

The role of educational institutions in fostering vocations: support document

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Introduction

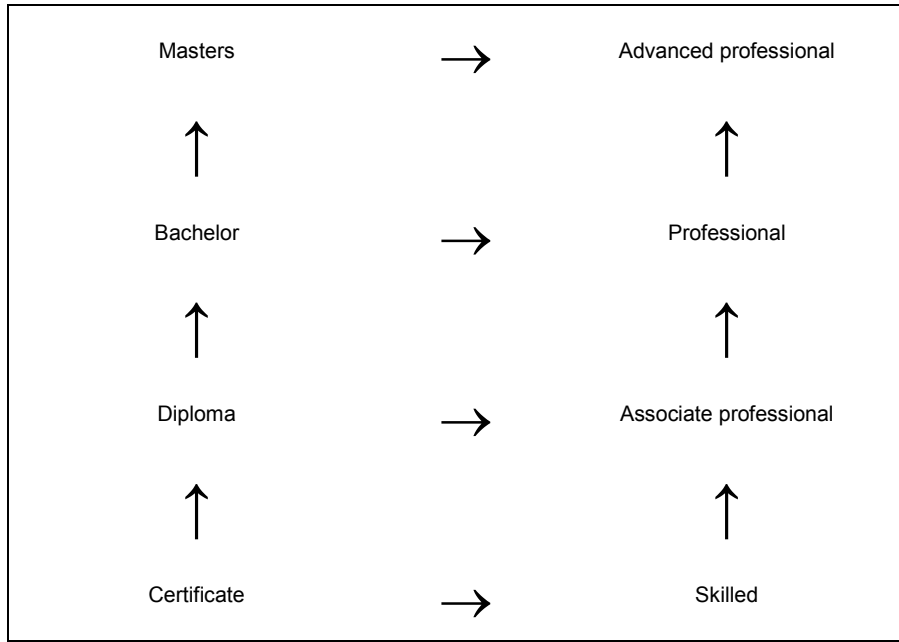
This support document has been prepared as part of the National Centre for Vocational Education Research Consortium Research Program: ‘Vocations: the link between post-compulsory education and the labour market’. There are three strands in the project: the first focuses on entry to vocations and how to improve occupational and further study outcomes from entry-level vocational education and training. The second focuses on the role of educational institutions in fostering vocations and how to improve occupational outcomes and educational pathways with VET and between VET and higher education. The third focuses on understanding the nature of vocations, their potential improvement and the development and use of skills in four broad industry areas. This support document is part of Strand 2. It explores available data and their usefulness in understanding patterns of movement and student outcomes within education, and between education and work.

In the simplest model of education in wealthy countries it is students’ progress from compulsory education to a tertiary education program which prepares them for a lifelong career. This simple model is problematised and complicated by at least three factors. In the first place there is broad agreement that students should be able to transfer from one tertiary education program and sector to another, and further, that they should be able to transfer credit from one program and sector to another. Such transfer of enrolment and credit is more feasible in countries with generalist tertiary education such as Aotearoa New Zealand, Canada, the UK and the US than in countries which distinguish sharply between different types of tertiary education such as Australia. Nonetheless, even in Australia there is a general view that students should be able to transfer enrolment and credit from one tertiary program to another, and in particular, between vocational and higher education.

A second factor that complicates a simple model of educational and occupational progression is that just as students should be able to transfer between different types of programs, workers should be able to transfer between different types of jobs, or occupations. There is a general view that people should be able to change occupations as their interests and circumstances change. There is also a view that with sufficient effort and aptitude people should be able to progress to more rewarding jobs. A third factor that problematises the simple model of educational and occupational progression is that even if people wanted to stay in the same job for their whole lives, the economy changes so much within the period of peoples’ working lives that they need to change their jobs and probably their occupation to remain productive in the changed economy.

The working paper raised three broad questions that might be answered statistically. First, what is the nature and extent of peoples’ educational transfers over their lives? Secondly, what is the nature and extent of peoples’ occupational transfers over their lives? And the third broad question is what is the relation between people’s educational and occupational transfers? These questions are illustrated diagrammatically in Figure 1. The questions might be: what is the size of each of the arrows shown in Figure 1? Figure 1 assumes that people transfer from tertiary education to occupations, but an important question is the extent of movement from occupations to tertiary education. And likewise Figure 1 assumes that all educational and occupational transfers are progressions upwards, but another important question is the extent of horizontal and downward or reverse transfer.

