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# The occupations and earnings of young Australians : the role of education and training

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# Longitudinal Surveys of Australian Youth

Research Report 55

## **The Occupations and Earnings of Young Australians: The Role of Education and Training**

Gary N. Marks

November 2008

This report forms part of the Longitudinal Surveys of Australian Youth analytical program conducted by ACER under contract to the Australian Government Department of Education, Science and Training (DEST), now Department of Education, Employment and Workplace Relations (DEEWR).

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## ACRONYMS

ABS	Australian Bureau of Statistics
ACER	Australian Council for Educational Research
ANTA	Australian National Training Authority
ASCO	Australian Standard Classification of Occupations
ASCO1	Australian Standard Classification of Occupations, First Edition
ASCO2	Australian Standard Classification of Occupations, Second Edition
AQF	Australian Qualifications Framework
CATI	Computer-assisted Telephone Interviews
DEST	Department of Education, Science and Training
DEEWR	Department of Education, Employment and Workplace Relations
LSAY	Longitudinal Surveys of Australian Youth
NCVER	National Centre for Vocational Education Research
OECD	Organisation for Economic Co-operation and Development
TAFE	Technical and Further Education
VET	Vocational Education and Training
YIT	Youth in Transition Study



## EXECUTIVE SUMMARY

This report investigates the effect of post-secondary education and training on the occupation and earnings of young people.

The majority of young Australians undertake further education and training after leaving school, and it is important to better understand the pathways that they follow, and the impact of different types of experience on the early career. Such analyses can help young people in choosing appropriate programs as well as assist policy makers in identifying resource priorities. They can also contribute to debates about the role of education in promoting social mobility and economic development.

The data analysed are from a sample of young people who were first interviewed when they were in Year 9 in 1995 and subsequently interviewed annually. This report analyses annual data collected up until 2005 when they were, on average, 24 years of age. Longitudinal data can provide important insights into the pathways that young people follow and the influences they experience.

The report examined the occupational status of jobs and weekly earnings by type of post-school education and training. Occupational status provides a convenient summary measure of occupations based on job status or prestige, while earnings measure the financial reward from work.

For the two outcomes examined—occupational status and weekly earnings—there were two sets of analyses. The first focused on the effects of participation in, and completion of, post-secondary education and training on occupational status and earnings. It is important to be able to identify whether different types of courses led to different outcomes, and the benefits of completing a course, particularly in areas where completion rates are not high. The second set of analyses focused on ‘trajectories’, namely whether post-secondary education and training influences the pattern of occupational status and earnings in the years after participation or completion.

The types of post-school education and training analysed were apprenticeships, traineeships, technical and further education (TAFE) certificates, TAFE diplomas, university diplomas, university degrees, post-graduate degrees and other qualifications comprising mainly courses run by private providers.

The multi-level regression analyses reported here provide estimates of the effects of participation in and qualifications from these types of post-secondary education and training on occupational status and earnings *net* of the effects of other influences, such as prior labour market experiences of work and unemployment, literacy and numeracy, school type, socioeconomic background and ethnicity. These estimates are based on person-year data from all waves on the longitudinal study, thereby minimising any biases that may result from sample attrition.

In addition, the report examined the role of gender as it is well established that there can be marked differences in the educational and labour market experiences of young men and women.

### **Main Education and Labour Market Activities**

The longitudinal data underscore the dynamics of the school-to-work transition process. In 1995 when the sample started, 100 per cent were in school (Year 9). The proportion in full-time study declined during the period. In 1997 and 1998, over 80 per cent were in full-time study, mostly at school. Full-time study declined precipitously in 1999 as most of the cohort had completed Year 12. In subsequent years, the proportion in full-time study declined as students completed or discontinued university and TAFE courses. By 2005 (at age 24) just over 5 per cent were in full-time study. Throughout the period the incidence of full-time study was much higher among young women.



In contrast to full-time education, the proportion of the cohort in full-time work increased throughout the period investigated. The percentage in full-time work increased abruptly to about 35 per cent in 1999, the first year most of the cohort left school, and then steadily increased each year. By 2005, 77 per cent of the cohort was in full-time work. In all years, the incidence of full-time work was substantially higher among young men than among young women.

The incidence of part-time work increased to 6 per cent in 1999, further increased to about 10 per cent by 2001 and 2002, and marginally declined to 8 per cent in 2005. Part-time work was much more common among women, peaking at over 13 per cent in 2002, compared to 7 per cent of young men that year.

The proportion of the cohort looking for work but not working or studying was around 5 per cent between 1999 and 2002, but had declined to 2 per cent by 2005. Unemployment was higher among males than among females between 1999 and 2002, but there was little difference in the later years.

### **Types of Education and Training Experience**

Almost 90 per cent of the cohort had participated in some form of post-school education and training by age 24 (in 2005). The most common form was enrolment in a university bachelor degree (46%), followed by TAFE certificate (21%), TAFE diploma (15%), traineeship (15%) and apprenticeship (13%). In common with other research, the data indicated marked gender differences: young women much more likely than young men to participate in bachelor degrees and to a lesser extent, TAFE programs, slightly more likely to take up traineeships, but much less likely to commence an apprenticeship (4% of young women by age 24 compared to 22% of young men).

The data indicated that around 75% of those who commenced a course of education or training gained a qualification, although not always in the field (or with the institution or employer) where they first started.

### **Occupational Group and Status**

There are striking but not unexpected changes in the distribution of occupations as the cohort progresses from school, via post-secondary education and training, to the labour market. The proportion working in managerial or professional occupations increased dramatically from 3 per cent in 1997 to 45 per cent in 2005. Concomitantly, the proportion in semi-skilled and unskilled manual work declined from nearly 28 per cent in 1997 and 1998 to 10 per cent in 2005. For men the decline was steeper, from 44 per cent to 16 per cent. The proportion of the cohort in sales, clerical and personal service work declined from 56 per cent in 1997 to 31 per cent in 2005. This decline was greater among young women: in 1999 75 per cent were working in sales, clerical and personal service jobs compared to 43 per cent in 2005.

In contrast to substantial changes in the proportions in other occupational groups, the proportion in trade or skilled manual work remained at around 16 per cent throughout the period investigated.

The occupational status of the jobs held by cohort members increased substantially throughout the time period studied. In 1997 and 1998 the mean occupational status was low, at about 20 score points (on the ANU3 scale). By 2005 the mean occupational status had increased to 37. This can be compared to the average for adult populations, which is around 45. The increase in occupational status was much greater for those in full-time work than for those in part-time work.

## **Influences on Occupational Status**

The main results of the multivariate analyses are as follows.

- University courses led to the largest increases in occupational status. In general, TAFE courses and apprenticeships/traineeships were associated with little increase in occupational status in the early career, which probably reflects the fact that young people in such programs are often already working in a similar occupation.
- Participation in a bachelor degree course was associated with an increase in occupational status of about 5 score points on a 1 to 100 point scale. The impact of a bachelor degree qualification was larger, around 14 score points. On this measure it clearly pays to complete the course.
- There was little difference between young men and women in the overall level of occupational status, and the effects of a bachelor degree on occupational status did not differ appreciably between the sexes. The effects of a university diploma qualification tended to be higher among women.
- Age had strong effects on occupational status indicating that as young people mature they secure higher status jobs.
- Prior experience of unemployment had detrimental effects on the occupational career. Prior experience of work had positive, but small, effects.
- The occupational trajectories associated with bachelor degrees rose in these early years of the career.
- In contrast, the occupational trajectories associated with other forms of post-secondary education and training were generally relatively flat.

## **Earnings**

Among full-time workers, mean weekly earnings increased substantially over the period: from \$352 in 1998 to \$1026 in 2005 (expressed in 2005 dollars). Median weekly full-time earnings also increased just as steeply, indicating that the increase in mean weekly earnings was because of general increases rather than a small minority of very high earners. These increases are due to a number of factors, such as age-based awards, apprentices moving off the apprenticeship training wage, the entry of school completers and university and other graduates, to the workforce, and the higher wages accruing to experience and on-the-job training.

The mean weekly earnings of part-time workers also increased sharply over the period, and rose from about 30 per cent of mean full-time earnings in 1998 (at about age 17) to about 47 per cent by 2005 (age 24). In large part this would reflect the changing composition of part-time work away from “student-type” employment in the early years to part-time work in higher status occupations by the mid-20s.

## **Influences on Earnings**

The main results of the multivariate analyses are as follows.

- A bachelor degree qualification had the largest impact, increasing earnings by about 30 per cent. The effects of bachelor degrees were slightly stronger among women than among men.
- Apprenticeships also had a major impact on earnings, and on average increased weekly earnings by about 20 per cent. This effect was stronger among young men than among young women.
- A TAFE diploma qualification increased earnings by about 14 per cent; and a university diploma by nearly 20 per cent.

- Completing a traineeship increased earnings by about 8 per cent, and a TAFE certificate by about 5 per cent.
- In general, gaining a qualification was associated with higher earnings, other factors equal, than participating without completion. However, there were some exceptions, such as in traineeships and some TAFE courses, which may be related to the modular structure of such programs.
- Experience of working since leaving school, either full-time or part-time, had a small positive effect on earnings.
- Prior experience of unemployment did not have detrimental effects on earnings, which suggests that, during the period of strong jobs growth covered by this report, a substantial proportion of unemployed young people may have been ‘shopping around’ for jobs with higher earnings.
- The average weekly earnings of young men are about 20 per cent higher than those of young women, after controlling for educational qualifications and labour market experience (but not hours worked).

### **Conclusions and Implications**

Overall, the results provide a positive message for education and training. In general, post-school education and training leads to higher status occupations and, in particular, higher earnings compared to not doing any further study or training. If anything, these benefits of education and training are stronger for young women than young men, especially for those who enrol in bachelor degrees (but the gender effect works in the other direction for apprenticeships). The fact that the results indicate that social background plays only a small role in accounting for differences in occupational status and earnings indicates that education is enhancing social mobility.

Within this broadly positive, it is clear that not all forms of post-secondary education and training are equally beneficial, at least in terms of the measures of occupation and earnings used here. Apprenticeships and especially university degrees tend to have stronger effects on earnings and occupations than other forms of post-secondary education and training at this early stage of young people’s careers. This variability suggests that there needs to be continuing attention to the relationship between the knowledge and skills produced through different forms of education and training and those required by the labour market. It also suggests the need for continuing emphasis on career guidance and counselling to help young people choose the programs most appropriate to their interests and needs.

# 1. INTRODUCTION

The main purposes of this report are to examine:

- the effects of post-secondary education and training on occupational status and earnings during the early socioeconomic career; and
- the occupation and earnings trajectories in the years subsequent to post-secondary education and training.

## Background

Substantial resources are invested in post-secondary education and training by young people, their families, governments and employers. The importance of education and training for the socioeconomic career is consistent with human capital theory, which contends that individuals make investments in their education and training in order to gain, greater than otherwise, returns to their future socioeconomic careers. In other words, those who undertake further education and training invest in increasing their productive capacities so their labour market outcomes will be superior to those who did not invest in their capacities.

Education may also be important for other reasons. Employers may use educational qualifications as a signalling device when deliberating on employee wages. More generally, employees with particular skills, derived from formalised education and training, are more productive and can secure higher wages.

In the Australian context, part of the reason why more educated workers earn more is structural or legal. For almost all professional and technical occupations particular qualifications are mandatory. In Australia, industrial awards include specification of the wage rates for particular qualifications. Workers without qualifications can be paid less.

It is unequivocal that education is associated with better labour market outcomes. A large body of empirical research shows that education is an important influence on occupation and earnings. Sociologists focus on the effects of education on occupational prestige or status. Both American and British studies conclude that the impact of the amount of education attained has a much stronger impact on occupational status than does social background. In Australia, the stronger effect for education than father's occupation on occupational destinations was found in data collected as long ago as 1965 (Broom & Jones, 1976: 98-100).

In the past, there has been a close relationship between specific vocational education and training pathways and particular occupations and industries (see Curtain & Sweet, 1998). However, recent work has shown that while higher education graduates are concentrated in professional and para-professional work, TAFE graduates are distributed across a wide range of occupations (ANTA, 2002; NCVET, 2000; Ryan, 2000). Stanwick (2006) concluded there were generally positive employment outcomes for TAFE diploma graduates: within 30 months of completion, about half were in jobs with job statuses of associate professionals or higher.

Economists refer to the effect of education on job earnings as the 'rate of return', defined as the percentage increase in earnings for each additional year of education relative to its cost. In Australia, the rate of return to education, so defined, is estimated at 5 to 8 per cent (McNabb & Richardson, 1989; Miller, Mulveya, & Martin, 2005; Trostel, Walker, & Woolley, 2002). However, there is much variation in the return in earnings for different types of education. Borland (2002) concluded that a three-year bachelor degree increases earnings by between 14 and 18 per cent. (The comparison group is not having a bachelor degree). In an analysis of British cohort data, Blundell *et al.* (2000) found the returns in earnings to degrees were higher among women than men.

The concentration of university graduates in professional and paraprofessional work partially accounts for their higher earnings compared to TAFE graduates (Ryan, 2000). The difference in earnings is quite large. NCVER (2000) reported the average wages for male and female TAFE graduates at \$491 and \$433 per week, respectively, compared to \$711 and \$691 for university graduates.

The Longitudinal Surveys of Australian Youth (LSAY) project is a source of considerable research on the effects of post-secondary education and training on occupation and earnings. Analyses of data from *Youth in Transition* cohorts born in 1961 and 1965 suggested that the earnings of TAFE graduates were higher than those of early school leavers but not substantially higher than those of school completers. However, male apprentices tended to have higher take home earnings (Long, McKenzie, & Sturman, 1996). Marks (1998) analysing data from three *Youth in Transition* cohorts (born 1961, 1975 and 1970) found strong effects on earnings for university degrees, moderate effects for apprenticeships and weak or no effects for TAFE certificates and diplomas. Analysing data collected from 1995 to 2004, Curtis (2008:87) reported slightly higher incomes for male lower level TAFE certificate participants than for those with no post-school, but the opposite was found for females.

### *Related Issues*

Factors other than education and training affect earnings. One important other influence is workforce experience: the greater the time spent working, generally the higher the job status and earnings. According to human capital theory, workers with more experience have better skills and work more efficiently than others, and thus are more valuable to the employer. As a result, they are paid more in accordance with their greater productivity; alternatively they can attract higher wages due to their stronger market position.

In general, experience of unemployment may have a detrimental effect on future wages, the so-called 'scarring effect'. The experience of unemployment is associated with lower earnings in subsequent employment (Arulampalam, 2001; Jacobson, LaLonde, & Sullivan, 1993). Thus, unemployment is more than just less time employed; it is likely to be associated with a deterioration of work skills and reduced confidence; and workers with a history of unemployment are likely to accept a lower status job with lower wages. However, it may be the case that in a strong labour market, with low unemployment rates, short periods of unemployment may indicate 'shopping around' for other better jobs. In this case, experience of unemployment would show a *positive* effect on job status and earnings.

Among young cohorts another important factor is age. For some industries, industrial awards specify pay rates for employees at different ages. This is especially true for traditional apprenticeships, where awards specify the wage rates for each year. Age may also be important because employers may consider "older" young people more suited to jobs that entail greater responsibility and thus higher status and pay. On the supply side older young persons may be more likely to apply successfully for appropriate higher status jobs than younger people. For example, a 24 year-old is more likely to be selling cars or real estate than a 19 year-old.

Gender is another potentially important influence on occupation and earnings. On average, males have had higher levels of education and training than females, although this has changed substantially in recent years as female levels of participation in education have risen much faster than those for males. However, there are still marked gender differences in the types of education, for example, far fewer females take up an apprenticeship. Labour market experiences among young people also differ by gender, with females more likely than males to work part-time or to spend time not in the workforce (Marks, 2006). Another consideration is occupational segregation. Women tend to be concentrated in a smaller number of occupations compared to men, who tend to be more widely distributed among occupations. Occupational segregation contributes to the gender differences in earnings (Karmel & Maclachlan, 1988; Rimmer, 1991; Vella, 1993)

Socioeconomic background is an important consideration in any study of social or economic outcomes, although its effects on occupation and earnings are almost entirely mediated through education. Hauser *et al.* (2000) commented that the direct effects of social origins on occupational outcomes, that is not through education, ‘are interesting but relatively minor’. However, the influence of socioeconomic background on occupational destinations may be greater during the early career, since social networks or cultural understandings associated with a more privileged background may be beneficial. In contrast, a low socioeconomic background may be associated with fewer social contacts linked to obtaining high status and well-paid jobs.

Other social background factors, such as region and ethnicity, may influence occupational destinations and earnings, even when taking into account post-secondary education and training. The labour market in regional and rural areas tends to be more limited and, apart from ‘resource-boom’ areas, tends to be less well-paid. Those from minority ethnic backgrounds may face discrimination in the labour market so have lower status jobs and wages than their Australian-born peers with similar levels of education and experience. Conversely, for some people a minority background may provide an impetus for more successful careers.

