealth parliaments have sought an assurance that the people doing particular jobs are appropriately trained for those jobs, that they are safe in their work environment, and/or that they have the skills to respond to an emergency should one occur.

It should be noted that while some 2 633 122 students were enrolled in subject bundles in 2019, only 76 565 students were enrolled in training package skill sets. From this, it can be argued that subject-bundle enrolments represent a more important form of short-form study (or micro-credential) than training package skill sets.

Does government need to do more?

Despite the large numbers of students engaged in subject-bundle enrolments, it would appear that the market is operating effectively through private funding and also being responsive to industry's regulatory and safety requirements. There appears therefore to be no compelling need for government to further intervene in the management of this market than currently occurs. A caveat to this may be the need to stimulate training in areas where there will be a demand for skills in the future, as previously discussed, and there may also be a need for VET regulatory bodies to review their risk-based approaches in this segment of the VET market.



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Appendix: Categorisations of ‘who pays’ from the Student Outcomes Survey

NCVER’s 2020 National Student Outcomes Survey included the following question and response categories:

How was the course paid for?

1 = ‘My employer paid’

2 = ‘My partner/my parents/another family member/a friend paid’

3 = ‘I paid the fees outright’

4 = ‘I took out a Commonwealth VET student loan’

5 = ‘I paid using a loan or payment plan offered by the training provider’

6 = ‘I did not need to pay a fee (paid for by government)’

7 = ‘Through secondary school’

9 = ‘Community/volunteer organisation paid’

10 = ‘Other’

For the purposes of this project, the following condensed categories were used for reporting:

1: Employers pays

2–5: Individual pays

6–7: Government pays

9–10: Community and other pays



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