Figure 1 An idealised model of educational and occupational progression



Furthermore, we are interested not only in the nature and extent of educational and occupational transfers within the same field of education and occupation, but the nature and extent of transfers between fields of education and occupations. For example, to what extent do people undertake tertiary education to transfer from one occupation to another, to re-enter the workforce and to progress within their current occupation?

Collating the whole population's educational and occupational transfers

These questions and more could be answered readily if peoples' educational participation and attainment and their employment throughout their lives could be collated and analysed. Since people change their names and names are ambiguous these data could be extracted more readily if everyone were allocated a unique identity number such as a Medicare number. The US' social security number has been used for this purpose. The federal social security administration started issuing social security numbers in 1936 to track citizens' accounts under the New Deal social security program. Social security numbers are now used mainly to track US citizens for tax purposes, and numbers are routinely allocated to children at birth since parents must quote their children's social security number to claim them as tax deductions. The US military uses the social security number as an identity number and some employers, hospitals, schools and credit providers also use the social security number as an identity number. Other institutions generate their own identity numbers but also collect their clients' social security number. The near universal allocation of social security numbers to US citizens and its common use by public and private bodies has supported several studies tracking peoples' life stages. However, privacy legislation now restricts educational institutions to using the last four digits of the social security number¹.

There is no realistic prospect of Australia having universal citizen identity numbers in the foreseeable future. Useful progress is being made in introducing universal tertiary student identity numbers, but it will be several years before they are implemented and a generation before enough data are collected to answer the questions about educational and occupational transfers we are asking. An alternative to collecting data about the whole population is to collect data about a sample of the population structured to represent salient characteristics of the population. One possibility would be to collect data about a sample from employers' and institutions' records augmented by their responses to questions about their educational and occupational transfers. It would thereby be possible to assemble the sample's educational and occupational histories which could be analysed for educational and occupational progression. There are formidable practical difficulties with such an approach and there is no such sample available to inform educational and occupational transfers in Australia.

An alternative is to collect data from a sample of the population each year. There are two such longitudinal surveys of interest, the Longitudinal Survey of Australian Youth and the Household, Income and Labour Dynamics in Australia survey.

¹ This information was provided to the joint TAFE Directors Australia/LH Martin Community College mission in April 2011.

Longitudinal Surveys of Australian Youth

The Longitudinal Surveys of Australian Youth started surveying young people from 1995. Each survey starts when young people turn 15 and continues annually for 10 years until they reach 25. The surveys have collected data from 5 groups or cohorts, those who were in year 9 in 1995 and those who turned 15 in 1998, 2003, 2006 and 2009 (NCVER 2010). This survey series is therefore limited to collecting information about young peoples' initial tertiary education and occupation: it doesn't collect information on their educational or occupational experiences older than 25 and thus for most of their working lives.

The Longitudinal Surveys of Australian Youth collect much information about respondents' demographics, schooling, post school education and their satisfaction with it, any change in their post school education and the reasons for the change, how they found their current job, their current job and its pay, opportunities for training and promotion, job training and its benefits, changes in their job skill and level of responsibility, whether they are looking for work and whether they left their job and why.

The Longitudinal Surveys of Australian Youth may therefore provide valuable insights into young peoples' initial transfer from school to post school education and work. They may inform the extent to which young people initially transfer between fields of study and occupations because it collects information on respondents' school subjects, post school study qualification type and main area of study, and occupation. They may also provide information on why respondents followed their initial path because it has several items on respondents' perception and satisfaction with school, post school study, their job and their job training.

Household, Income and Labour Dynamics in Australia surveys

The Household, Income and Labour Dynamics in Australia surveys started in 2001 with a survey of 7,682 households and 13,969 individuals. Adults are surveyed annually and by 2009 the survey obtained responses from 7,234 households and 9,245 of the original respondents. Some respondents are interviewed in some years, are not interviewed in another year but are interviewed in a subsequent year. Some 7,721 have been interviewed in all 9 years so far (Melbourne Institute of Applied Economic and Social Research, 2011, p. 14). The survey asks respondents about their health, family, living arrangements, finances, education and employment.

Of particular interest to this project is the information the survey collects on the level, title and description of any current tertiary enrolment. However, in statistical reports reviewed so far only respondents' level of education is reported. The survey also collects respondents' current occupation and main duties; the purpose, place, time and length of work related training; and the extent to which work related training could be used in a new job with a different employer. This, with data the survey collects on the number and level of the qualifications respondents previously completed and their employment status since leaving full time study, provides useful information on respondents' transfers between education and work over a decade.