Education at secondary school may also influence the early socioeconomic career. As with socioeconomic background, attending an independent school may expose students to beneficial social networks and cultural understandings. School-leaving status may also be important, since employers may distinguish between young people who completed Year 12 and those who did not. Previous LSAY research suggest that early school leavers—those who leave school before the beginning of Year 11—on some criteria have better outcomes than later school leavers and school completers (McMillan & Marks, 2003). However, that study focused on the initial labour market experiences, and it could be expected that, with time, school completers have increasingly better outcomes.

The LSAY series of reports has demonstrated the importance of achievement in literacy and numeracy measured by tests conducted during middle secondary school. High achievers are less likely to leave school early and more likely to complete Year 12 at school, obtain higher tertiary entrance scores, and attend and complete university. The effect of literacy and numeracy tend to be substantially stronger than that of socioeconomic background.

In the economics literature, one issue is the extent to which the effects of bachelor degrees on earnings are upwardly biased. University graduates tend to have higher levels of academic achievement, but does academic achievement have an *independent* effect on the socioeconomic career? In other words, do those with higher levels of achievement gain higher status and better paid jobs than those with lower levels of achievement but with the same education and workforce experience? Such questions can be addressed using longitudinal data, as in this report.

## **Contribution of this Report**

There are several areas where this report contributes to our understanding of post-secondary education and training. First, much of the research on the importance of education on occupational status and earnings focuses on adults and does not distinguish between secondary and post-secondary education (for example, much of the returns to education literature) or the different types of post-secondary education. Research on youth tends to focus almost exclusively on earnings and does not consider occupation as an outcome. Furthermore, those analyses tend to be of cohorts born some time ago who underwent the school-to-work transition under different institutional arrangements and labour market conditions.

This report investigates the occupation and earnings associated with different types of post-secondary education and training during the early socioeconomic career, distinguishing between participation and qualifications, and analysing data from a cohort that has only recently completed the school-to-work transition. In 2005, only 5 per cent of the Year 9 1995 LSAY cohort were in full-time study and about 80 per cent were employed.

The analyses in the report are facilitated by longitudinal data since it allows examination of the dynamics of post-school labour market outcomes rather than just a cross-sectional snapshot. Furthermore, longitudinal data allow the estimation of fixed effects models so that both observed and unobserved factors that have effects on the outcome of interest can be identified.

The following research questions are addressed:

1. What are the effects of different types of post-secondary education and training on young people's subsequent occupational status and earnings?
2. Are there gender differences in these effects?
3. Are there substantial differences in the benefits to the socioeconomic career between participation in education and training and completion of the course?
4. How do occupation and earnings trajectories differ for different types of post-secondary education and training?
5. Are there substantial gender differences in these trajectories?
6. Are there effects of factors other than education and training on occupation and earnings—such as socioeconomic background, ethnicity, school completion status—or are occupations and earnings of young people almost entirely attributable to differences in education and training, and experiences in the labour force?
7. How important are skills in literacy and numeracy to the early socioeconomic career?

## **Chapter Outline**

The following chapter, Chapter 2, describes the data and sample, discusses attrition and weights, summarises the construction of person-year data set, and provides details on the measures and analytic techniques. Chapter 3 presents profiles of the cohorts for the period 1997 to 2005. This is presented because it is important to understand the educational and employment context of the cohort as members make the transition from school. It also provides distributions of the variables used in the subsequent analytical chapters.

Chapter 4 focuses on occupation. It compares the occupational status of jobs for those with and without particular types of post-secondary education and training. However, other factors are also associated with higher occupational status—notably age and experience in the labour force—so the independent effects of post-secondary education and training are estimated by regression analysis. The second part of the chapter investigates occupational trajectories, again by first presenting overall differences followed by regression analyses. Chapter 5 follows the same structure as Chapter 4 but concentrates on earnings.

The report concludes with Chapter 6, which addresses the research questions introduced in this chapter and the policy implications of the findings.

## 2. DATA, SAMPLING, MEASURES AND ANALYTICAL TECHNIQUES

This report analyses data from annual surveys conducted between 1995 and 2005 of the Year 9 1995 LSAY cohort (the Y95 cohort). This cohort is one of several that make up the LSAY project (for details see Marks & Rothman, 2003). The initial sample comprised 13,613 students from approximately 300 government, Catholic and independent schools (for details on the sampling procedure and other technical details see Long, 1996).

The students were surveyed in their schools in 1995, where they completed a questionnaire about themselves and their families, and undertook reading comprehension and mathematics tests. Further data on education, training and labour market activities have been collected from sample members on an annual basis: by mail questionnaire in wave 2 and by computer-assisted telephone interviews (CATI) in subsequent waves conducted around October/November each year. The 2001 interview collected extensive retrospective data on post-secondary education and training. The most recent year of data analysed for this report was 2005 (wave 11). At the 2005 interview, the average of the cohort was 24.8 years.

All students were in Year 9 in 1995. The great majority were in Year 12 in 1998, and 1999 was their first year after leaving school. Of those who went to university, most first enrolled in 1999 and completed their three year course in late 2001. At the time of the 2005 interview, this group would have been in the labour market for about four years. Of course, there are substantial proportions that did not follow this route. About 20 per cent did not participate in Year 12 and more than one-half did not go to university. However, by 2005 well over 90 per cent were no longer enrolled in full-time study.

### Sample

The sample is a stratified random sample of Year 9 students in 1995. Its design was intended to provide a nationally representative sample of Year 9 students that would permit a sample of some 10,000 young people to be interviewed by phone in late 1997. The major stratum in the design was state (or territory) of schooling, with over-sampling of students from smaller states. The selection of students within states was proportional by school sector. Three sectors were used as strata: government schools, Catholic schools and independent schools. Response rates for government schools tended to be lower than those for Catholic and independent schools.

Within strata, schools were selected proportional to their enrolment size. Information on the number of Year 9 students in each school came from ACER's sampling frame, which was based on information provided by the relevant state authorities and, in the case of non-government schools, by the then federal Department of Education, Employment and Training (DEET). These figures were based on the 1994 annual school census. Within schools, two classes were randomly selected (again, proportional to their size). Schools were asked for a list of the number of students enrolled in each of their Year 9 classes for a subject studied by all Year 9 students in the school (usually English classes).

On selection to the sample, students completed two 25-minute, 20-question tests in reading comprehension and mathematics. Students also completed a questionnaire that included questions on their social background, educational and vocational plans, and attitudes to school.

Stratification weights were constructed to account for differences between the distributions of respondents in the sample and the distributions in the population from which the sample was drawn. Weights were also required to correct for over-sampling of the smaller states. The weights were calculated by comparing the distribution of respondents by state of residence, school sector and gender in the sample with that reported in the 1995 edition of *ABS Schools Australia*.



*Sample Attrition*

Since 1995 there has been extensive attrition of the cohort. Table 1 presents the number of respondents in the Y95 cohort's surveys conducted between 1997 and 2005. In 2005 only 31 per cent of the original sample were still participating in the survey.

**Table 1 Sample size 1997-2005 for the Year 9 class of 1995 cohort**

<b>Year</b>	<b>Number</b>	<b>Per cent of original sample</b>
1997	10307	75.7
1998	9738	71.5
1999	8783	64.5
2000	7889	58.0
2001	6876	50.5
2002	6095	44.8
2003	5354	39.3
2004	4660	34.2
2005	4233	31.1

Sample attrition in the Y95 sample did not occur uniformly across social groups. Attrition in the Y95 sample is higher among those with low achievement in Year 9 literacy and numeracy, Indigenous youths, males and those from low socioeconomic backgrounds (Marks & Long, 1996; Rothman, 2008). Those who drop out of the study tend to have less successful outcomes than those who remain in the study, and weighting largely corrects this bias. The LSAY samples can still retain strong statistical properties, even down to 25 per cent of the original sample, because the original sample was so large.

There are two major issues with sample attrition. First, it reduces sample size so that there is less statistical power. In other words, the estimates of population parameters are less precise (have wider confidence limits). In regression-type analyses, they are more likely not to be statistically significant. A more serious issue is that attrition is not random and causes the sample to become unrepresentative of the original sample (MaCurdy, Mroz, & Gritz, 1998; Marks & Long, 1996). Attrition would be of less concern if it were completely random.

With appropriate weights, it is generally concluded that the effects of attrition on the substantive conclusions of a longitudinal study tend to be minimal. Using respondents who left and re-entered a longitudinal study as a test for the effects of attrition, Falaris and Peters (1998) concluded that attrition had little or no impact on the parameter estimates obtained from regression analyses. Rothman (2008) reviewed other studies from the United States, which also find only small biases.

In addition to the stratification weights introduced above, for each wave of the LSAY survey weights were constructed to adjust for sample attrition. These attrition weights were calculated according to gender and four levels of combined scores on the achievement tests administered in Year 9. The weights ensure that the current sample remains broadly representative of the original cohort of Year 9 students (Rothman, 2008). These weights take account of attrition associated with measured, but not unmeasured, variables.

All estimates presented in this and subsequent chapters have used the sample weights (a combination of the stratification and attrition weights) for estimates of the respective population parameters.

## Measures of Central Variables

Occupation and earnings are arguably the most important labour market outcomes. The occupation and earnings of individuals in contemporary societies more or less define their socioeconomic position. They also provide good indications of future prospects in the labour market.

### *Occupation*

It should be noted that occupation has several advantages over earnings for analyses of career. Earnings can change considerably over short periods, especially among young people, whereas occupation is far more stable. It is more difficult for respondents to know accurately their weekly gross earnings than their occupation. Workers who work irregular hours or are self-employed may find it difficult to calculate their weekly earnings but would have little trouble telling an interviewer their occupation. In addition, the distinction between gross and net earnings is quite complex for self-employed workers.

At each annual interview, LSAY respondents were asked about their current job, the job title and the kind of work they did. This information was coded according to the four-digit codes in the Australian Standard Classification of Occupations (ASCO) schema. Information on occupations collected from the 1997 to 1999 interviews were coded in accordance with the first edition (ASCO1), while interviews conducted after 1999 coded occupations according to the second edition of ASCO (ASCO2) (ABS, 1997). This information was used to develop two measures of occupation: broad occupational group; and occupational status.

The first measure, occupational group, is categorical, comprising four groups: Professional and managerial; Trade and skilled manual; Clerical, sales and personal services; and Semi/unskilled manual. These are based on major occupational groups in ASCO2 (Table 2).

**Table 2 Classification of occupational group by ASCO2 major groups**

<b>ABS No.</b>	<b>ABS Description</b>	<b>Classification</b>
1	Managers and Administrators	Professional/Managerial
2	Professionals	Professional/Managerial
3	Associate Professionals	Professional/Managerial
4	Tradespersons and Related workers	Trade & Skilled Manual
5	Advanced Clerical and Service Workers	Clerical, Sales, Personal
6	Intermediate Clerical, Sales and Service Workers	Clerical, Sales, Personal
7	Intermediate Production and Transport Workers	Semi/Unskilled Manual
8	Elementary Clerical, Sales and Service Workers	Clerical, Sales, Personal
9	Labourers and Related Workers	Semi/Unskilled Manual

One of the problems with categorical measures of occupation, such as social class or broadly defined occupational groups, is that the categories are often very heterogeneous comprising both low and high status (or income) occupations. Categorical measures are more complex to analyse, since there will be many more estimates ( $c-1$  estimates where  $c$  is the number of categories) compared to one estimate for a single continuous variable. In this report the occupational group is reported in Chapter 3 on the cohort profiles but not in the analytical chapter on occupation.

For Chapter 4 on occupational outcomes the dependent variable analysed is occupational status. Occupational status is a useful summary measure of the social standing, prestige or desirability of occupations. Ganzeboom and Treiman (1996) make the point that occupational prestige measures “are generated from popular evaluations of occupational standing” and that occupation is the single most important dimension of social interaction. It is sometimes pointed out that occupational status does not always correspond to earnings since there are high-status low pay occupations as well as low-status highly-paid occupations. However, occupational status is not meant to be a surrogate measure of income and high prestige occupations tend to have non-pecuniary advantages such as more pleasant work environments, more autonomy and greater safety.

The concept of *occupational status* overcomes this problem since it differentiates occupations on the basis of the income and educational levels of individual occupations. Although a doctor and teacher are both professional occupations and in many occupational schemas they would be grouped together, they differ substantially in occupational status because more education is required to become a doctor and, on average, doctors have higher earnings.

The most commonly used measures of occupational status in Australia are those developed by Jones and colleagues at the Australian National University (Broom & Jones, 1976; Jones, 1989; Jones & McMillan, 2001; McMillan & Jones, 2000). Several scales have been developed for each of occupational classification systems developed by the ABS. ANU2 was developed for the Classification and Classified List of Occupations (CCLO), ANU3 for ASCO1, and ANU3\_2 for ASCO2 classifications.

The ANU3 scale was developed using aggregate data on 161 ASCO groups from the 1986 census. A regression equation linking aggregate worker characteristics to prestige ratings was used to estimate socioeconomic status scores for all four digit ASCO codes. Scores were scaled to range from 0 (low status) to 100 (high status).

Occupations with low ANU3 status scores include unskilled mining and construction labourers (score 7.8), forklift drivers (3.4), cleaners (3.7) and product assemblers (4.4). Examples of jobs at the top of the status hierarchy are university teachers (82.1), solicitors (77.7), veterinarians (85.1), and legislators and government appointed officials (95.1).<sup>1</sup>

For this report, ANU3 scores were constructed from the ASCO1 or ASCO2 four digit codes of the respondents' main occupations.

### *Earnings*

Earnings are the second major outcome examined in this report. Earnings should be distinguished from other concepts such as income and wages. *Income* is the money coming to an individual, family or household. It includes money received from all sources: employment, investments and government benefits, such as unemployment benefits. *Earnings* is the money received from paid employment. *Wages* is the money received by employees from employers, so it does not include the self-employed. Throughout this report, the term earnings is used in preference to income or wages. Two separate measures of earnings were constructed: ‘weekly earnings’ and ‘hourly earnings’.

In the telephone interviews, employed respondents were asked how often they were paid and how much they were paid. The few that were self-employed were asked their weekly earnings. From these questions, measures of weekly earnings were constructed. Together with the measures of hours worked, the responses to the earnings questions were used to construct measures of hourly earnings. Using ABS statistics on the Consumer Price Index (ATO, 2006), all earnings measures were adjusted so they were in the common metric of 2005 dollars.

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<sup>1</sup> The ANU3\_2 scores for each 4 digit ASCO2 occupational group can be found at <http://ipumsi.anu.edu.au/scale32.phtml>.

Chapter 4 uses the ‘weekly earnings’ measure as it provides an indication of the standard of living, whereas ‘hourly earnings’ on its own does not. This report is about the relative position of young people after participation in or qualifications from various types of post-school education and training. ‘Hourly earnings’ is of more theoretical value, for example in estimates of the rate of return. Note that adjusted hourly earnings are reported in the cohort profiles chapter.

For the regression analyses reported in Chapter 5, weekly earnings were converted to logged weekly earnings (by taking the natural logarithms of adjusted earnings) so as to reduce the influence on the estimates of observations of extremely low or high earnings.

The Appendix details the other measures used in the report.

## **Analytic Techniques**

Chapter 3 presents the educational (and training), occupational and labour force profiles of the cohort as they move from school to the labour market. It reports univariate statistics: frequencies; percentages; means (averages); and standard deviations.

The standard deviation is a measure of distribution. Sixty-eight per cent of cases have scores between one standard deviation below and above the mean. Ninety-five per cent of cases are within two (or more precisely 1.96) standard deviations above and below the mean. Standard deviations are not usually appropriate for highly skewed (asymmetric) variables such as earnings, where most earners have lower than the average earnings and small proportions have high earnings.

In the tables presenting summary statistics on occupation and earnings, the median and inter-quartile range are also presented. The median is included because the mean (or average) can be misleading in highly skewed distributions. Similarly, the intra-quartile range—the difference in score (occupational status or earnings) between the cases at the one-quarter and three-quarter points in the distribution—is often a better indicator of the distribution than the standard deviation in highly skewed distributions.

### *Regression Analyses*

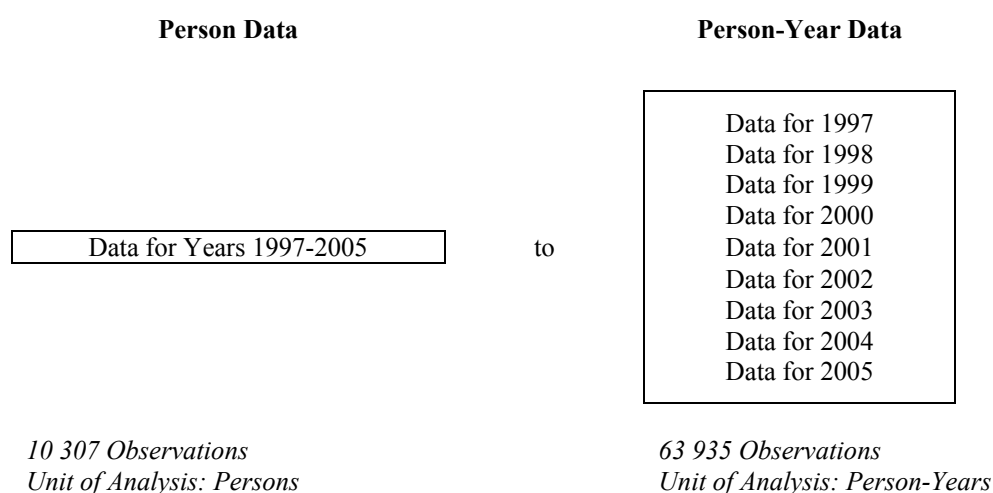
In Chapters 4 and 5, regression analyses were used to estimate the effects of post-secondary education and training on occupational status and earnings. These regression analyses were performed on person-year data. The hierarchical data set created had two levels, person-years at the lowest level and persons (respondents) at the second level. There are several advantages to this approach. First, by combining the data for several years, fluctuations due to sampling and measurement error are minimised. Second, the effect of missing data is reduced by estimating repeated rather than the main effects for each year (Littell, Milliken, Stroup, & Wolfinger, 1996:115-134). Of course, observations without any valid data on occupation or earnings are not included in the analyses. However, valid observations include respondents with valid occupational and earnings data for a particular year, even if there is no valid data for the same individual in other years. Third, the repeated measures model specification provides more reliable estimates of population parameters and the associated statistical tests (Littell et al., 1996). The analysis of only complete case data from longitudinal studies is very likely to produce biased estimates and is inefficient (Little & Rubin, 2002).

### *The Person-Year Data and Measures*

Cohort members’ occupations and earnings change from year to year. Similarly, participation in and qualifications from post-secondary education and training are ‘time-variant’ as are cohort members’ labour market experiences. For the regression analysis to analyse the occupational and earnings data for an individual for each year observations were made, it is necessary to construct a ‘stacked’ person-year data set, because participation and qualifications change with time. For example, according to the 2002 data, only 3 per cent of the cohort had obtained a university degree, but by 2005, over 32 per cent had. An alternative strategy would be to analyse data from the most recent (2005) wave, but data would be limited to only 4233 cases: useful information on respondents who participated in post-secondary education and training and left the study before 2005 would not be used.

The strategy used for this report was to construct a person-year data set which allows regression analysis of the dynamics of occupational status and earnings by utilising the information from the time-variant factors. The person-year data set was constructed by ‘stacking’ the annual data (see Figure 1).

The stacked data set allows simultaneous analysis of *all* years, 1997 to 2005, with 63 935 observations or ‘person-years’. Not only can the dynamics of the socioeconomic career be analysed, but there is no wastage of data collected before 2005, and the effects of attrition associated with any unmeasured variables are substantially reduced.



**Figure 1 Relationship between person data and person-year data**

In the person-year or stacked data sets there is a record of a respondent’s occupational status and earnings for each year they were in the study. For example, in the standard person data set the record for individual with ID number 1 is as follows

ID	Occ Yr 1	Occ Yr2	Occ Yr3	Occ Yr4	Earn Yr 1	Earn Yr2	Earn Yr3	Earn Yr4
1	24	24	25	24	23856	25675	24789	26789

In the person-year data these same data are rearranged as follows:

ID	Year	Occupational Status	Earnings
1	1	24	23856
1	2	25	25675
1	3	24	24789
1	4	24	26789

For the variables distinguishing participation and qualifications a code of one is assigned to individuals who have participated (or obtained a qualification) *by that year* and zero otherwise. These variables are used to estimate the effects of participation in, and qualifications, from post-school education and training. The second type of measures was used for the analysis of trajectories. Cohort members were assigned scores equalling the number of years since last participating in the corresponding type of post-school education or training, or the year qualifications were obtained. Otherwise, a score of zero was assigned.

Focusing first on participation for each person-year, a score of 0 was assigned if, by that year the cohort member had never participated in the corresponding type of post-secondary education or training, or was not in the last year of participation; 0.5 if that year was the last year of participation (information on occupation and earnings were measured at least six months after participation); a score of 1 for one year since participation; a score of 2 for two years since participation; a score of 3 for three years since participation; and so forth. For types of participation other than apprenticeships and traineeships, participation was defined as full-time participation. Apprenticeships and traineeships are necessarily part-time study, as the participant almost invariably works full-time.

Corresponding measures for the years since the qualification obtained were also constructed, as in the following example:

ID	Year Since Participation	Year Since Qualification	Occupational Status	Earnings
27	0	0	Missing	15678
27	0.5	0.5	16	16786
27	1	1	33	34789
27	2	2	33	36679
47	0	0	Missing	15678
47	0.5	0	16	16786
47	1	0	23	24789
47	2	0	23	26789

In this example, the respondent with identification number 47 did not obtain a qualification but for respondent 27 the data for qualification and participation are identical. For apprenticeships and traineeships, completion (as asked in the questionnaire) was deemed as equivalent to qualification.

The frequencies for years since participation and qualification are presented in Table 3. The frequencies for the measures simply distinguishing between participants/graduates and non-participants/non-completers are that for zero (coded 0) and 0.5 to 7 (coded 1).

For the experience measures, the percentage of the year employed or unemployed (as appropriate) for years since the beginning of 1997 to the date of interview in that year were averaged to provide a percentage of the time since 1997 spent employed or unemployed.

### *Approach*

The regression analysis is performed sequentially. Groups of variables were added sequentially, beginning with the core model comprising age and the measures of participation or qualifications. In the next model, gender was added (being male compared to female). Model 3 added experience of employment, and model 4 added experience of unemployment. This use of sequential models allows a better understanding of the processes studied. The procedure shows the extent to which the effects of post-secondary education and training are mediated by other factors or by their association with other variables. For example, if an apprenticeship is associated with higher earnings but males also have higher earnings and most apprentices are male, the effect of an apprenticeship incorporates effects of gender. In a regression analysis controlling for gender, the estimate for an apprenticeship is its effect 'independent' of its association with gender. In most situations, the magnitude of the 'independent' effect is smaller.

**Table 3** Frequencies of time-variant measures of participation and qualifications

Years	Apprentice-ship	Trainee-ship	TAFE certificate	TAFE diploma	University diploma	Bachelor degree	Post-grad degree	Other
<i>Since Last Year of Participation</i>								
0	60372	59189	60208	60380	63004	52037	63818	62669
0.5	1203	1143	856	848	217	3683	81	288
1.0	733	938	740	712	187	2757	23	248
2.0	593	784	610	613	159	2254	13	212
3.0	446	662	490	515	136	1646	.	170
4.0	338	519	397	425	111	1022	.	137
5.0	157	384	311	315	96	407	.	121
6.0	56	227	230	117	25	126	.	69
7.0	28	64	60	6	.	2	.	17
<i>Since Year of Qualification</i>								
0	61796	61574	59894	61866	63675	58294	63862	61935
0.5	615	621	943	560	81	2014	38	451
1.0	512	540	906	480	66	1663	21	390
2.0	408	461	754	399	47	1166	9	335
3.0	220	354	589	328	38	653	5	289
4.0	178	300	468	232	23	144	.	247
5.0	116	66	222	57	5	1	.	216
6.0	57	16	104	13	.	.	.	68
7.0	33	3	55	.	.	.	.	4

In the regression analyses of the effects of factors other than post-secondary education and training on occupational status (Chapter 4), the final model adds the occupational status of the job in the previous year. Similarly, in the analyses of the influence of other factors on earnings, earnings from the main job in the previous year are added in the final model.

These prior state variables are included to control for unmeasured factors that impact on the outcome variable. Such unmeasured factors, by definition, are not included in the model. For example, personality, physique, physical attractiveness, social networks and cultural understandings may all affect occupational status and earnings, but they are not directly measured in LSAY and it is difficult to measure all of them well in any single study. The inclusion of prior state controls for the effects of these factors on the outcome of interest. This type of analysis is sometimes referred to as fixed effects analysis, as the procedure assumes that these unmeasured factors have stable unchanging (fixed) effects on the dependent (outcome) variable. The estimates for the measured factors (for example, participation or qualifications) are therefore 'net' of any other influences, and so are estimates of their 'pure' independent effects.

### *Interpretation*

The interpretation of the estimates from the regression analyses is dependent on whether the predictor variable is quantitative (continuous) or qualitative (categorical). Age, a quantitative variable, was measured in years, so the effects are for a one-year difference in age. For the experience measures, the estimate reflects the change in the dependent variable for a difference of 10 per cent in the time spent employed or unemployed. Socioeconomic background and achievement were standardised so the estimate is the change in the dependent variable for a change of one standard deviation in socioeconomic background or achievement.

As noted earlier, many quantitative measures were centred or standardised so that the estimate for the intercept is meaningful. The intercept can be interpreted as the estimated or average occupational status or earnings for observations scoring zero on all variables in the model. Age was centred at 18 and employment experience at the mean time spent employed. Experience of unemployment was not centred.

In the case of categorical measures, such as gender and qualifications, the effects are relative to the comparison group. For example, the difference in occupational status or earnings is reported for males compared to females. The effects for the dichotomous measures of participation and qualifications are the effects of having participated or having obtained the qualification. For the continuous measures of years since participation/qualification, the effects are for each year since year last participated or the year the qualification was obtained.

In the regression analyses in Chapter 5, 'earnings' was logged to minimize the influence of extreme cases, usually respondents with very high earnings. The estimates on logged earnings can be interpreted as percentage effects, the percentage increase in income for a unit change in the respective independent variable. In the text the estimates are interpreted as percentage effects (after multiplication by 100). However, this is not strictly true although very close for most parameter estimates. The correct formula to convert logarithmic estimates to percentage effects is:

$$\text{Percentage effects} = [\exp(\text{Estimate}) - 1] \times 100 \quad (\text{Allison, 1995:65}).$$

In the tables, the statistical significance of the parameter estimates in the regression analyses are indicated in the conventional way (\*\* $P < 0.001$ , \* $0.001 < P < 0.01$ , \* $0.01 < P < 0.05$ ) where 'P' is the probability of the null hypothesis. A P value less than 0.001 means that there is less than one chance in 1000, that is the difference between the estimate and zero is due to random fluctuation, based on the distribution of a large number of samples drawn from a population. Traditionally 'P' values greater than 0.05 are interpreted as not statistically significant. However, this may be too stringent so P values greater than 0.05 but less than 0.10 are indicated in the tables by a different symbol: †  $0.05 < P < 0.10$ .



### 3. COHORT PROFILES

This chapter describes the occupational, earning, educational and labour market profiles of the cohort for the years 1997 to 2005. In the transition of young people from school to work, there are great changes in what they do and in their prior experiences from year to year. Included in this chapter are the profiles for

- Main activity
- Occupational group and occupational status
- Weekly and hourly earnings
- Participation in post-secondary education and training
- Qualifications from post-secondary education and training
- Experience of employment and unemployment

#### Main Activity

Table 4 presents the percentages for main activity. The proportion in full-time study declined as the cohort aged. In 1997 and 1998, over 80 per cent were in full-time study, almost invariably at school. Full-time study declined precipitously in 1999 as most of the cohort had completed Year 12. In subsequent years, the proportion in full-time study declined as students completed or discontinued university and TAFE courses. In 2004, only 8 per cent of the cohort was in full-time study, and in 2005, just over 5 per cent were in full-time study. From 1997 to 2001, the incidence of full-time study was about 10 percentage points higher among young women than young men, because Year 12 completion is higher among young women and participation in university degree courses—which easily constitutes the largest slice of post-secondary education and training—is considerably higher among young women (see Table 8).

In contrast to full-time education, the proportion of the cohort in full-time work increased throughout the period investigated. The percentage in full-time work increased abruptly to about 35 per cent in 1999, the first year most of the cohort left school, and then steadily increased each year. By 2004, over 70 per cent of the cohort was in full-time work at the time of interview, and in 2005, 77 per cent. In all years, the incidence of full-time work was substantially higher among young men than among young women. As a proportion of those in full-time work, part-time study combined with full-time work was quite common from 1997 to 2000, but was much less so in 2004 and 2005. This pattern reflects the higher proportions engaged in apprenticeships and traineeships during the early years.

The incidence of part-time work increased from 3 to 6 per cent in 1999, further increased to about 10 per cent by 2001 and 2002, and marginally declined to 8 per cent in 2005. Part-time work was much more common among women, peaking at over 13 per cent in 2002, compared to 7 per cent of young men that year. Each year, the incidence of part-time work combined with part-time study is very low at only 1 or 2 percentage points. Similarly, part-time study was the main activity of less than one percent of respondents.

The proportion of the cohort looking for work but not working or studying was around 5 per cent between 1999 and 2002, but had declined to 2.2 per cent by 2005. Unemployment was higher among males than among females between 1999 and 2002, but there was little difference in the later years.

The proportion of young women engaged in “other” activities increased from 0.8 per cent in 1997 to 8.5 per cent in 2005, when the median age was 24 years. Previous work has shown that in the later years, about 70 per cent of those not in education or the labour market had children of their own (Marks, 2006). In contrast, the proportion of young men whose main activity was classified as ‘other’ fluctuated throughout the period and, in contrast to young women, was only 3.5 per cent in 2005.

**Table 4 Main activity 1997-2005**

All	1997		1998		1999		2000		2001		2002		2003		2004		2005	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
FT study	8908	86.5	7783	79.8	4208	48.1	3198	40.7	2145	31.3	1363	22.4	823	15.4	390	8.4	220	5.2
FT work & PT study	346	3.4	688	7.1	1307	14.9	1265	16.1	921	13.5	550	9.1	363	6.8	358	7.7	314	7.4
FT work	552	5.4	573	5.9	1856	21.2	2056	26.2	2331	34.0	2763	45.5	2899	54.3	2918	62.9	2927	69.3
PT work & PT study	21	0.2	23	0.2	123	1.4	152	1.9	73	1.1	103	1.7	68	1.3	50	1.1	38	0.9
PT work	127	1.2	206	2.1	530	6.1	490	6.2	661	9.6	614	10.1	487	9.1	407	8.8	360	8.5
PT study	32	0.3	30	0.3	68	0.8	68	0.9	49	0.7	41	0.7	50	0.9	31	0.7	12	0.3
Looking for work	225	2.2	358	3.7	460	5.3	400	5.1	370	5.4	309	5.1	253	4.7	171	3.7	94	2.2
Other	86	0.8	88	0.9	195	2.2	226	2.9	297	4.3	331	5.4	398	7.5	317	6.8	256	6.1
<b>Men</b>																		
FT study	4192	83.3	3600	74.7	1827	42.8	1361	35.5	910	27.1	633	21.3	398	15.3	179	7.9	107	5.2
FT work & PT study	280	5.6	536	11.1	877	20.5	876	22.8	636	19.0	292	9.8	185	7.1	174	7.7	151	7.3
FT work	324	6.4	355	7.4	973	22.8	1031	26.9	1191	35.5	1499	50.5	1468	56.3	1501	66.2	1543	74.9
PT work & PT study	8	0.2	5	0.1	39	0.9	51	1.3	28	0.8	43	1.4	25	1.0	25	1.1	14	0.7
PT work	48	1.0	85	1.8	192	4.5	190	4.9	269	8.0	205	6.9	189	7.2	167	7.4	124	6.0
PT study	12	0.2	15	0.3	30	0.7	31	0.8	21	0.6	15	0.5	23	0.9	9	0.4	3	0.1
Looking for work	126	2.5	198	4.1	261	6.1	233	6.1	213	6.4	165	5.5	123	4.7	88	3.9	48	2.3
Other	43	0.8	28	0.6	68	1.6	65	1.7	85	2.5	118	4.0	196	7.5	121	5.4	72	3.5
<b>Women</b>																		
FT study	4716	89.6	4183	84.9	2381	53.1	1837	45.7	1235	35.3	730	23.5	424	15.5	210	8.8	113	5.2
FT work & PT study	66	1.2	152	3.1	431	9.6	390	9.7	285	8.2	258	8.3	178	6.5	183	7.7	163	7.6
FT work	228	4.3	219	4.4	882	19.7	1025	25.5	1141	32.6	1264	40.7	1431	52.4	1417	59.7	1384	64.1
PT work & PT study	13	0.2	18	0.4	84	1.9	101	2.5	46	1.3	60	1.9	43	1.6	25	1.1	25	1.1
PT work	79	1.5	122	2.5	338	7.5	300	7.5	392	11.2	409	13.2	298	10.9	239	10.1	236	10.9
PT study	20	0.4	15	0.3	39	0.9	37	0.9	28	0.8	26	0.8	27	1.0	22	0.9	9	0.4
Looking for work	99	1.9	160	3.2	199	4.4	167	4.2	157	4.5	144	4.6	129	4.7	82	3.5	47	2.2
Other	44	0.8	60	1.2	127	2.8	160	4.0	212	6.1	213	6.9	202	7.4	196	8.3	184	8.5

Note: Weighted Estimates

## Occupational Group and Occupational Status

Table 5 shows the distributions across the four occupational groups for all respondents with jobs and separately for full-time and part-time workers, and by gender.