However, the Household, Income and Labour Dynamics in Australia surveys are necessarily limited by the size of the questionnaire. While the surveys collect reasonably full information about respondents' current study, they collect only the number and level of qualifications previously completed by respondents: it does not collect the dates when they completed their previous qualifications nor their field of education. Likewise, while the surveys collect reasonably full information about respondents' current employment, job training and job seeking, they collect only the periods of their earlier periods of employment and unemployment: it does not collect their previous occupations and job training. So it is possible to construct only the broadest outline of respondents' educational and occupational transfers before the 10 years covered by the survey.

Because respondents are of different ages it may be possible to draw some conclusions about peoples' educational and occupational transfers at different life stages by constructing a cross sectional study. For example, one could examine the educational and occupational transfers from 2001 to 2009 of nurses aged 15 to 24, 25 to 34, 35 to 44, 45 to 54 and 55 to 64 and 65 years and over. However, depending on how narrowly the age and occupational groups are defined a cross sectional study may reach the necessary limit in the number of respondents in the Household, Income and Labour Dynamics in Australia surveys. If there are modest numbers of personal care attendants, enrolled nurses and registered nurses in the survey aged 55 to 64 any observation about occupational progression of 55 to 64 year old nurses may be approximate. Furthermore, there are likely to be few 55 to 64 year old nurses who are studying so any observation of educational and occupational progression of nurses in this age group is likely to be very approximate.

Longitudinal studies may be supplemented by surveys of the whole population, the preeminent one being the Australian census.

Australian census

The Australian Census of Population and Housing has been taken every 5 years since 1961 and the 2011 census will be taken on Tuesday 9 August. The census collects a number of data of interest. The census has collected peoples' current study since at least 1911 and asks what type of educational institution the person is studying at. This is the question and tertiary education options in the 2006 and 2011 censuses:

- 25 What type of educational institution is the person attending?
Tertiary institution:
 Technical or further educational institution (including TAFE Colleges);
 University or other higher educational institution;
 Other educational institution.

Since at least 1911 the census has asked peoples' highest year of schooling. From 1971 the census asked people about the highest qualification they completed: its name, level, main field of study, the name of the institution and when it was completed. From 2006 the Australian Bureau of Statistics changed two questions about peoples' highest qualification:

(24) In 2006, the question asking at which institution was the person's highest qualification obtained was removed, as evaluation of the use of this question during processing found there was little or no benefit in it being asked. In 2006, the response options for the year qualification completed question was altered to a choice of "Yes, before 1998" or "No, 1998 or later", with 1998 being the year the Australian Qualifications Framework was introduced. This has been continued for the 2011 Census. (ABS, 2011, p.73)

Since at least 1911 the census has asked about peoples' labour force status, occupation and their employer's name, address, size, industry and main product. Since 1986 the census has asked about peoples' main tasks. The questions of interest and the censuses in which they were asked are shown in Table 1.

Table 1 Census questions 1981–2011

Item	1981	1986	1991	1996	2001	2006	2011
Current study	✓	✓	✓	✓	✓	✓	✓
Current study – type of institution	✓	✓	✓	✓	✓	✓	✓
Highest level of education achieved					✓	✓	✓
Highest level of education – where					✓	✓	✓
Highest qualification – name	✓	✓	✓	✓	✓	✓	✓
Highest qual – field of study	✓	✓	✓	✓	✓	✓	✓
Highest qual – name of institution	✓	✓	✓	✓	✓		
Highest qual – year obtained	✓	✓	✓	✓	✓		
Highest qualification – obtained before 1998 or 1998 or after						✓	✓
Highest qualification – name	✓	✓	✓	✓	✓	✓	✓
Highest qualification – name	✓	✓	✓	✓	✓	✓	✓
Occupational status	✓	✓	✓	✓	✓	✓	✓
Occupation	✓	✓	✓	✓	✓	✓	✓
Occupation – main tasks		✓	✓	✓	✓	✓	✓
Occupation – employer's name	✓	✓	✓	✓	✓	✓	✓
Occupation – employer's address	✓	✓	✓	✓	✓	✓	✓
Occupation – employer's size	✓	✓	✓	✓	✓	✓	✓
Occupation – employer's industry	✓	✓	✓	✓	✓	✓	✓
Occupation – employer's main product	✓	✓	✓	✓	✓	✓	✓
Income	✓	✓	✓	✓	✓	✓	✓

Source: ABS (2011, pp. 70-1) Appendix 4 Census topics 1911–2011.