There are striking but not unexpected changes in the distribution of occupations as the majority of the cohort progresses from school, via post-secondary education and training, to the labour market. The proportion working in managerial or professional occupations increased dramatically from 3.2 per cent in 1997 to 45 per cent in 2005. Concomitantly, the proportion in semi-skilled and unskilled manual work declined from nearly 28 per cent in 1997 and 1998 to 10 per cent in 2005. For men the decline was steeper, from 44 per cent to 16 per cent. The proportion of the cohort in sales, clerical and personal service work declined from 56 per cent in 1997 to 31 per cent in 2005. This decline was greater among young women: in 1999 75 per cent were working in sales, clerical and personal service jobs compared to 43 per cent in 2005. In contrast to substantial changes in the proportions in other occupational groups, the proportion in trade or skilled manual work hovered around 13 to 16 per cent throughout the time period investigated.

**Table 5 Occupational groups, 1997-2005, %**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Full-time &amp; part-time work</b>									
<i>No of Cases</i>	5307	5242	6367	6150	5580	5070	4542	4139	3827
Professional/Managerial	3.2	3.8	8.5	13.0	17.6	26.0	35.3	44.8	45.6
Trade & Skilled Manual	12.9	14.5	16.6	15.8	15.6	14.8	12.9	13.5	13.6
Sales, Clerical, Personal	56.2	53.9	53.2	52.0	51.2	45.7	39.4	31.5	31.0
Semi/Unskilled Manual	27.6	27.7	21.8	19.3	15.6	13.5	12.4	10.2	9.8
<b>Full-time work only</b>									
<i>No of Cases</i>	856	1240	3224	3353	2688	3101	3187	3102	3200
Professional/Managerial	2.9	3.2	9.2	14.7	21.5	29.9	40.7	48.3	49.1
Trade & Skilled Manual	36.4	39.4	26.8	24.7	12.4	17.6	13.3	13.9	13.6
Sales, Clerical, Personal	29.9	25.7	41.6	41.7	49.3	38.7	33.9	28.7	28.2
Semi/Unskilled Manual	30.8	31.8	22.4	18.9	16.8	13.7	12.1	9.1	9.2
<b>Part-time work only</b>									
<i>No of Cases</i>	4451	3899	3069	2749	2850	1916	1326	1019	607
Professional/Managerial	3.3	4.0	7.7	10.7	13.6	18.7	21.7	34.8	27.1
Trade & Skilled Manual	7.9	6.1	5.1	3.5	19.0	9.7	12.1	12.0	14.3
Sales, Clerical, Personal	61.9	64.3	66.5	66.2	53.3	58.6	53.3	40.2	45.6
Semi/Unskilled Manual	27.0	25.7	20.7	19.7	14.1	13.0	13.0	13.1	13.1
<b>Men (all work)</b>									
<i>No of Cases</i>	2457	2431	3017	2905	2622	2353	2131	1972	1834
Professional/Managerial	3.5	3.9	9.4	13.9	18.8	25.6	32.8	39.8	40.9
Trade & Skilled Manual	22.4	24.9	28.5	28.2	27.3	26.2	22.9	24.3	24.6
Sales, Clerical, Personal	30.0	29.0	30.0	30.0	30.5	27.9	24.8	19.6	18.8
Semi/Unskilled Manual	44.1	42.3	32.0	27.9	23.3	20.3	19.5	16.3	15.8
<b>Women (all work)</b>									
<i>No of Cases</i>	2850	2811	3350	3245	2958	2717	2411	2167	1993
Professional/Managerial	2.9	3.7	7.6	12.0	16.4	26.5	37.7	49.9	50.3
Trade & Skilled Manual	4.6	5.1	5.2	3.7	4.3	3.7	3.1	2.5	2.5
Sales, Clerical, Personal	79.3	76.7	75.1	73.3	71.3	62.9	53.7	43.6	43.4
Semi/Unskilled Manual	13.2	14.5	12.1	10.9	8.0	6.9	5.6	4.0	3.8

Note: Weighted estimates of percentages.

Changes in the distributions of occupational groups were more marked for full-time work than for part-time work. The proportion in full-time work in managerial, professional or associate professional occupations was 49 per cent in 2005, compared to 27 per cent among part-time workers. Conversely, 46 per cent of part-time workers were in sales, service and personal service occupations, compared to 28 per cent of full-time workers. Similar proportions of full-time and part-time workers were in semi-skilled or unskilled occupations.

There were strong gender differences in the distributions of occupations. Between 20 and 25 per cent of men were working in trade or skilled manual occupations, compared to 2 to 5 per cent of young women. Men were also more commonly working in semi-skilled or unskilled occupations. For example, in 1997 and 1998 over 40 per cent of men were working in these types of jobs, compared to only 12 per cent of young women. Conversely, women were far more likely to be working in clerical, sales or personal service work: in 2005 over 40 per cent of women were in such work compared to 19 per cent of men. The proportion in managerial, professional or paraprofessional work did not differ between the sexes before 2002, but later such work was more common among women. This pattern is probably due to the entry of degree holders into the workforce after 2002. The 10 percentage point difference is the same magnitude as that for bachelor degrees.

Table 6 presents summary statistics for occupational status for all workers, and separately for full-time and part-time workers. (Gender differences are not shown since they are analysed in Chapter 4.) Table 6 shows that the occupational status of the jobs held by cohort members increased throughout the time period studied. In 1997 and 1998 the mean occupational status was low, at about 20 score points. By 2004-2005 the mean occupational status had increased to 37. This can be compared to the average for adult populations, which is around 45. The increase in the median occupational status was less dramatic, increasing from 25 in 1999 to 31 in 2005. The smaller increase for the median indicates that some of the increase in mean occupational status can be attributed to a small proportion of the sample in very high status jobs.

**Table 6 Occupational status, 1997-2005, ANU3 score points**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Full-time &amp; part-time work</b>									
<i>No of Cases</i>	5306	5223	6334	6144	5554	5050	4524	4064	3827
Mean	19.7	20.1	23.1	23.6	25.9	28.7	31.8	34.9	36.6
Standard Deviation	9.7	9.8	12.6	12.3	13.1	14.8	16.6	18.3	18.9
Median	24.3	25.2	25.3	25.1	25.1	26.2	27.4	29.9	31.0
Inter-quartile Range	14.1	14.1	13.5	16.0	12.1	15.5	19.5	23.2	25.3
<b>Full-time work</b>									
<i>No of Cases</i>	855	1235	3198	3349	2676	3097	3171	3248	3200
Mean	21.2	21.4	24.4	25.3	27.2	30.1	33.7	36.5	37.9
Standard Deviation	10.4	10.1	13.2	12.8	14.2	15.4	17.3	18.4	18.9
Median	22.3	23.3	25.3	25.1	26.2	26.9	29.2	31.9	33.8
Inter-quartile Range	13.1	14.3	13.3	11.7	12.3	15.1	19.9	25.3	31.2
<b>Part-time work</b>									
<i>No of Cases</i>	4451	3887	3062	2747	2836	1907	1324	798	607
Mean	19.3	19.7	21.7	21.4	24.5	26.0	27.0	28.4	30.0
Standard Deviation	9.5	9.6	11.8	11.3	11.8	13.3	14.1	16.5	17.6
Median	25.3	25.3	25.3	25.1	25.1	25.1	25.1	25.1	26.0
Inter-quartile Range	14.1	14.1	14.1	14.2	13.9	11.7	13.7	15.6	17.4

Note: Weighted estimates of ANU score points.

Furthermore, the increase in occupational status was greater for full-time work than for part-time work. For full-time work, the mean occupational status increased from 21 in 1997 to 38 in 2005, compared to an increase from 19 to 30 for part-time work. The median occupational status of part-time jobs hardly increased at all.

## Earnings

Table 7 presents summary statistics for weekly and hourly earnings. For estimates between 1997 and 2004, the dollar amounts were converted to 2005 dollars.

**Table 7 Weekly and hourly earnings, 1997-2005**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Weekly Earnings- Full-time &amp; part-time work (\$)</b>									
<i>No of Cases</i>	4309	4362	5392	5377	4802	4291	3779	3646	3439
Mean	129	163	319	406	492	596	714	840	938
Standard Deviation	121	150	212	246	297	393	405	466	523
Median	88	112	289	377	502	616	700	816	879
Inter-Quartile Range	88	163	286	326	382	408	414	377	441
<b>Weekly Earnings- Full-time work (\$)</b>									
<i>No of Cases</i>	703	1000	2721	2913	2299	2635	2659	2918	2885
Mean	300	352	440	538	644	740	841	937	1026
Standard Deviation	140	158	206	228	293	395	385	440	495
Median	269	320	402	502	628	690	803	879	941
Inter-Quartile Range	104	144	195	226	251	264	286	345	439
<b>Weekly Earnings- Part-time work (\$)</b>									
<i>No of Cases</i>	3606	3339	2654	2452	2494	1646	1112	720	546
Mean	92	102	182	225	336	334	396	438	480
Standard Deviation	79	81	122	132	212	229	258	335	416
Median	75	88	151	188	289	282	345	377	439
Inter-Quartile Range	60	65	135	163	276	264	331	339	402
<b>Hourly earnings - Full-time &amp; part-time work (\$)</b>									
<i>No of Cases</i>	4068	4337	5375	5365	4792	4281	3771	3640	3436
Mean	9.1	10.4	12.5	14.8	17.4	19.3	21.8	24.4	27.0
Standard Deviation	12.1	7.2	8.6	11.2	23.5	15.4	21.1	19.4	27.2
Median	8.4	9.6	11.8	13.8	15.7	17.9	20.1	22.0	23.8
Inter-Quartile Range	3.4	4.1	5.0	5.9	5.8	6.5	7.7	9.0	10.9

Note: Weighted estimates in 2005 dollars

Among full-time workers, weekly earnings increased substantially over the time period investigated. Mean weekly full-time earnings increased from \$352 in 1998 to \$1026 in 2005. Median weekly full-time earnings also increased just as steeply, indicating that the increase in mean weekly earnings was because of general increases rather than the entrance of a small minority of very high earners. These increases are due to a number of factors, such as age-based awards, apprentices moving off the apprenticeship training wage, the entry of school completers and university and other graduates to the workforce, and the higher wages accruing to on-the-job training and experience. The distribution also widened, as indicated by increases in the standard deviation and the inter-quartile range.

Mean weekly earnings of part-time workers was about 40 per cent that of full-time workers. The earnings of part-time workers also increased substantially, from a mean of \$102 in 1998 to \$480 in 2005. As for full-time work, median weekly earnings increased more or less in tandem with full-time earnings.

Mean hourly earnings also increased substantially from \$10.40 per hour in 1998 to \$27 per hour in 2005. The medians followed the same pattern increasing from \$9.60 per hour in 1998 to \$23.80 per hour in 2005.

### Participation in Post-Secondary Education and Training

Table 8 presents the percentage of the cohort participating in various education and training activities between 1997 and 2005. There is no distinction made between full-time and part-time courses in the analysis. The first panel comprises estimates for all respondents, and the two lower panels the estimates for men and women. The last column presents the percentage that have ever participated in each type of education and training using data from the 2005 wave. In the bottom row of each panel are estimates for the percentage in no study or training for that particular year; the last entry in each panel is the estimate of the percentage that had never participated in any recognised type of post-secondary education and training.

**Table 8 Participation in post-secondary school education and training, 1997-2005 (%)**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	Ever
<b>All</b>										
Apprenticeship	3.0	5.1	8.2	9.5	7.5	2.6	2.8	1.4	1.2	13.1
Traineeship	1.2	1.7	5.0	4.0	2.4	1.9	1.3	0.8	0.7	14.9
TAFE Certificate	2.0	1.2	6.2	4.2	2.8	2.9	2.8	2.6	2.5	21.1
TAFE Diploma	0.2	0.1	6.7	6.3	3.7	2.5	1.6	1.4	1.2	15.1
University Diploma	.	0.0	0.6	1.9	0.5	0.7	0.5	0.4	0.4	4.3
Bachelor Degree	0.0	0.0	30.8	32.0	31.7	22.6	15.2	8.8	5.7	46.4
Postgrad Degree	.	.	.	0.3	0.1	0.2	0.9	1.4	1.8	3.2
Other	0.3	0.8	2.4	1.4	0.6	0.6	0.8	1.3	0.2	7.0
<i>No Study/Training</i>	.	.	36.5	40.6	51.7	66.1	74.2	81.9	86.2	11.1
<b>Men</b>										
Apprenticeship	5.4	9.1	14.8	17.2	13.5	4.5	5.0	2.7	2.0	22.4
Traineeship	1.7	2.0	4.3	3.6	2.2	1.7	1.4	0.6	0.7	13.6
TAFE Certificate	1.9	1.0	4.9	3.4	2.6	2.0	1.9	2.0	2.0	17.7
TAFE Diploma	0.2	0.1	6.5	5.7	3.6	2.1	1.1	1.1	1.4	13.8
University Diploma	.	0.1	0.6	2.0	0.6	0.7	0.6	0.6	0.4	5.0
Bachelor Degree	0.0	0.0	25.9	27.0	27.2	21.4	15.3	8.5	5.0	41.2
Postgrad Degree	.	.	.	0.3	0.1	0.2	0.9	1.3	1.6	2.7
Other	0.2	0.8	2.1	1.2	0.7	0.6	0.7	1.2	0.3	5.7
<i>No Study/Training</i>	.	.	37.2	39.9	50.4	66.9	73.1	82.2	86.6	12.2
<b>Women</b>										
Apprenticeship	0.8	1.3	1.9	2.1	1.7	0.8	0.6	0.2	0.5	4.1
Traineeship	0.8	1.3	5.7	4.4	2.5	2.1	1.2	1.0	0.7	16.2
TAFE Certificate	2.0	1.3	7.4	4.9	3.1	3.7	3.7	3.1	3.0	24.3
TAFE Diploma	0.1	0.2	7.0	7.0	3.7	2.9	2.1	1.8	1.0	16.2
University Diploma	.	0.0	0.5	1.8	0.4	0.6	0.4	0.2	0.4	3.6
Bachelor Degree	0.0	0.0	35.6	36.8	35.9	23.7	15.0	9.2	6.4	51.4
Postgrad Degree	.	.	.	0.3	0.1	0.2	0.8	1.6	2.1	3.7
Other	0.3	0.7	2.8	1.5	0.6	0.6	0.8	1.3	0.2	8.2
<i>No Study/Training</i>	.	.	35.8	41.4	53.0	65.4	75.3	81.5	85.7	10.0

Notes: Categories not mutually exclusive. Includes both part-time and full-time. Estimate for 'Ever Participated' based on the 2005 data. Weighted estimates.

Overall, about 13 per cent had at one stage been in an apprenticeship. This estimate is slightly higher than the 11.4 per cent estimated by Ainley and Corrigan (2005: Table 1) using data up until 2003. With a further year of data, Curtis (2008) estimated that 12.1 per cent of the cohort had undertaken an apprenticeship. The proportion in an apprenticeship peaked at nearly 10 per cent in 2000, but by 2005 only 1.2 per cent of cohort members were doing an apprenticeship. Participation in apprenticeships is far higher among males: by 2005, 22 per cent of males had ever been in an apprenticeship compared to only 4 per cent of females.

The annual incidence of traineeships is lower than that for apprenticeships, but since they are usually of a much shorter duration, the overall incidence is higher at 15 per cent. This estimate is higher than previous estimates of 9.3 per cent (Ainley & Corrigan, 2005: Table 1) and 11.0 per cent (Curtis, 2008). The estimate is higher here, since it includes traineeships between 1998 and 2000 that may have not been recorded in the 2001 data. A higher proportion of young women participated in traineeships (16 per cent) than young men (14 per cent).

Just over 20 per cent of the cohort had been in a TAFE certificate course sometime between 1997 and 2005. Participation peaked in 1999, with 6.2 per cent of the cohort enrolled in a TAFE certificate course. Participation in TAFE certificate courses up until 2005 was higher among young women (24 per cent) than young men (18 per cent).

Participation in a TAFE diploma course was less common, with approximately 15 per cent participating sometime between 1997 and 2005. Participation was only slightly more common young women (16 per cent) than young men (14 per cent). Participation also peaked in 1999 at 6.7 per cent.

Participation in a university diploma course was low, with only 4 per cent of the cohort enrolled in such a course at any time between 1997 and 2005. In contrast to other forms of post-secondary education, participation was higher, albeit slightly, among young men than young women.

Of all the types of post-secondary education and training considered here, participation was greatest in bachelor degree courses. A very substantial 46 per cent of the cohort had at some stage enrolled in a degree course, more than twice the level of participation of the next most common form of post-secondary education and training, TAFE certificate courses. This estimate is consistent with that obtained from previous studies, 31 per cent by 1999 and 38 per cent by 2000 (Marks, Fleming, Long, & McMillan, 2000: 17 and Addendum, 58).