While the census asks a number of questions of interest by collecting information only about peoples' highest previous qualification the census doesn't collect much information about peoples' educational history. Neither does it collect much information about peoples' employment history. Nonetheless, a quasi-longitudinal study may be undertaken by constructing synthetic cohorts.

Because the census has been taken every 5 years since 1961 it is best to construct cohorts of people in age ranges of 5 years or multiples of 5 years. Thus, one may construct a cohort of people aged 15 to 19 in 1961. By the time of the next census in 1966 this cohort would be 5 years older, in the age range 20 to 24 years. By the next census in 1971 the cohort would be aged 25 to 29. By the time of the 2006 census this first cohort is 60 - 64 years old. One may then construct a second cohort which is aged 15 to 20 at the time of the 1996 census. By the time of the 1971 census the second cohort would be 20 to 24 and so on until the 2006 census when cohort 2 is aged 55 to 59. One may thereby construct 10 cohorts with data from 1 to 10 censuses. This is shown in Table 2.

Table 2 Hypothetical synthetic cohorts constructed for the census 1961–2006

Age range	1961	1966	1971	1976	1981	1986	1991	1996	2001	2006
15–19	1	2	3	4	5	6	7	8	9	10
20–24		1	2	3	4	5	6	7	8	9
25–29			1	2	3	4	5	6	7	8
30–34				1	2	3	4	5	6	7
35–39					1	2	3	4	5	6
40–44						1	2	3	4	5
45–49							1	2	3	4
50–54								1	2	3
55–59									1	2
60–64										1

By examining the current study and occupation of cohort 1 at each census one could build up a picture of the cohort's educational and occupational progression from aged 15 to 19 to aged 60 to 64. The census asks about peoples' current study and occupation on the evening of completing the census and thus does not collect peoples' study over the 5 years since the last census. However, by observing changes in the cohort's highest qualifications between censuses one may get a reasonable idea of their educational progression from one census to another. This may be associated with their occupational progression from one census to another. Similar synthetic cohort analyses may be conducted for the remaining cohorts, but over progressively fewer censuses and thus for progressively shorter time spans. Nonetheless, one may compare the educational and occupational progressions of cohorts 1 and 2 from the age ranges 15-19 to 55-59, of cohorts 1, 2 and 3 from the age ranges 15-19 to 50-54, and so on. This would allow one to examine how educational and occupational progressions have changed for an age group over time.

Rather more information may be obtained from relevant Australian Bureau of Statistics' (ABS) surveys, particularly the Survey of Education and Training.

ABS surveys

Survey of Education and Training

The ABS has conducted surveys of households about education and training every four years since 1989. The most recent survey was conducted in 2009 and the next is planned for 2013. Because of changes in the method, scope and classification standards of the survey the Australian Bureau of Statistics (2009, p.16) advises that data are reasonably comparable only from 1993 to 2005. The 2009 survey was conducted by personal interview from March to June. The Bureau surveyed approximately 13,200 households and got full responses from 23,807 people. The survey was of people aged 15 to 74 years, but most questions were asked of people aged 15 to 64 years.

The 2009 survey collected respondents' current labour force status, occupation, occupation industry, size of employer, duration of current employment, duration of current occupation, income and any job seeking activity. It also collected their participation in learning related to work in the last 12 months: its broad field, institution and location.

The bureau adopted the international classification of learning activities released in July 2009 which distinguishes between formal, non formal and informal learning. Formal learning is structured, taught learning in institutions and organisations and leads to a recognised qualification issued by a relevant body. Non-formal learning is structured and taught but does not lead to a recognised qualification. Informal learning is unstructured and not institutionalised.

The survey collected respondents' highest year of schooling and their current learning by type, broad field, level and reason for undertaking education. It also collected respondents' 15 highest qualifications: their order of recency, year completed in year ranges, whether studied in the last 12 months, level, broad field, institution or organisation enrolled, and their all and main reasons for studying. The Survey of Education and Training thus allows one to analyse respondents' educational transfers between level and broad field by year range. However, the survey collects data on respondents' current and previous study by broad field of education, at the 2-digit level. This distinguishes between education and health which are broad fields coded with 2 digits, for example, but not between nursing and medicine which are narrow fields distinguished by codes with 4 digits. The survey collects only current occupation so educational transfers can't be related to occupational transfers. However, the survey collects the level and field of the highest educational attainment of respondents' parents and other socio-economic characteristics, so one could examine some inter-generational effects.

Another survey of interest is the Australian Bureau of Statistics' Survey of Education and Work.