Estimates of participation in a bachelor degree from the 1995 Year 9 LSAY cohort are comparable to estimates from other sources. ABS data from a supplementary survey to the May 1999 Labour Force Survey and the 2001 Survey of Education and Work estimated that 29 to 33 per cent of recent school leavers, or 42 to 48 per cent of recent school leavers who had completed Year 12, were in higher education in the year after leaving school (ABS, 1999, 2002). Estimates from the 1995 Year 9 LSAY cohort are similar: 33 per cent of the 1995 Year 9 cohort and 41 per cent of Year 12 completers commenced higher education in the first semester of 1999. The OECD's estimate from the 2005 edition of *Education at a Glance* is that about 60 per cent of young persons in Australia will enter tertiary education type A (university) programs at some time during their lives (OECD, 2005:14, 242). This estimate is based on current entry rates at different ages. The LSAY estimate of 46 per cent participating up to 2005 (approximately age 24) is consistent with this figure.

Participation in degree courses was highest in 2000 at 32 per cent, declining to 23 per cent in 2002. This reflects the bulk of students who first enrolled in 1999 and completed a three-year degree in 2001. Subsequently, participation declined to 15 per cent in 2003 and only 6 per cent in 2005.

There was a sizable gender difference in participation in degree courses: 51 per cent of young women had participated in degree courses compared to 41 per cent of young men. This 10 percentage point gap in participation was maintained between 1999 and 2001, but narrowed thereafter.

Participation in postgraduate degree courses was uncommon, with only 3 per cent ever participating in such a course by 2005 (about age 24). As expected, participation was highest in the later years. Participation was slightly higher among young women.

About 7 per cent of the cohort participated in “other” courses: about 6 per cent of young men and 8 per cent of young women. Participation in other courses was highest in 1999.

In 1999 and 2000, more than half of the sample was participating in some form of post-secondary education and training. In 2001, about half were participating and by 2005 only about 14 per cent.

Approximately 11 per cent had not participated in any of these types of post-secondary education and training. Non-participation was slightly higher among young men at 12 per cent compared to 10 per cent for young women.

### **Qualifications from Participation in Post-Secondary Education and Training**

Table 9 presents estimates of the qualifications obtained by cohort members for these same types of post-secondary education and training.

By 2005, about 10.5 per cent of the cohort had completed an apprenticeship. Since 12.9 per cent participated in an apprenticeship, the apparent completion rate is therefore 81.3 per cent. This compares with the Ainley and Corrigan’s (2005:28) estimate of 77 per cent up to 2003, and 78 per cent up to 2004 (Curtis, 2008:32). Both studies note that the LSAY estimate for completion is higher than the NCVET estimate of 60 per cent. However, the NCVET estimate is of apprenticeships in one field of study with a single employer, whereas the LSAY estimate is for completion of an apprenticeship regardless of changes in field of study or employer. Furthermore, as Curtis (Curtis, 2008) points out, those who start an apprenticeship early in a year but soon discontinue may not provide this information in an interview conducted towards the end of the year.

Approximately 11 per cent of the sample completed a traineeship, implying an apparent completion rate of 73 per cent.

The estimated completion rates for TAFE certificate courses are relatively high at around 86 per cent. This is probably due to the inclusion of low-level TAFE certificates (for example, AQF levels 1 and 2) in the measure of TAFE certificate qualifications. In addition, a TAFE certificate course can be started and completed between survey interviews, so at neither interview would the respondent be participating in a TAFE certificate course.

Approximately 32 per cent of the sample had obtained a bachelor degree by 2005. This represents an apparent completion rate of 69 per cent. Excluding continuing students, the completion rate increases to 73 per cent. This is consistent with estimates from a recent report on course completion in higher education (Marks, 2007).

Only very small percentages of the sample have obtained university diploma and post-graduate degree qualifications. Approximately 6 per cent of the sample had obtained other qualifications, an apparent completion rate of 86 per cent.

From the 2005 data, it is estimated that slightly more than a quarter of the sample (27%) had not obtained a qualification in post-secondary education and training. A higher proportion of young men (29%) than young women (24%) were without a post-secondary qualification.



**Table 9 Post-secondary school qualifications in education and training 1997-2005 (%)**

	Since last interview									Ever
	1997	1998	1999	2000	2001	2002	2003	2004	2005	
<b>All</b>										
Apprenticeship	0	1.2	0.9	1.7	2.6	0.4	4.7	1.5	0.6	10.5
Traineeship	0	0.1	0.2	1.0	6.4	0.7	1.7	0.7	0.5	10.8
TAFE Certificate	0	1.8	1.1	2.9	9.4	2.5	1.8	1.8	1.7	18.0
TAFE Diploma	0	.	0.4	1.1	5.0	1.7	1.0	0.6	0.5	9.6
University Diploma	.	.	.	0.1	0.4	0.2	0.1	0.2	0.2	1.2
Bachelor Degree	.	.	.	0.0	2.9	10.1	8.7	7.5	3.7	31.6
Postgrad Degree	.	.	.	.	0.0	0.1	0.1	0.2	0.3	0.8
Other	0	0.1	1.9	3.6	0.0	0.0	0.2	0.5	0.3	6.2
<i>None</i>	.	.	.	.	.	.	.	.	.	26.6
<b>Men</b>										
Apprenticeship	0	2.0	1.3	2.9	4.6	0.6	8.3	2.7	1.1	18.6
Traineeship	0	0.1	0.3	0.7	5.2	0.5	1.6	0.8	0.2	9.8
TAFE Certificate	0	1.3	0.7	2.1	7.9	1.9	1.5	1.3	1.1	14.3
TAFE Diploma	0	.	0.4	0.8	3.9	1.9	0.8	0.5	0.2	7.9
University Diploma	.	.	.	0.1	0.4	0.3	0.1	0.3	0.2	1.5
Bachelor Degree	.	.	.	0.0	1.9	7.0	6.5	8.1	3.8	26.6
Postgrad Degree	.	.	.	.	0.0	0.0	0.0	0.2	0.3	0.5
Other	0	0.1	2.2	3.1	0.0	0.0	0.1	0.4	0.4	5.7
<i>None</i>	.	.	.	.	.	.	.	.	.	29.3
<b>Women</b>										
Apprenticeship	0	0.4	0.5	0.5	0.7	0.1	1.2	0.3	0.1	2.7
Traineeship	0	0.0	0.1	1.3	7.6	1.0	1.7	0.6	0.8	11.8
TAFE Certificate	0	2.3	1.5	3.7	10.9	3.1	2.2	2.2	2.2	21.6
TAFE Diploma	0	.	0.4	1.3	6.1	1.6	1.2	0.6	0.9	11.3
University Diploma	.	.	.	0.2	0.3	0.1	0.2	0.2	0.1	1.0
Bachelor Degree	.	.	.	0.0	3.8	13.1	10.8	6.9	3.5	36.3
Postgrad Degree	.	.	.	.	0.0	0.1	0.2	0.3	0.4	1.0
Other	0	0.1	1.6	4.0	0.0	0.0	0.2	0.6	0.3	6.7
<i>None</i>	.	.	.	.	.	.	.	.	.	24.0

Note: Weighted estimates of percentages. Categories not mutually exclusive. Includes both part-time and full-time study. Estimate for 'Ever Qualified' and 'None' based on the 2005 data.

## Labour Market Experience

The purpose of this section is to summarise the cohort's experiences in the labour market. Presented are the average time spent in work or unemployment as a percentage of person months, and the proportion of the sample that spent different proportions of the year employed and unemployed. For average time spent employed and unemployed, three measures are used: the first includes time spent in full-time study either at school or at post-secondary institutions; the second excludes time at school; and the third excludes time in all forms of full-time study (school and post-secondary). As noted in the previous chapter, employment includes both full-time and part-time employment. For comparative purposes, time spent in post-secondary full-time study is also presented.

Table 10 shows dramatic increases in the time spent employed, from less than 50 per cent in 1999 to nearly 90 per cent in 2005. Excluding full-time study, on average 84.3 per cent of 2005 was spent employed. In contrast, the average time spent looking for work while not working or in full-time study was 2.9 per cent of the year.

Time spent unemployed declined as the cohort aged. In 1997 and 1998, unemployment was reasonably high, when among early school leavers who were not in full-time study about 9 per cent of the year was spent unemployed. This declined to less than 6 per cent in 2000, and in 2005 was just below 3 per cent.

**Table 10 Per cent of time spent since beginning of year working, unemployed or studying full-time, 1997-2005**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>All</b>									
Work	48.0	50.6	67.9	76.6	78.2	80.2	83.2	85.8	88.5
Work (excluding School)	46.1	49.7	67.7	76.6	78.2	80.2	83.2	85.8	88.5
Work (excl. Sch & FT study)	45.3	49.1	46.8	56.0	53.8	65.5	73.5	79.6	84.3
Unemployed	9.5	10.2	12.2	8.8	6.1	6.5	6.0	4.5	3.2
Unem. (Excluding Sch.)	9.0	9.7	12.0	8.8	6.1	6.5	6.0	4.5	3.2
Unem. (excl. Sch. & FT study)	8.7	9.4	6.9	5.5	4.0	5.1	5.0	4.0	2.9
Full-time Study (excl. Sch.)	2.2	1.8	43.6	38.7	36.3	21.8	15.9	9.4	6.4
<b>Men</b>									
Work	45.1	48.7	68.1	77.0	78.5	81.5	84.8	88.2	91.0
Work (excluding School)	42.8	47.7	67.9	77.0	78.5	81.5	84.8	88.2	91.0
Work (excl. Sch & FT study)	42.1	46.9	50.8	59.9	58.4	68.5	75.1	82.9	86.8
Unemployed	9.9	10.5	12.4	9.2	6.7	7.0	6.5	4.9	3.3
Unem. (excluding Sch.)	9.4	10.0	12.3	9.2	6.7	7.0	6.5	4.9	3.3
Unem. (excl. Sch. & FT study)	9.1	9.6	7.7	6.0	4.3	5.6	5.6	4.4	2.9
Full-time Study (excl. Sch.)	2.3	2.0	38.1	33.8	32.2	20.7	16.1	8.7	6.6
<b>Women</b>									
Work	50.8	52.4	67.8	76.3	78.0	79.1	81.8	83.5	86.1
Work (excluding School)	49.2	51.7	67.5	76.3	78.0	79.1	81.8	83.5	86.1
Work (excl. Sch & FT study)	48.4	51.2	43.1	52.3	49.5	62.7	71.9	76.5	81.8
Unemployed	9.1	9.9	11.9	8.4	5.6	6.0	5.5	4.2	3.1
Unem. (Excluding Sch.)	8.7	9.4	11.7	8.4	5.6	6.0	5.5	4.2	3.1
Unem. (excl. Sch. & FT study)	8.4	9.2	6.2	5.1	3.6	4.6	4.5	3.5	2.9
Full-time Study (excl. Sch.)	2.0	1.5	49.0	43.4	40.1	22.8	15.8	10.1	6.2

Note: Weighted estimates of percentages. Categories are not mutually exclusive. (Paid) work includes both part-time and full-time work.

After 1999, young men spent more time employed than young women. The gender gap in time spent employed tended to increase as more women were engaged in activities outside the labour force, mainly child-rearing. As with employment, young men had spent more time unemployed, but in 2005 there was no gender difference.

Table 11 reports the proportions of the cohort that spent various amounts of time employed, ranging from 'No Time' to 'All Year'. In 1999, about one-third had not been working at any time during the year. By 2005 this figure had dropped to 8.5 per cent. In contrast, the proportion of the cohort that had been working all year increased from 30 to 73 per cent. After 2000, higher proportions of young men than young women had been working all year.

**Table 11 Time spent in paid work since beginning of year, 1997-2005 (%)**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>All</b>									
No time	38.5	39.3	32.7	23.6	22.9	18.7	14.8	11.2	8.5
1-24 per cent	9.4	7.4	11.5	8.3	20.2	12.8	7.7	5.7	4.3
25-50 per cent	8.0	5.1	11.3	16.3	3.6	2.7	4.5	2.4	1.9
51-74 per cent	6.5	3.9	6.4	3.7	4.0	3.4	3.7	3.5	3.3
75-99 per cent	7.2	5.4	7.7	7.2	6.7	8.0	8.2	8.8	8.9
All Year	30.5	38.8	30.3	41.0	42.5	54.3	61.1	68.3	73.1
<b>Men</b>									
No time	40.8	40.4	31.0	23.6	22.0	17.2	13.5	8.4	6.5
1-24 per cent	10.3	8.3	10.1	8.3	16.4	11.5	7.2	5.2	4.0
25-50 per cent	8.5	5.7	9.5	16.3	3.5	2.6	4.9	2.6	1.6
51-74 per cent	6.3	4.0	7.1	3.7	4.3	3.2	3.6	3.5	2.9
75-99 per cent	6.4	5.4	8.4	7.2	6.4	7.8	8.0	9.5	8.1
All Year	27.7	36.2	33.9	41.0	47.4	57.7	62.9	70.9	76.9
<b>Women</b>									
No time	36.3	38.3	34.3	23.6	23.8	20.1	16.0	14.0	10.4
1-24 per cent	8.4	6.6	12.9	8.3	23.9	14.1	8.3	6.3	4.6
25-50 per cent	7.6	4.6	13.1	16.3	3.8	2.8	4.2	2.1	2.1
51-74 per cent	6.6	3.7	5.7	3.7	3.8	3.7	3.8	3.6	3.6
75-99 per cent	7.9	5.5	7.1	7.2	7.0	8.3	8.4	8.2	9.8
All Year	33.2	41.3	26.9	41.0	37.8	51.1	59.4	65.9	69.5

Note: Weighted estimates of percentages. Includes both part-time and full-time work. Excludes time in full-time education.

Table 12 presents similar information for unemployment. In 1998, 80 per cent had spent no time unemployed and 4 per cent had spent all year looking for work. About 9 per cent had spent more than a quarter of the year looking for work. In 2005, 88 per cent had spent no time looking for work and less than 1 per cent had been looking for work all year. Less than 4 per cent had spent more than a quarter of the year looking for work. Gender differences are small and not consistent.

The next two chapters examine the impact of the differing educational and labour market experiences on occupational status and earnings.

**Table 12 Time spent since beginning of year unemployed, 1997-2005 (%)**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>All</b>									
No time	79.1	79.2	81.4	82.1	87.3	84.1	85.2	86.9	88.7
1-24 per cent	10.8	9.2	9.6	10.1	7.2	9.3	8.2	7.7	7.7
25-50 per cent	3.5	4.3	3.9	3.9	2.8	3.2	3.1	3.1	2.3
51-74 per cent	1.6	1.8	2.3	1.6	1.5	1.6	1.3	0.8	0.4
75-99 per cent	1.1	1.2	0.9	1.0	0.7	0.6	0.8	0.8	0.5
All Year	3.9	4.2	1.9	1.3	0.5	1.2	1.4	0.6	0.4
<b>Men</b>									
No time	78.0	78.5	80.1	82.1	86.6	83.6	84.3	85.6	89.3
1-24 per cent	11.5	9.9	10.1	10.1	7.2	9.1	8.1	8.4	6.6
25-50 per cent	3.5	4.4	3.9	3.9	3.0	3.4	3.2	3.3	2.9
51-74 per cent	1.7	1.5	2.4	1.6	1.9	1.8	1.9	1.0	0.4
75-99 per cent	1.2	1.2	1.1	1.0	0.8	0.7	0.8	1.3	0.3
All Year	4.0	4.4	2.3	1.3	0.5	1.3	1.6	0.4	0.5
<b>Women</b>									
No time	80.0	79.9	82.7	82.1	87.9	84.6	86.1	88.0	88.2
1-24 per cent	10.1	8.5	9.1	10.1	7.2	9.5	8.2	7.1	8.6
25-50 per cent	3.5	4.3	3.8	3.9	2.6	2.9	3.0	3.0	1.7
51-74 per cent	1.5	2.0	2.2	1.6	1.1	1.5	0.7	0.7	0.4
75-99 per cent	1.0	1.3	0.7	1.0	0.7	0.4	0.7	0.4	0.6
All Year	3.9	4.1	1.5	1.3	0.5	1.1	1.3	0.8	0.4

Note: Weighted estimates of percentages. Excludes time in full-time education.

## 4. OCCUPATIONAL STATUS

This chapter focuses on the relationship between post-secondary education and training and subsequent occupational status. The first part focuses on the effect of participation in and qualifications from, post-secondary education and training. It compares the occupational status of the jobs of those who participated in post-secondary education and training and those who did not. A similar comparison is made for qualifications to ascertain if, for some types of post-secondary education and training, participation is just as beneficial as qualification. Regression analysis is utilised to estimate the ‘independent’ effects of post-secondary education and training on occupational status. The second part of the chapter focuses on trajectories, utilising the same analytical strategy: analysis of the bivariate associations of occupational trajectories with post-secondary education and training, followed by estimates of their independent effects.

This chapter examines the following research questions:

- What are the effects of post-secondary education and training on occupational status?
- Are these effects very different for qualifications compared to participation?
- Are there gender differences in the effects of post-secondary education and training on occupational status?
- What are the effects of participation and qualifications on the occupational career when taking into account other factors that influence the occupational career, such as labour force experiences?
- What are the occupational trajectories associated with different types of post-secondary education and training?
- Do these trajectories differ substantially for completion (qualifications) compared to participation?
- What is the role of factors other than post-secondary education and training on the occupational career, such as region, socioeconomic background and school leaving status?