Survey of Education and Work

The Australian Bureau of Statistics has conducted surveys of households about education and work or similar surveys annually since 1964. The most recent survey was conducted in May 2011. The survey is conducted by face to face and telephone interviews. About 39,800 interviews were completed in 2010. Like the Survey of Education and Training, the Survey of Education and Work was of people aged 15 to 74 years, but most questions were asked of people aged 15 to 64 years (ABS 2010).

The survey of education and work collects respondents' age group in 5 year ranges, labour force status, duration of current job, current occupation and occupation of work of last job, current industry and industry of work of last job. Since the survey of education and work is conducted as a supplement of the monthly Labour Force Survey data items in the Labour Force Survey are also available for the Survey of Education and Work. This adds considerable detail about respondents' current work but nothing about their previous work. The Survey of Education and Work also collects respondents' previous and current year study by type of institution, level and broad field and highest educational attainment level, main field and year completed.

Since the Survey of Education and Work is conducted annually it normally provides more current data than the survey of Education and Training which is conducted every four years. Since the Survey of Education and Work or a similar survey has been conducted since 1964 it may provide more longitudinal data than the Survey of Education and Training which has been conducted since 1989, although care would have to be taken to account for changes in survey method, scope and classification standards. The Survey of Education and Work and its associated Labour Force Survey contain much more information on respondents' current labour force activities than the Survey of Education and Training. However, the Survey of Education and Training collects data on up to 15 qualifications held by respondents and so is a much better source of information on educational transfer. Like the Survey of Education and Training, the Survey of Education and Work collects data on respondents' current and previous study by broad field of education, at the 2-digit level.

We now examine relevant sources of data from the vocational and higher education sectors.

VET sector data

VET enrolments

The National Centre for Vocational Education Research administers the national VET provider collection which is an administrative collection of publicly funded vocational student enrolments, privately funded vocational students in public providers, and the national apprentice and trainee collection which is an administrative collection on apprentices and trainees and their employers. These collections have been collected at least annually since 1994, although the collections' scope and data classifications have changed over the years.

In addition to data on current enrolments these collections include data on students' highest school level completed, the year of their highest school level completed and the level of one or more prior educational qualifications. The national VET provider collection collects students' main reason for studying, the occupation for which they are being trained and their current labour force status. The national apprentice and trainee collection collects a number of items on apprentices' and trainees' employment and employers.

VET enrolment collections include data on the levels of vocational students' prior qualifications, but not their number since students may have multiple prior qualifications of the same level, and not their field of education nor when they were completed. These collections are therefore of limited use in analysing students' educational progression.

VET Student Outcomes Survey

The Student Outcomes Survey surveys a random sample of students who completed a module or a qualification in the previous year. The survey has been collected annually since 1997 although its scope has changed over the years. In alternate years the sample is big enough to analyse outcomes at the level of institutions and in other years the sample is of medium size. Outcomes data are collected by a mail out survey as at the last Friday in May and thus report outcomes approximately 6 months after completing the module or program. State training authorities attach demographic data to each record.

The student outcomes survey asks respondents several questions about respondents' training and their satisfaction with it, and collects respondents' highest level of schooling before they started their training, the number of prior qualifications they had completed before their training, their main reason for training, whether their training helped them achieve their main reason, whether they gained any job related or personal benefits from their training, the relevance of their training to their main job at the time of completing the survey, and the level and type of institution of any subsequent study they undertook. The survey also collects information on respondents' labour force status and employment before they started their training and at the time of completing the survey approximately 6 months after completing it: their occupation and main tasks, their employers' industry and their earnings.

The student outcomes survey collects valuable information on the immediate benefits and outcomes of publicly funded vocational education but little information on graduates' education and work much before or after their training

Down the Track survey

In September 2004 the National Centre for Vocational Education Research surveyed 15-24 year old graduates who had completed the student outcomes survey in 2002 and thus had completed their training in 2001. Although it is not entirely clear from the reports of the survey, it appears that it collected similar data as the student outcomes survey, 2 years later. This is still quite soon after completing training and thus does not report students' medium and longer term educational and occupational transfers.

Apprentice and Trainee Destination survey

In 2008 the National Centre for Vocational Education Research surveyed a random sample of apprentices and trainees who left their training between October and December 2007. Respondents were asked the level and type of institution of any qualification they had enrolled in since leaving their training and whether it related to their apprenticeship or traineeship. Respondents were asked to state as at 26 September 2008 and thus approximately 9 months after they left their training their labour force status, earnings, whether and why they had changed employers, their occupation and main tasks, their employer's industry, the relevance of their training to their current job, the usefulness of their apprenticeship or traineeship skills to their main job and whether and why they were looking for different work.