### **Occupational Status and Type of Post-Secondary Education and Training**

Table 13 presents summary statistics for occupational status among participants, non-participants and those with and without the respective qualification. In the case of apprenticeships and traineeships, completion is considered equivalent to obtaining a qualification. The columns marked ‘Prior’ show the statistics for those who had already (in a prior year) either participated (under ‘Participation’) or completed the respective qualification (under ‘Qualification’). The columns marked ‘None’ show the comparable statistics for observations without prior participation or a prior qualification.

Table 13 shows that there is little difference in the mean occupational status of participants and completers in apprenticeships. Mean occupational status of former participants in traineeships was only 26 score points. After completion, mean occupational status increased to 29 score points. Participation in or qualification from a TAFE certificate is associated with only marginal increases in occupational status.

**Table 13 Participation, qualification and occupational status, ANU3 scale**

Qualification	Statistic	Participation		Qualification	
		None	Prior	None	Prior
Apprenticeship	<i>N of Obs.</i>	42721	3305	44060	1966
	Mean	26	26	26	25
	Lower CL	26	25	26	25
	Upper CL	27	26	27	26
	Median	25	25	25	25
	Quartile Range	17	11	16	11
Traineeship	<i>N of Obs.</i>	41760	4266	43892	2134
	Mean	26	26	26	29
	Lower CL	26	26	26	28
	Upper CL	27	27	26	29
	Median	25	26	25	27
	Quartile Range	16	12	16	15
TAFE Certificate	<i>N of Obs.</i>	43201	2825	42660	3366
	Mean	26	27	26	28
	Lower CL	26	26	26	28
	Upper CL	27	27	26	29
	Median	25	26	25	27
	Quartile Range	16	14	16	14
TAFE Diploma	<i>N of Obs.</i>	43083	2943	44218	1808
	Mean	26	29	26	31
	Lower CL	26	28	26	30
	Upper CL	26	29	26	32
	Median	25	27	25	28
	Quartile Range	16	17	16	14
University Diploma	<i>N of Obs.</i>	45281	745	45795	231
	Mean	26	30	26	37
	Lower CL	26	28	26	34
	Upper CL	26	31	27	39
	Median	25	26	25	37
	Quartile Range	16	25	16	32
Bachelor Degree	<i>N of Obs.</i>	36086	9940	41097	4929
	Mean	24	37	24	46
	Lower CL	24	36	24	45
	Upper CL	24	37	25	46
	Median	25	30	25	50
	Quartile Range	16	31	17	35
Post-Graduate Degree	<i>N of Obs.</i>	45937	89	45959	67
	Mean	26	47	27	47
	Lower CL	26	43	27	42
	Upper CL	27	52	27	51
	Median	25	43	25	53
	Quartile Range	16	36	16	36
Other	<i>N of Obs.</i>	45102	924	44325	1701
	Mean	26	27	26	29
	Lower CL	26	26	26	28
	Upper CL	27	28	26	30
	Median	25	25	25	26
	Quartile Range	16	19	16	17

Note: Weighted estimates of ANU score points. CL= 95 % Confidence Limit.

TAFE diplomas appear to have a larger impact than TAFE certificates on occupational status. Mean occupational status after participation in a TAFE diploma course was 29 score points. After receiving a qualification, occupational status increased to 31. This pattern can also be seen with the medians. A university diploma qualification is more important than participation in a university diploma course.

After participation, the mean occupation status of participants was 30 score points; after obtaining a qualification, 37 score points. The mean occupational status after participation in a university degree was 37 score points. The mean score for university degree graduates was even higher, at 46 score points. Mean occupational status for post-graduate degree courses are the same, at 47 score points. Mean occupational status after participation in other courses was 27 score points; after completion, only slightly higher at 29 score points.

Overall, apprenticeships are not associated with increases in occupational status. Occupational status increases were associated with completion of a traineeship, TAFE certificate or TAFE diploma courses. However, for these forms of post-secondary education and training there are not substantial differences in occupational status between participation and completion at this early age. University diplomas, degree courses and post-graduate qualifications, however, *are* associated with jobs with substantially higher levels of occupational status. These increases in occupation status may be due, at least to some extent, to age, since observations with prior participation or completion of post-secondary education will be for older respondents. The next section investigates whether these types of post-secondary education and training do affect occupational status.

### **Effects of Post-Secondary Education and Training on Occupational Status**

A series of multivariate models were analysed to estimate the effects of different types of education and training on occupational status, examining both participation (Table 14) and completion (Table 15).

Table 14 presents the results from a series of regression analyses on the effects of participation on occupational status. The top panel presents the estimates from analyses of all respondents, and the second and third panels from the analyses of men and women, respectively. The analyses were performed on the person-year data with a repeated design model.

In model 1, the estimate for the intercept is the average occupational status for a respondent scoring zero on all the predictor variables, that is, 18 year-olds who did not participate in any post-school education and training. The estimate of 21.1 is low, considering that the scale ranges from 0 to 100. On average, a one year increase in age increases occupational status by 1.7 occupational status score points. Apprenticeships do not increase occupational status; in fact, the coefficient is negative but very small. Participation in traineeships had no effects on occupational status. The effect of TAFE certificate and diploma courses was very slightly negative or had no effect at all. Participation in a university diploma also had a slight negative effect.

The largest impact on occupational status was participation in a bachelor degree course. On average, participation increased occupational status by about 4.5 occupational status score points. The additive effect of a post-graduate degree was nearly 8 score points. Participation in other courses had no significant effect on occupational status.

There are no striking gender differences in the effects of participation in these types of education and training on occupational status (panels 2 and 3). However, participation in a bachelor degree course had a slightly larger impact among men. This is not the case for post-graduate courses. A TAFE diploma course had a small positive effect among men and a small negative effect among women.

The estimates for the effects of these types of post-secondary education did not change substantially with the addition of controls for gender, experience of employment and experience of unemployment. Men had slightly lower levels of occupational status than women (about 2 score points). The effects of experience of employment were quite small. A ten percentage point rise in time spent employed, on average, increased occupational status by one-tenth of a score point (0.1). The effect of age was much greater.

Experience of unemployment had a larger negative effect on occupational status, supporting the notion that unemployment does have a scarring effect. A 10 percentage point increase in time spent unemployed decreased subsequent occupational status by 0.5 score points. The detrimental effect of unemployment experience appears to be greater among men than among women.

**Table 14 Effects of participation in education and training on occupational status**

	Model			
	1	2	3	4
<b>All</b>				
Intercept	21.1***	22.1***	21.8***	22.2***
Age	1.7***	1.7***	1.7***	1.8***
Apprenticeship	-0.8**	-0.3	-0.5†	-0.5†
Traineeship	-0.2	-0.2	-0.2	-0.2
TAFE Certificate	-0.9*	-1.0**	-0.7*	-0.8*
TAFE Diploma	-0.1	-0.1	0.1	-0.1
University Diploma	-1.6*	-1.5*	-1.3†	-1.4†
Bachelor Degree	4.6***	4.5***	4.7***	4.5***
Post-Graduate University	8.0***	8.0***	8.0***	7.9***
Other Course	-0.3	-0.5	-0.2	-0.2
Male	.	-2.0***	-1.9**	-1.9***
% Time Working (excl. Full-Time Study)	.	.	0.1***	0.1**
% Unemployed (excl. Full-Time Study)	.	.	.	-0.5***
<b>Men</b>				
Intercept		20.1***	20.0***	20.4***
Age		1.5***	1.5***	1.6***
Apprenticeship		-0.2	-0.3	-0.3
Traineeship		-0.7	-0.7	-0.7
TAFE Certificate		-0.2	-0.1	-0.2
TAFE Diploma		1.2*	1.3*	1.1†
University Diploma		-1.8	-1.7	-1.9†
Bachelor Degree		5.7***	5.8***	5.5***
Post-Graduate University		6.6*	6.6*	6.5*
Other Course		0.1	0.2	0.2
% Time Working (excl. Full-Time Study)		.	0.1*	0.0
% Unemployed (excl. Full-Time Study)		.	.	-0.7***
<b>Women</b>				
Intercept		22.2***	21.8***	22.0***
Age		1.9***	1.9***	1.9***
Apprenticeship		-0.1	-0.2	-0.2
Traineeship		0.3	0.3	0.3
TAFE Certificate		-1.5***	-1.2**	-1.2**
TAFE Diploma		-1.2**	-1.0*	-1.1*
University Diploma		-1.0	-0.8	-0.9
Bachelor Degree		3.2***	3.5***	3.4***
Post-Graduate University		8.8***	8.8***	8.8***
Other Course		-1.1	-0.9	-0.9
% Time Working (excl. Full-Time Study)		.	0.2***	0.1***
% Unemployed (excl. Full-Time Study)		.	.	-0.4***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted Estimates



**Table 15 Effects of qualifications on occupational status**

	<b>Model</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>All</b>				
Intercept	21.2***	22.1***	21.9***	22.3***
Age	1.4***	1.5***	1.5***	1.5***
Apprenticeship	-2.0***	-1.7***	-1.8***	-1.8***
Traineeship	-0.1	-0.2	-0.3	-0.2
TAFE Certificate	0.2	0.0	0.0	0.0
TAFE Diploma	2.0***	1.9***	1.9***	1.9***
University Diploma	7.7***	7.7***	7.7***	7.6***
Bachelor Degree	14.4***	14.2***	14.2***	14.1***
Post-Graduate University	5.0*	4.9*	4.9*	4.9*
Other Course	1.0*	1.0*	1.0*	1.1*
Male	.	-1.8***	-1.8***	-1.8***
% Time Working (excl. Full-Time Study)	.	.	0.1***	0.0
% Unemployed (excl. Full-Time Study)	.	.	.	-0.5***
<b>Men</b>				
Intercept		20.2***	20.2***	20.7***
Age		1.4***	1.4***	1.5***
Apprenticeship		-2.1***	-2.1***	-2.1***
Traineeship		-0.7	-0.7	-0.7
TAFE Certificate		0.2	0.2	0.2
TAFE Diploma		2.6***	2.6***	2.5***
University Diploma		11.6***	11.6***	11.4***
Bachelor Degree		13.6***	13.6***	13.4***
Post-Graduate University		3.7	3.7	3.7
Other Course		1.7*	1.7*	1.8*
% Time Working (excl. Full-Time Study)		.	0.0	-0.1
% Unemployed (excl. Full-Time Study)		.	.	-0.7***
<b>Women</b>				
Intercept		22.1***	21.9***	22.0***
Age		1.5***	1.5***	1.5***
Apprenticeship		0.2	0.0	0.1
Traineeship		0.2	0.0	0.0
TAFE Certificate		-0.1	-0.2	-0.1
TAFE Diploma		1.5**	1.5**	1.4**
University Diploma		4.0*	3.9*	3.9*
Bachelor Degree		14.5***	14.5***	14.4***
Post-Graduate University		4.7†	4.6†	4.6†
Other Course		0.6	0.6	0.6
% Time Working (excl. Full-Time Study)		.	0.1***	0.1***
% Unemployed (excl. Full-Time Study)		.	.	-0.3***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted Estimates

Table 15 presents the results from corresponding analyses of qualifications. A notable difference is that the effect of a bachelor degree on occupational status is much larger, around 14 score points compared to about 5 for participation. The impact of qualifications from a university diploma is over 7 score points compared to no effect for participation.

The effects of qualifications from the other types of post-secondary education and training are very similar to those for participation. The large effects of age and the small effects of employment experience are very similar for qualifications and participation.

### **Effects of Factors other than Post-Secondary Education and Training**

Table 16 presents the results from further regression analyses of qualifications with the addition of other factors. Model 1 adds socio-demographic variables to model 4 in Table 15 (top panel). Region had minimal or no effects on occupational status. A slight decline in occupational status was found for coming from a rural compared to a metropolitan area. A non-English speaking background (with the father born in a non-English speaking country) was associated with an increase of 0.7 score points in occupational status, relative to having a father born in Australia. Socioeconomic background had a small effect. The estimate of 0.8 is for a one standard deviation increase in socioeconomic background. Therefore, the effect of socioeconomic background for a 4 standard deviation difference (the 95<sup>th</sup> percentile compared to the 5<sup>th</sup> percentile), net of post-secondary education and other factors in the model, was small, about 3.2 occupational status score points. The addition of these variables made little impact on the estimates for other factors in the model, indicating that the effects were not strongly associated with region or socioeconomic background. For example, the impact of bachelor degree qualification is only slightly smaller when controlling for socioeconomic background.

Model 2 adds achievement in literacy and numeracy, and school sector. The impact of achievement was only moderate: a one standard deviation difference in achievement increased occupational status by 0.7 score points. The addition of achievement to the analysis did not substantially change the estimates for the effect of a bachelor degree qualification, suggesting that effects of degrees on occupational status are not substantially overestimated in absence of controls for earlier academic achievement. Having attended a Catholic school marginally increased occupational status by 0.5 score points, and having attended an independent school, by 0.7 score points.

Model 3 adds school leaving status. Net of other factors in the model, the occupational status of early school leavers is 0.9 score points higher than that of later school leavers and completers. However, this effect could be described as minimal.

Finally, model 4 adds occupational status of the job in the previous year. Its inclusion is to control for other factors that may impact on occupational status, but which cannot be included in the model. As expected, prior occupational status has a large impact on present occupational status. A 10 score point difference in occupational status is associated with a 4.6 score point difference in the status of the present job. The magnitudes of the effects of the other variables in the model are smaller, but not substantially so. In many instances, the effect remains statistically significant. According to this model, the independent effect of bachelor degree qualifications is 10.4 score points and that of a university diploma 4.5 score points. A one-year increase in age is associated with almost a 1.0 score point rise in occupational status. There is no effect for employment experience, and there is a moderate scarring effect for experience of unemployment.

**Table 16 Effects of qualifications and other influences on occupational status**

	Model			
	1	2	3	4
<b>All</b>				
Intercept	22.3***	21.9***	21.8***	21.6***
Age	1.5***	1.5***	1.5***	0.8***
Apprenticeship	-1.7***	-1.6***	-1.7***	-1.4***
Traineeship	-0.1	-0.1	-0.1	0.0
TAFE Certificate	0.0	0.1	0.1	0.1
TAFE Diploma	1.9***	1.9***	2.0***	1.3***
University Diploma	7.5***	7.3***	7.4***	4.5***
Bachelor Degree	13.9***	13.7***	13.8***	10.4***
Post-Graduate University	4.5*	4.3*	4.4*	2.0
Other Course	1.2*	1.2*	1.3**	1.0**
Male	-1.7***	-1.6***	-1.7***	-0.7***
% Time Working (excl. Full-Time Study)	0.1*	0.1***	0.1**	0.0†
% Unemployed (excl. Full-Time Study)	-0.5***	-0.4***	-0.4***	-0.3***
Regional Background	-0.3	-0.4†	-0.2	0.0
Rural Background	-0.5*	-0.5*	-0.4†	0.0
Father born English-Spkg. country	0.0	0.0	0.0	-0.3
Father born non-English-Spkg. country	0.7**	0.8***	0.9***	0.2
Socioeconomic Background	0.8***	0.6***	0.6***	0.4***
Literacy & Numeracy Scores	.	0.7***	0.7***	0.5***
Attended Catholic School	.	0.5*	0.5*	0.5**
Attended Independent School	.	0.7*	0.8**	0.3
Early School Leaver (Before Yr 11)	.	.	0.9**	-0.1
Later School Leaver (Yr 11 or 12)	.	.	0.4	0.2
Occupational Status Previous Year	.	.	.	4.6***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted Estimates

### Occupational Trajectories

The occupational trajectories subsequent to participation in post-secondary education and training are shown in Figure 2 and the trajectories subsequent to qualifications are shown in Figure 3. The figures show clear differences in occupational trajectories according to type of post-secondary education and training. There is a hierarchical ordering with Bachelor and post-graduate courses associated with a steeply rising trajectory which soon flattens out. The occupation trajectories associated with university diplomas and TAFE diplomas are much less steep. A slowly increasing trajectory is discernable for TAFE diplomas and to a lesser extent for TAFE certificates and other qualifications. The occupational trajectory for traineeships is basically flat, whereas for apprenticeships it appears to be declining. For most types of education and training, the occupational status trajectories are relatively flat at this early stage in their careers.

For participation in university diploma and degree courses (Figure 2), there is a decline in mean occupational status at about 4 or 5 years after participation, which probably reflects the lower status jobs of non-completers. This decline is not as apparent for qualifications (Figure 3). For other vocational education and training, the flat trend lines for qualifications (completion) are little different to those for participation.

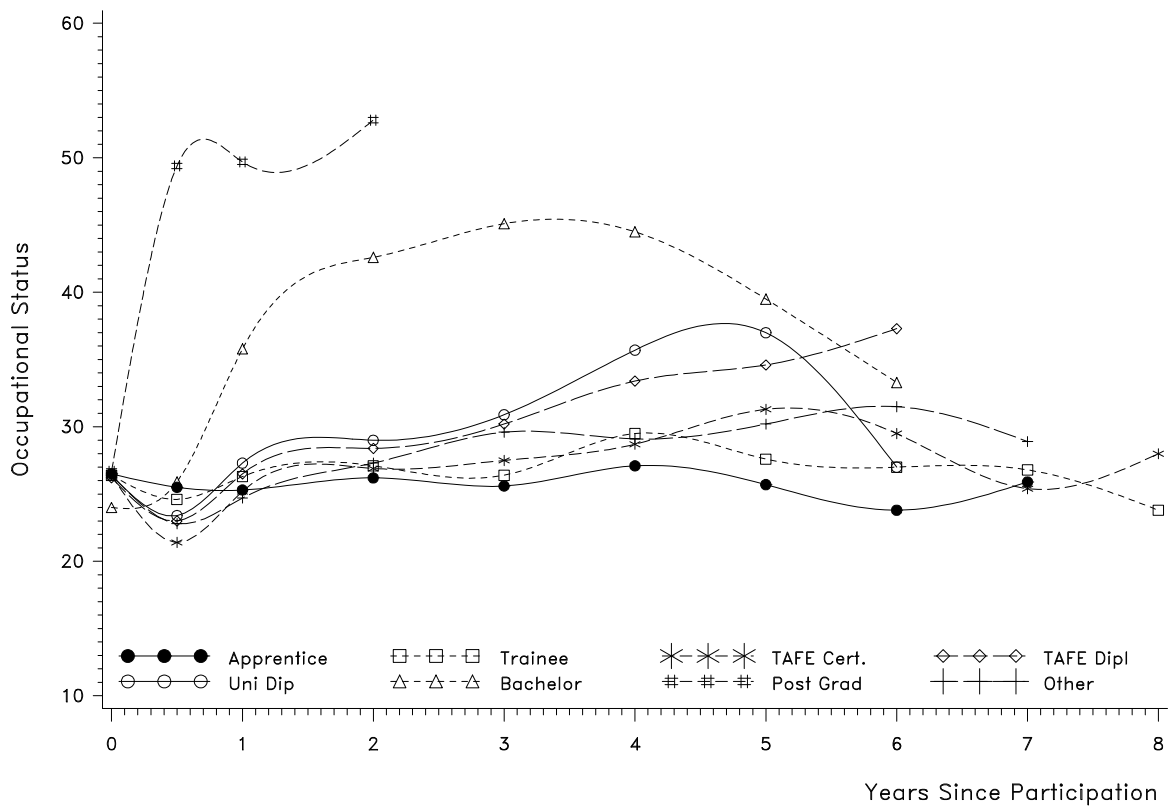


Figure 2 Plot of mean occupational status by type of education and training participation

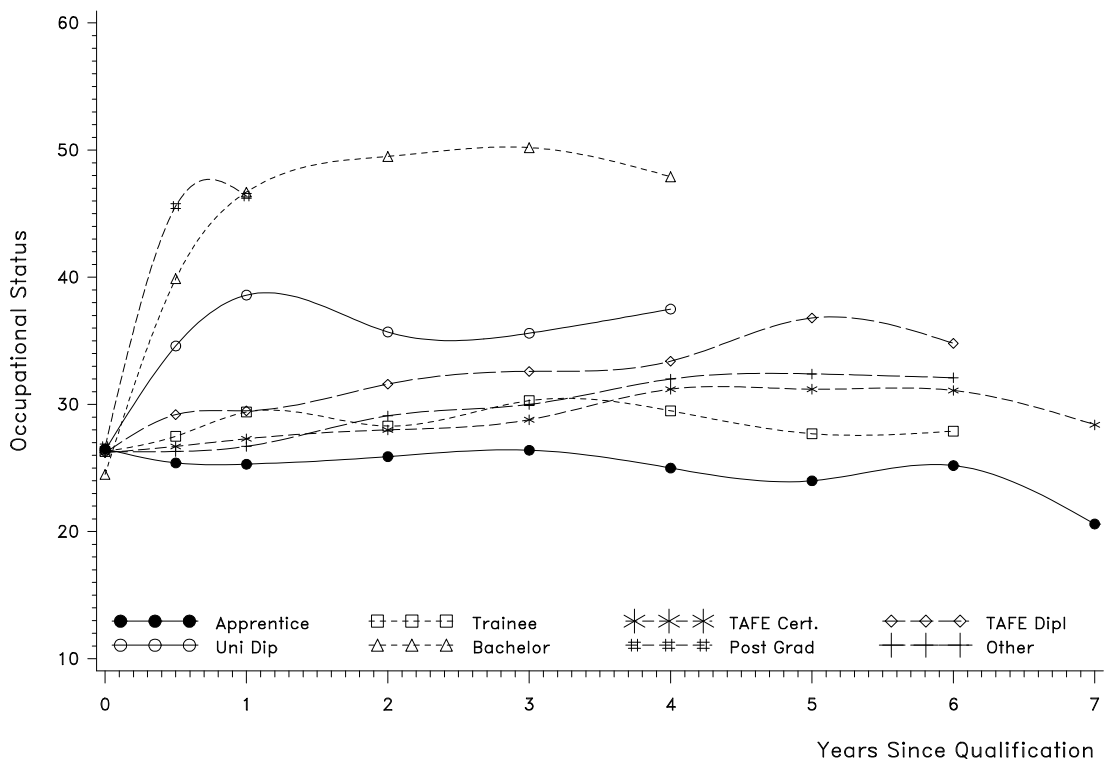


Figure 3 Plot of mean occupational status by type of qualification

More detail on occupational trajectories is shown in Table 17 for participation and in Table 18 for qualifications. Mean occupational status after participation in an apprenticeship was around 25 to 27 score points and remained fairly constant with time since participation. Five years after participation, mean occupational status was 26, the same as it had been one year after participation. A similar pattern was found for qualifications.

The occupational trajectory for traineeships is only slightly higher than that for apprenticeships, despite the tendency for trainees to be in white-collar work. There was a barely discernable increase in occupational status with time since participation or qualification for trainees. The medians also show no increase, and possibly a decrease, in occupational status with time. There was no difference between participation and qualification.

TAFE certificate courses show moderate increases in occupational status. Mean occupational status rose from 25 one year after participation to 32 five years after participation. The occupational trajectory for qualifications is very similar to that for participation, with mean occupational status reaching 31 after five years.

For TAFE Diploma course participants, mean occupational status rose more steeply, from 27 in the first year after participation to 35 and 38 in the fifth and sixth years. In these later years, the range of occupations was wider than it was for apprenticeships and traineeships.

Participation in university diploma courses is associated with steeper occupational trajectories, increasing from a mean occupational status of 27 in the first year after participation to 37 in the fifth year. A more dramatic increase is found for qualifications with mean occupational status at 50 score points five years after obtaining a qualification.

University degree courses show steeper occupational trajectories. Two years after participation in a bachelor degree course, mean occupational status was 43 score points; after 3 and 4 years, 45 score points. For qualifications, the occupational trajectory is slightly steeper, rising to 50 points three years after obtaining a qualification. Subsequent to participation in a post-graduate degree course, mean occupational status rose to over 50 score points. A similar pattern was found for qualifications, but the estimates are based only on a small number of cases.

Occupational status in other courses steadily increased from a mean of 25 score points one year after participation to 32 points six years after participation. The pattern for other qualifications is very similar. In contrast to some other types of post-secondary education and training, there was no decline in occupational status among those who participated in other qualification four or five years earlier.

Qualifications appear to make little difference to occupational status for most types of vocational education at this early stage. For apprenticeships and traineeships, subsequent mean occupational status tends to be even a little higher for participation than for completion. For TAFE certificates, there is little difference in mean and median occupational status between participation and certification. For TAFE diplomas, occupational status tends to be only slightly higher for those obtaining a qualification. These findings are not surprising given the similarity that often exists between the type of work undertaken before completion of some TAFE certificates and that undertaken after completion.

In contrast, for university diplomas and degrees, occupational status tends to be substantially higher among those with qualifications compared to participants. For example, mean occupational status two and three years after a university diploma qualification was about 36 score points compared to around 30 score points two and three years after participation. For university degree courses, differences between participation and qualifications are even larger. Mean occupation status 2 years after obtaining a bachelor degree was around 50 score points compared to 43 score points for participation alone.

**Table 17 Occupational status by years since last year of post-secondary education and training participation (ANU3 score points)**

Qualification	Statistic	Time since participation (years)							
		<1	1	2	3	4	5	6	7
Apprenticeship	<i>N of Obs.</i>	1179	660	530	411	304	143	48	22
	Mean	25.5	25.3	26.2	25.6	27.1	25.7	23.8	25.9
	Lower CL	25.0	24.4	25.3	24.5	25.8	23.7	19.7	20.4
	Upper CL	26.1	26.1	27.2	26.7	28.4	27.8	27.9	31.4
	Median	26	25	26	24	26	24	23	24
	Quartile Range	10	11	11	10	12	10	18	8
Traineeship	<i>N of Obs.</i>	1095	816	695	585	458	341	198	56
	Mean	24.6	26.3	27.1	26.4	29.5	27.6	27.0	26.8
	Lower CL	23.8	25.4	26.0	25.4	28.2	26.1	25.1	23.5
	Upper CL	25.3	27.3	28.1	27.4	30.9	29.1	28.9	30.1
	Median	25	26	26	26	27	27	26	26
	Quartile Range	15	11	12	12	19	15	12	11
TAFE certificate	<i>N of Obs.</i>	425	525	457	385	311	259	190	31
	Mean	21.6	25.1	27.0	27.7	29.1	31.8	29.6	25.7
	Lower CL	20.5	24.0	25.7	26.3	27.5	29.9	27.4	21.4
	Upper CL	22.7	26.2	28.3	29	30.6	33.6	31.8	30.0
	Median	24	25	26	26	27	28	26	25
	Quartile Range	15	15	16	13	15	14	16	12
TAFE diploma	<i>N of Obs.</i>	585	578	526	444	387	282	105	
	Mean	23.0	26.5	28.5	30.2	33.4	34.7	37.7	
	Lower CL	22.0	25.4	27.3	28.8	31.8	32.7	34.1	
	Upper CL	24.0	27.6	29.7	31.6	35	36.7	41.3	
	Median	25.0	26	27	27	30	32	36	
	Quartile Range	16	18	16	16	18	22	33	
Uni diploma	<i>N of Obs.</i>	134	143	132	119	99	86	24	
	Mean	23.4	27.3	28.9	30.9	35.7	37	27	
	Lower CL	20.8	24.5	26	27.3	31.4	32.7	20.6	
	Upper CL	26.0	30.0	31.8	34.4	40.1	41.3	33.3	
	Median	25	25	25	27	29	32	27	
	Quartile Range	16	23	22	21	31	28	18	
Bachelor	<i>N of Obs.</i>	2692	2255	2042	1499	943	379	121	
	Mean	25.9	35.8	42.6	45.1	44.5	39.6	33.4	
	Lower CL	25.3	35.0	41.7	44.1	43.4	37.9	30.6	
	Upper CL	26.4	36.6	43.4	46	45.7	41.3	36.2	
	Median	25	29	42	48	47	39	32	
	Quartile Range	15	27	33	35	32	29	18	
Post-grad degree	<i>N of Obs.</i>	54	22	13					
	Mean	49.4	49.7	52.8					
	Lower CL	43.2	39.9	42.9					
	Upper CL	55.6	59.5	62.7					
	Median	43	58	58					
	Quartile Range	39	42	20					
Other	<i>N of Obs.</i>	133	147	138	110	88	82	49	
	Mean	23.4	25.1	28.8	29.2	29.7	31.3	31.9	
	Lower CL	21.1	22.8	26.4	26.2	26.4	27.9	27.8	
	Upper CL	25.6	27.4	31.3	32.2	33	34.7	36.0	
	Median	25	25	26	27	27	29	30	
	Quartile Range	13	19	15	22	23	18	25	

Note: Weighted estimates of ANU score points. CL= 95 % Confidence Limit.

**Table 18 Occupational status by years since qualification in post-secondary education and training (ANU3 score points)**

Qualification	Statistic	Time since qualification (years)							
		<1	1	2	3	4	5	6	7
Apprenticeship	<i>N of Obs.</i>	551	471	388	206	164	105	50	31
	Mean	25.4	25.3	25.9	26.4	25.0	24.0	25.2	20.6
	Lower CL	24.5	24.3	24.8	25.0	23.2	21.6	21.9	16.2
	Upper CL	26.3	26.3	27.0	27.9	26.8	26.4	28.5	25.1
	Median	26	24	26	26	23	22	25	19
	Quartile Range	11	10	11	11	11	11	10	16
Traineeship	<i>N of Obs.</i>	557	485	422	319	275	59	14	3
	Mean	27.5	29.4	28.3	30.3	29.5	27.7	27.9	32.0
	Lower CL	26.4	28.0	27.0	28.8	27.7	24.4	23.9	-15.1
	Upper CL	28.5	30.7	29.5	31.9	31.3	31.0	31.9	79.2
	Median	27	27	27	29	27	27	27	30
	Quartile Range	11	15	16	14	15	15	4	38
TAFE certificate	<i>N of Obs.</i>	850	752	636	497	410	198	86	48
	Mean	26.2	27.3	28.0	28.8	31.2	31.2	31.1	28.4
	Lower CL	25.3	26.2	26.9	27.5	29.7	29.1	28.0	24.8
	Upper CL	27.1	28.3	29.1	30	32.6	33.3	34.3	32.0
	Median	26	26	27	27	27	27	27	27
	Quartile Range	13	15	15	15	18	16	12	17
TAFE diploma	<i>N of Obs.</i>	477	417	345	296	210	51	12	
	Mean	29.2	29.5	31.6	32.6	33.4	36.8	34.8	
	Lower CL	27.9	28.1	30	30.8	31.2	32.0	24.5	
	Upper CL	30.5	30.8	33.1	34.4	35.7	41.6	45.1	
	Median	27	27	29	30	29	32	27	
	Quartile Range	16	12	14	17	18	31	32	
Uni diploma	<i>N of Obs.</i>	65	61	45	34	21	5		
	Mean	34.6	38.6	35.7	35.6	37.5	49.5		
	Lower CL	30.1	33.8	29.6	28.0	28.8	31.9		
	Upper CL	39.1	43.4	41.9	43.2	46.2	67.2		
	Median	34	41	35	36	43	47		
	Quartile Range	30	29	32	27	27	15		
Bachelor	<i>N of Obs.</i>	1620	1513	1063	599	133	1		
	Mean	39.9	46.7	49.5	50.2	47.9	31.1		
	Lower CL	38.9	45.7	48.5	48.9	45	.		
	Upper CL	40.9	47.7	50.6	51.5	50.7	.		
	Median	36	50	55	54	50	31		
	Quartile Range	33	35	26	23	23	0		
Post-grad deg	<i>N of Obs.</i>	35	20	7	5				
	Mean	45.6	46.4	50.2	47.9				
	Lower CL	39.3	37.8	32.7	26.6				
	Upper CL	51.9	55.1	67.7	69.1				
	Median	53	54	63	37				
	Quartile Range	35	35	36	27				
Other	<i>N of Obs.</i>	363	326	289	253	208	197	61	
	Mean	26.3	26.7	29.1	30	32	32.4	32.1	
	Lower CL	24.9	25.2	27.3	28.1	29.7	30	27.6	
	Upper CL	27.7	28.2	30.9	32	34.2	34.9	36.5	
	Median	25	26	26	27	27	28	27	
	Quartile Range	15	14	15	16	20	22	22	

Note: Weighted estimates of ANU score points. CL= 95 % Confidence Limit.

## Modelling Occupational Trajectories

Table 19 presents estimates for the effects of participation in post-school education and training on occupational trajectories. Table 20 presents the results from analyses of qualifications. Of the types of post-secondary education and training examined, only university degree courses had substantial positive effects on occupational trajectories. On average, a bachelor degree increased earnings by about 4 score points per year for participation, and over 7 score points per year for qualifications. Participation in a post-graduate degree appeared to be associated with a smaller increase in occupational status, but the effects were not significant at the  $p < 0.05$  level. A university diploma qualification increased occupational status, on average, by about 2 score points per year.

In contrast, the effects for apprenticeships, traineeships, TAFE certificates and diplomas were small and often negative. The occupational trajectories associated with these types of post-secondary education and training are rather flat. This is not surprising given the close connection that often exists between the occupation while undertaking training and that taken up after completion, especially at this early stage of young people's careers.

The estimates for the effects of post-secondary education and training hardly changed at all with different model specifications. Each year of age increased occupational status by 1.7 score points. The estimates for experience of employment and unemployment on occupational trajectories were almost identical to the estimates obtained in the earlier analyses of effects.

There was a small, negative effect on occupational trajectories for being male. The occupational trajectories associated with a bachelor degree appeared to be slightly steeper among women than among men. The scarring effect of prior experiences of unemployment was stronger among men than women. The only other notable gender difference was the positive effect of a university diploma among men but no effect among women.