The apprentice and trainee destination survey thus was similar to the Student Outcomes Survey in the information it provides on students' educational and occupational progression.

We now examine higher education enrolment data.

Higher education enrolment data

The Australian Government Department of Education, Employment and Workplace Relations collects administrative data on higher education enrolments from each institution. Data supplied by universities is mostly complete and accurate. Data supplied by other higher education providers tends to be less complete, typically restricted to students about whom the Australian Government requires regular individual reports: international students and domestic students who take out a Government loan or are awarded a Government scholarship. However, universities enrol approximately 95% of all higher education students and so data published by the Department is reasonably complete.

The Australian Government's higher education statistical collection collects eight data elements relevant to students' tertiary education pathways (Table 3). Reports of data element 327 – new basis for admission to current course – are not accurate for at least two reasons. First, because Australian universities' admissions are dominated by the Australian tertiary entrance rank derived from secondary education; many students who have completed both secondary education and a vocational program are likely to be reported as being admitted on the basis of their secondary education. Secondly, institutions have inconsistent and not universally reliable ways of collecting these data: some collect them from students, some collect them from staff (though usually not the staff who decided the student's admission), some derive them from students' prior educational attainment and some report the coding of their State tertiary admissions centre.

Data element 493 provides each student's highest educational participation prior to commencement. There is a limitation and a problem with this data. The limitation is that it records only each student's highest educational participation. So a student who started the first year of a bachelor's program, completed a vocational award program and then started another bachelor's program would have their highest prior educational participation reported as an incomplete higher education program: their completed vocational program would not be reported. The problem is that the final year of secondary education is not given a level in the Australian qualifications framework, so its level is ambiguous: it is probably higher than certificates I and II but probably lower than diplomas and certificates IV. The Department's coding notes say that 'The order of these codes is not strictly hierarchical, due to the addition of codes over time', but in the absence of any other guidance many institutions code a completed final year of secondary education as a higher prior educational participation than a completed vocational award program of any level. This means that students who complete year 12 and complete a vocational diploma before starting their bachelor program would have their highest educational participation reported as completed final year of secondary education.

Data element 561 – details of prior study for which credit was offered – is informative but a limited indication of the number of vocational students transferring to higher education because only about a third of former vocational students who enrol in higher education seek and are granted credit towards their new program. This is because they transfer to a different field, because of the substantial differences in curriculum between vocation and higher education or because the prior vocational study is not otherwise considered relevant to the current study.

Table 3 Names and descriptions of higher education student data elements on prior study

Data element	327: New basis for admission to current course
Description	A commencing student who was admitted on the basis of: 31 a higher education course (Australian or overseas equivalent; complete or incomplete); 33 secondary education undertaken at school, VET or other higher education provider (Australian or overseas equivalent); 34 A VET award course other than a secondary education course (Australian or overseas equivalent; complete or incomplete); 36 mature age special entry provisions; 37 a professional qualification; 29 other basis.
Data element	493: Highest educational participation prior to commencement
Description	02YYYY A complete higher education postgraduate level program 03YYYY A complete higher education bachelor level program 04YYYY A complete higher education sub-degree level program 05YYYY An incomplete higher education program 07YYYY A complete final year of secondary education 08YYYY Other qualification, complete or incomplete 090000 No prior educational attainment 10YYYY A complete VET award course 11YYYY An incomplete VET award course Where YYYY is the year of the completion or last year of participation.
Data element	560: Credit used value
Description	The total value of all credit used by a student toward their current program
Data element	561: Details of prior study for which credit was offered
Description	0100 Credit was offered for prior higher education study only 0200 Credit was offered for prior VET study only 0300 Credit was offered for a combination of prior higher education and VET study 0400 Credit was offered for study undertaken at an education provider outside Australia 0500 Credit was offered for work experience undertaken inside or outside Australia
Data element	562: Field of education of prior VET study for which credit was offered
Description	A code that records the field of education of the VET study for which credit was offered
Data element	563: Level of education of prior VET study for which credit was offered
Description	A code that records details of the level of the Vocational and Technical Education study for which credit was offered
Data element	564: Type of provider where VET study was undertaken
Description	A code that denotes the type of Vocational and Technical Education provider with whom the qualification or study for which credit was offered was undertaken
Data element	565: Credit offered value
Description	Total value of credit offered to a student toward their current program
Data element	566: Credit/status higher education provider code
Description	A code indicating the higher education provider where the studies for which the credit was offered were undertaken

Source: Department of Education, Employment and Workplace Relations (2008)

Higher education enrolment data are thus reasonably complete, but do not provide full and not necessarily accurate data on students' previous tertiary education.

Surveys of higher education graduates

Graduate Destination Survey

The Graduate Destination Survey is part of the Australian graduate survey which is the national census of newly qualified higher education graduates that has been conducted by what is now called Graduate Careers Australia annually since 1972. The survey is conducted about four months after graduates complete their program. The survey is administered by each higher education institution and by Graduate Careers Australia on behalf of some smaller institutions. Survey methods and response rates therefore differ somewhat between institutions, but the average response rate is 55%.

The survey collects some demographic information and some universities match responses with their enrolment data and thus are able to analyse their full demographic and enrolment data. The survey also collects graduates' level and title of their highest previous qualification; their work in their final year of study; their qualification title, level and main field; their labour force status at the time they complete the survey; their main tasks, pay and how they found their job; and their employer's name, main business, size and postcode. The survey also asks about the importance to their main job of their qualification, major fields of education and other skills and knowledge acquired during program. The survey also asks about graduates' current study qualification title, main fields of education, level and institution.

The graduate destination survey provides data on higher education graduates' immediate prior qualification and study and work upon completing their program. But it doesn't provide information on graduates' medium term destination, for which longer terms surveys are conducted.

Beyond Graduation Survey

Graduate Careers Australia started administering the Beyond Graduation Survey in 2009. The survey is of graduates who completed their program three years earlier. So the 2009 Beyond Graduation Survey was of graduates who completed their program in 2005. The target population was 64,284 of whom 41,487 were the survey population for whom long term contact details were held. Some 23 or less than half the target institutions participated and 7,867 useable responses were received, giving a response rate of 19%. Graduate Careers Australia was able to match 6,797 responses to the 2009 survey with their 2006 graduate destination survey.

Graduate Careers Australia analysed in detail responses to the 2009 survey which could be matched to their 2006 survey. It found that the 2009 respondents broadly represented the 2006 respondents on key demographic and qualification variables. However, it found that the 2009 respondents had reported in the 2006 survey a higher median starting salary, were more likely to have been available for full time employment and rated their overall course satisfaction higher than all of the respondents to the 2006 survey. Graduate Careers Australia suggest that these differences may be due to sampling bias resulting from less than half the institution participating in the 2006 survey participating in the 2009 survey.

The 2009 Beyond Graduation Survey asked many questions similar to the 2006 graduate destination survey, so essentially extends the Graduate Destination Survey's data on educational and occupational

progression by three years. It also asks graduates to reflect again on the value of their study and thus provides a more mature reflection on their study experience.

Graduate Careers Australia is planning to conduct subsequent surveys five years after graduation.

2008 Graduate Pathways Survey

The 2008 graduate pathways survey was a single survey commissioned by the Department of Education, Employment and Workplace Relations. It was a survey of domestic bachelor graduates who completed their program in 2002. The total population of domestic bachelor graduates was 98,535 of whom the target population was 76,346. A total of 9,238 graduates returned a usable response, giving a national response rate of 12.1%. An analysis found that respondents represented the whole population relatively well by sex, residential location, field of education and labour force status, but that they over represented the population in proceeding to further study and obtaining higher qualifications. There was no attempt to compare respondents with respondents to the 2003 graduate destination survey or course experience survey.

The 2008 graduate pathways survey asked respondents about their current highest qualification, their main reason for studying in 2002; and the institution, degree title and major fields of the bachelor degree they completed in 2002; the extent of its contribution to their knowledge, skills and personal development; and its value for their subsequent work, study and long term career goals. The survey asked respondents to report their activity in April 2003, 2005 and 2008: broad level of study, labour force status, employer's name, business, their occupation, main tasks, pay and whether they envisage continuing in the same kind of work for the next three to five years. The survey also asked respondents at 2003, 2005 and 2008 their overall work satisfaction, employability and skills, how much their occupation was related to their major fields of study, how well their bachelor degree prepared them for their work, and the single factor that shaped the kind of work they were doing.

The 2008 graduate pathways survey provides detailed information on bachelor graduates' employment destination soon after completing their degree. It may provide useful information on short-term educational and occupational progression, but not of medium and longer term progression.

State tertiary admissions centres

Most applications for admission to tertiary study in Tasmania and Northern Territory are made direct to the institution because of the relatively small number of institutions in each jurisdiction. However, since the 1960s most applications to public higher education institutions in the other states and territories have been made through the state's tertiary admissions centre. From the 1990s most state tertiary admissions centres have also handled applications to private higher education providers, TAFE institutes and private vocational education providers. However, less than 30% of applications to institutions other than universities are made through state tertiary admissions centres and so they cannot provide comprehensive data on applications to these institutions.

Tertiary admission centres' coverage of university applications differs by state, field and institution. All institutions handle applications for research degrees directly, not through their state tertiary admissions centre. Some institutions receive all applications for postgraduate coursework programs directly, some direct most through their state tertiary admissions centre and some direct applications for only some postgraduate coursework programs through their state tertiary admissions centre, such as education and possibly nursing. Most but not all universities have their applications for admission to medicine and dentistry handled by the Australian Council for Educational Research. Some universities receive applications for study by distance education directly and all applications for study through Open Universities Australia are handled by OUA. Notwithstanding these variations, state tertiary admissions centres handle about 70% of applications for admission to bachelor degrees in all fields other than medicine and dentistry.

State tertiary admissions centres collect from all applicants their basic demographic data and a full educational history. This includes all results for all subjects for all attempts at the senior secondary certificate. Some of this information is provided by applicants and validated by certified copies of official records, but the bulk of these data are transferred from senior secondary assessment bodies. State tertiary admissions centres also collect details of all previous tertiary study. Again, some of this is obtained from applicants' certified copies of their academic transcripts. However, much is provided by the state tertiary admissions centres' automated results transfer system. This system collects from each application the name of each of the institutions in which the applicant has studied, the names of their programs, the start and finish dates of their programs and any previous name under which they studied. The system sends to participating tertiary institutions, which include all universities, a request for an extract of the students' academic transcript which the university's computer supplies in a standard format specified by the system. State tertiary admissions centres also collect applicants' further study preferences, the outcome of their application and whether they enrolled in the program which they were offered.

State tertiary admissions centres therefore hold for each applicant for admission to a bachelor degree their: age; subjects, results and years of study for the senior secondary certificate; and the subjects, results and years of study of all previous tertiary study. Since people of all ages apply through tertiary admissions centres it should be possible to construct a cross sectional study. Thus, one might compare for different age groups the main field of education and year of completion of senior secondary study, the main fields of education and years of completion of previous tertiary study; and the field of education of the program in which they enrolled in the admissions year being studied.

To this end the project sent data requests to each state tertiary admissions centre in August and September 2010. By the end of 2010 replies had been received from three centres: NSW, South

Australia and Victoria. The replies stated various levels of difficulty of obtaining the data requested and it seemed clear that the project was unlikely to receive comprehensive and consistent data. In early 2011 the project tried a different approach. It requested access to state tertiary admissions centre data held by universities. The project obtained agreement from two universities for data from NSW, Queensland and Victoria. The Queensland Tertiary Admissions Centre refused the project permission to use the data on the grounds that it wasn't authorised to release the data. The Universities Admissions Centre granted permission to use NSW data and the Victorian Tertiary Admissions Centre granted permission to use its data.

However, the tertiary admissions centre data held by universities does not include the field of education nor any subjects of previous tertiary study. It will therefore be possible to analyse for New South Wales and Victoria the period for applicants to transfer from senior secondary study to a bachelor program but not necessarily their first bachelor program. It will also be possible to analyse at least Victorian bachelor enrollees' transfer of field of education from secondary to bachelor study. However, it will not be possible to analyse bachelor enrollees' previous tertiary study, including their previous vocational education studies.

Conclusion

This paper has reviewed sources of data on peoples' educational and occupational transfers throughout their lives. No single source has been found to provide information on all peoples' educational and occupational transfers throughout their whole lives. Some surveys provide information just on peoples' educational transfers, some on just their occupational transfers, some provide information on peoples' educational level but not field of education or only broad field of education, and most sources are limited by the period over which they collect data. Some of these limitations may be overcome by conducting cross sectional studies of different age groups and from some sources such as the census it is possible to undertake a synthetic cohort analysis which follows an age group over successive years of the census.

Most of the data from vocational and higher educational administrative systems and surveys are more detailed but are confined to information current at the time of collection which is augmented by limited data on the student's educational and occupational position immediately before the data are collected. These data would be much more useful if there were a unique student identifier since this would allow students to be tracked from one institution and sector to another. While the state tertiary admissions centres hold data which is potentially very informative, it is not yet clear that they hold it or may supply it in a form useful for the analysis sought in this project.

The statistical analysis will therefore have to combine data from different sources and the next stage of the project is to determine the optimal combination of sources and analyses

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