**Table 19 Effects of participation in education and training on occupational trajectories**

	Model			
	1	2	3	4
<b>All</b>				
Intercept	21.2***	22.1***	22.0***	22.3***
Age	1.5***	1.6***	1.6***	1.6***
Apprenticeship	-1.0***	-0.9***	-1.0***	-1.0***
Traineeship	-0.6***	-0.6***	-0.7***	-0.7***
TAFE Certificate	-0.3*	-0.3**	-0.3**	-0.3**
TAFE Diploma	0.4*	0.4*	0.3*	0.3*
University Diploma	-0.4	-0.4	-0.4	-0.4
Bachelor Degree	3.8***	3.7***	3.7***	3.7***
Post-Graduate University	3.5†	3.6†	3.6†	3.6†
Other Course	0.1	0.0	0.0	0.0
Male	.	-1.9***	-1.9***	-1.9***
% Time Working (excl. Full-Time Study)	.	.	0.1***	0.0
% Unemployed (excl. Full-Time Study)	.	.	.	-0.5***
<b>Men</b>				
Intercept		20.2***	20.2***	20.7***
Age		1.6***	1.6***	1.6***
Apprenticeship		-1.0***	-1.0***	-1.0***
Traineeship		-0.8***	-0.8***	-0.8***
TAFE Certificate		-0.1	-0.1	-0.1
TAFE Diploma		0.6**	0.6**	0.6**
University Diploma		-1.0*	-1.0*	-1.0*
Bachelor Degree		3.3***	3.3***	3.3***
Post-Graduate University		4.8†	4.8†	4.7†
Other Course		0.0	0.0	-0.1
% Time Working (excl. Full-Time Study)		.	0.0	0.0
% Unemployed (excl. Full-Time Study)		.	.	-0.7***
<b>Women</b>				
Intercept		22.1***	21.9***	22.1***
Age		1.5***	1.6***	1.6***
Apprenticeship		-0.6†	-0.7*	-0.7*
Traineeship		-0.4*	-0.5**	-0.5**
TAFE Certificate		-0.4**	-0.5**	-0.4**
TAFE Diploma		0.1	0.1	0.0
University Diploma		0.4	0.4	0.4
Bachelor Degree		3.9***	3.9***	3.8***
Post-Graduate University		2.8	2.8	2.8
Other Course		0.0	0.0	0.0
% Time Working (excl. Full-Time Study)		.	0.1***	0.1***
% Unemployed (excl. Full-Time Study)		.	.	-0.3**

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

**Table 20** Effects of qualifications in education and training on occupational trajectories

	Model			
	1	2	3	4
<b>All</b>				
Intercept	21.3***	22.2***	22.1***	22.5***
Age	1.7***	1.7***	1.7***	1.7***
Apprenticeship	-1.5***	-1.3***	-1.4***	-1.3***
Traineeship	-0.7***	-0.7***	-0.8***	-0.8***
TAFE Certificate	-0.3*	-0.4**	-0.4**	-0.4**
TAFE Diploma	0.2	0.2	0.2	0.1
University Diploma	2.1**	2.1**	2.1**	2.0**
Bachelor Degree	7.4***	7.4***	7.3***	7.3***
Post-Graduate University	-1.7	-1.8	-1.8	-1.8
Other Course	-0.1	-0.1	-0.1	-0.1
Male	.	-1.9***	-1.9**	-1.9***
% Time Working (excl. Full-Time Study)	.	.	0.1*	0.0
% Unemployed (excl. Full-Time Study)	.	.	.	-0.6***
<b>Men</b>				
Intercept		20.3***	20.3***	20.8***
Age		1.7***	1.7***	1.7***
Apprenticeship		-1.5***	-1.5***	-1.5***
Traineeship		-0.9**	-0.9**	-0.9**
TAFE Certificate		-0.2	-0.2	-0.2
TAFE Diploma		0.1	0.1	0.1
University Diploma		3.0**	3.1**	3.0**
Bachelor Degree		7.1***	7.1***	7.0***
Post-Graduate University		-4.7	-4.7	-4.7
Other Course		0.0	0.0	0.0
% Time Working (excl. Full-Time Study)		.	0.0	-0.1*
% Unemployed (excl. Full-Time Study)		.	.	-0.8***
<b>Women</b>				
Intercept		22.2***	22.0***	22.3***
Age		1.7***	1.7***	1.7***
Apprenticeship		-0.6	-0.7	-0.6
Traineeship		-0.6*	-0.7**	-0.7**
TAFE Certificate		-0.5**	-0.5***	-0.5**
TAFE Diploma		0.2	0.2	0.1
University Diploma		1.1	1.0	1.0
Bachelor Degree		7.4***	7.4***	7.3***
Post-Graduate University		-1.9	-1.9	-1.9
Other Course		-0.2	-0.2	-0.2
% Time Working (excl. Full-Time Study)		.	0.1***	0.1**
% Unemployed (excl. Full-Time Study)		.	.	-0.4***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

## 5. EARNINGS

This chapter focuses on the relationship between post-secondary education and training and earnings. The structure of the chapter is identical to that of the previous chapter on occupational status. The first part presents statistical summaries for earnings by participation and qualification, including regression analyses that estimate the net and independent effects of post-secondary education and training on earnings. The second part of the chapter focuses on earnings trajectories.

This chapter examines the following research questions:

- What are the effects of post-secondary education and training on earnings?
- Are there gender differences in the effects of post-secondary education and training on earnings?
- What are the earnings trajectories associated with different types of post-secondary education and training?
- Do these trajectories differ substantially for qualifications compared to participation?
- What are the effects of factors other than post-secondary education and training on earnings, such as region, socioeconomic background and school leaving status?

### **Earnings and Type of Post-Secondary Education and Training**

Table 21 presents summary statistics for earnings among participants in post-secondary study, non-participants and those with and without qualifications. Earnings of those who participated in an apprenticeship were high: mean and median earnings were \$812 and \$707 per week, respectively. Earnings after completion of an apprenticeship were higher than that for participation, at \$907 and \$816 per week.

Earnings associated with traineeships were lower than for apprenticeships. After participation in a traineeship, mean and median earnings were \$638 and \$628 per week, respectively. Completion of traineeship was associated with higher mean and median earnings: \$716 and \$700 per week, respectively.

TAFE certificates were associated with lower earnings than apprenticeships or traineeships. The estimates of mean and median weekly earnings for those who participated in a TAFE certificate course were \$563 and \$552, respectively. Mean and median earnings increased after obtaining a TAFE certificate qualification, to \$663 and \$628 per week, respectively.

TAFE diploma courses were not associated with substantially higher earnings than TAFE certificate courses. After participation in a TAFE diploma course, mean and median earnings were \$584 and \$565 per week, respectively. Completion was associated with even higher earnings, a mean of \$674 and a median of \$653.

For university diploma courses, qualifications were very important. After participation, mean earnings were about the same as for TAFE diploma participants at \$594 per week. However, mean weekly earnings increased to \$879 after receiving a university diploma qualification.

After participation in a bachelor degree courses, mean and median weekly earnings were \$644 and \$628, respectively, lower than for apprenticeships. Qualifications increased weekly earnings substantially to a mean of \$816 and a median of \$879.

**Table 21 Participation in education and training, qualifications and weekly earnings (\$)**

Qualification	Statistic	Participation		Qualification	
		None	Yes	None	Yes
Apprenticeship	<i>N of Obs.</i>	36600	2797	37733	1664
	Mean	455	812	462	907
	Lower CL	451	793	458	881
	Upper CL	459	830	466	932
	Median	377	707	377	816
	Quartile Range	546	502	540	565
Traineeship	<i>N of Obs.</i>	35688	3709	37526	1871
	Mean	468	638	472	716
	Lower CL	464	627	468	702
	Upper CL	472	648	477	730
	Median	377	628	377	700
	Quartile Range	546	414	540	326
TAFE certificate	<i>N of Obs.</i>	36981	2416	36540	2857
	Mean	479	563	468	663
	Lower CL	474	549	464	649
	Upper CL	483	578	472	677
	Median	377	552	377	628
	Quartile Range	540	452	540	377
TAFE diploma	<i>N of Obs.</i>	36866	2531	37796	1601
	Mean	477	584	476	674
	Lower CL	473	568	471	653
	Upper CL	481	600	480	694
	Median	377	565	377	653
	Quartile Range	540	508	540	439
University diploma	<i>N of Obs.</i>	38743	654	39201	196
	Mean	483	594	483	879
	Lower CL	478	561	479	771
	Upper CL	487	627	487	988
	Median	395	565	395	728
	Quartile Range	540	565	540	458
Bachelor degree	<i>N of Obs.</i>	30606	8791	35027	4370
	Mean	445	644	450	816
	Lower CL	441	634	446	803
	Upper CL	450	653	454	828
	Median	377	628	377	879
	Quartile Range	505	678	502	560
Post-graduate degree	<i>N of Obs.</i>	39329	68	39340	57
	Mean	473	737	472	1007
	Lower CL	469	615	468	900
	Upper CL	477	858	476	1115
	Median	377	628	377	1067
	Quartile Range	540	913	540	502
Other	<i>N of Obs.</i>	38605	792	37946	1451
	Mean	482	594	476	693
	Lower CL	478	556	472	668
	Upper CL	486	631	480	717
	Median	395	508	377	628
	Quartile Range	541	565	540	489

Note: Weighted estimates of 2005 dollars. CL= 95 % Confidence Limit.

Former participants of post-graduate degree courses had higher earnings, with a mean of \$737 per week and a median of \$628. Participants and graduates of post-graduate degree courses showed the highest weekly earnings although by definition this group is older.

The earnings of participants and graduates of other courses had means and medians similar to the corresponding summary statistics for TAFE diploma courses.

These findings suggest that participation in and qualifications from post-secondary education and training increase weekly earnings, but this may not necessarily be so. Earnings also increase with age and employment experience. The next section estimates the independent effects of post-secondary education and training on earnings to clarify the contribution of post-school study.

### **Effects of Post-Secondary Education and Training on Earnings**

As was done for occupational status, a series of multivariate models was analysed to estimate the effects of post-secondary education and training on weekly earnings. Table 22 contains the models for participation and Table 23 contains the models for qualifications.

In model 1 of Table 22, the estimate for the intercept is the average logged earnings for a respondent scoring zero on all predictor variables; that is, 18 year olds who did not participate in any post-secondary education and training. The estimate is \$168 per week (which is the exponent of 5.123).

Participation in an apprenticeship increased earnings by 25 per cent, or about 20 per cent when taking into account employment experience. Participation in a traineeship also increased earnings by around 20 per cent when taking into account labour force experience. In contrast, participation in other types of post-secondary education and training appear to have had negative effects on earnings. These negative effects may be a result of the disproportionately large number of observations in which earnings have been measured the year after dropping out of study.

Completing an apprenticeship (see Table 23) is associated with an increase of more than 20 per cent in weekly earnings, a traineeship 8 per cent, a TAFE certificate 5 per cent, a TAFE diploma 14 per cent, and a university diploma 17 per cent. The effect of completing a university degree is higher, at 31 per cent.

On average, a one year difference in age increases earnings by 20 to 25 per cent. This is a large effect and to some extent reflects the award system in some industries in which rates are set by age. The weekly earnings of men were about 20 per cent higher than for women. The effect of employment experience was small but in the expected direction. A 10 percentage point rise in time employed increased earnings by about 3 per cent on average.

Unexpectedly, experience of unemployment was associated with higher earnings. A 10 percentage point increase in time spent unemployed increased earnings by around 7 per cent. One explanation for this positive effect is that a substantial amount of unemployment can be attributed to young people shopping around for more highly paid jobs.

There were gender differences in the effects of these qualifications on earnings. The effects of apprenticeships were larger among men, whereas the effects of traineeships, TAFE certificates and diplomas were larger among women. The effects of traineeships and TAFE certificates among men were small and often not statistically significant.

**Table 22** Effects of participation in education and training on weekly earnings

	Model			
	1	2	3	4
<b>All</b>				
Intercept	512.3***	502.6***	501.6***	498.9***
Age	25.5***	25.3***	25.4***	25.2***
Apprenticeship	25.3***	21.3**	18.9**	19.0***
Traineeship	22.5***	23.2***	21.6***	20.6***
TAFE Certificate	-10.8***	-9.6***	-7.5***	-7.6***
TAFE Diploma	-5.0*	-4.6*	-3.0	-2.1
University Diploma	-8.0*	-9.3*	-7.5*	-6.7†
Bachelor Degree	-11.2***	-10.2***	-7.2***	-5.1***
Post-Graduate University	-32.3***	-32.9***	-30.9***	-29.7**
Other Course	-8.1*	-6.9*	-5.1	-5.3
Male	.	20.2***	20.6**	20.4***
% Time Working (excl. Full-Time Study)	.	.	1.9***	2.5***
% Unemployed (excl. Full-Time Study)	.	.	.	4.9***
<b>Men</b>				
Intercept		528.2***	528.3***	525.7***
Age		24.4***	24.2***	24.1***
Apprenticeship		21.7***	18.3***	18.5***
Traineeship		18.8***	16.2***	15.3***
TAFE Certificate		-10.4***	-7.8**	-7.6**
TAFE Diploma		-3.9	-1.1	-0.4
University Diploma		-5.1	-2.0	-1.3
Bachelor Degree		-17.2***	-12.5***	-10.3***
Post-Graduate University		-37.0**	-34.3**	-33.0*
Other Course		-3.5	0.0	0.0
% Time Working (excl. Full-Time Study)		.	2.8***	3.4***
% Unemployed (excl. Full-Time Study)		.	.	4.5***
<b>Women</b>				
Intercept		497.1***	496.1***	493.3***
Age		26.3***	26.4***	26.3***
Apprenticeship		14.8***	13.7***	12.9**
Traineeship		26.4***	25.5***	24.4***
TAFE Certificate		-9.0***	-7.6**	-8.1**
TAFE Diploma		-4.8†	-4.0	-2.9
University Diploma		-12.2*	-11.3*	-10.6*
Bachelor Degree		-5.4***	-3.8*	-1.7
Post-Graduate University		-29.9*	-28.6*	-27.5*
Other Course		-10.1*	-9.4*	-9.9*
% Time Working (excl. Full-Time Study)		.	1.1***	1.8***
% Unemployed (excl. Full-Time Study)		.	.	5.2***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

**Table 23** Effects of qualifications on weekly earnings

	Model			
	1	2	3	4
<b>All</b>				
Intercept	512.8***	501.4***	501.0***	497.8***
Age	22.8**	22.5***	22.9***	22.8***
Apprenticeship	31.6***	27.3***	23.4**	23.0***
Traineeship	10.1***	11.4***	9.1***	8.3***
TAFE Certificate	4.3*	6.6***	6.0***	5.1**
TAFE Diploma	11.8***	12.9***	13.1***	13.6***
University Diploma	18.8**	17.4**	16.3**	17.0**
Bachelor Degree	26.7***	28.3***	29.1***	30.9***
Post-Graduate University	11.2	12.1	11.7	12.3
Other Course	21.7**	21.6***	20.0***	19.1***
Male	.	23.7**	23.7***	23.3***
% Time Working (excl. Full-Time Study)	.	.	2.9***	3.7***
% Unemployed (excl. Full-Time Study)	.	.	.	6.6***
<b>Men</b>				
Intercept		529.2***	530.5***	527.0***
Age		22.0***	22.0***	21.9***
Apprenticeship		28.1***	23.0***	22.8***
Traineeship		8.2**	4.9	4.1
TAFE Certificate		3.1	3.4	2.8
TAFE Diploma		7.9*	9.5**	10.2**
University Diploma		28.6***	27.5***	28.4***
Bachelor Degree		24.0***	25.9***	27.9***
Post-Graduate University		0.1	3.1	3.8
Other Course		20.6***	18.8***	17.9***
% Time Working (excl. Full-Time Study)		.	4.3***	4.9***
% Unemployed (excl. Full-Time Study)		.	.	6.2***
<b>Women</b>				
Intercept		496.9***	495.9***	492.4***
Age		23.2***	23.5***	23.5***
Apprenticeship		16.4**	14.2**	13.1*
Traineeship		13.9***	12.4***	11.5***
TAFE Certificate		8.9***	8.2***	6.9**
TAFE Diploma		16.0***	15.6***	16.1***
University Diploma		5.7	4.9	5.1
Bachelor Degree		30.8***	31.1***	32.7***
Post-Graduate University		14.9	13.7	13.9
Other Course		22.3***	21.1***	20.3***
% Time Working (excl. Full-Time Study)		.	1.7***	2.5***
% Unemployed (excl. Full-Time Study)		.	.	6.9***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

There was no evidence that the effect of a bachelor degree on earnings was greater among men than among women. In fact, the effects for degrees were greater among women. It is likely, therefore, that differences in the returns to bachelor degrees do not contribute to the gender gap in earnings among young people.

The effects on earnings of a university diploma are substantially stronger among men than among women. One possible explanation for this difference is in the type of diploma obtained: men may tend to obtain diplomas in fields with higher earnings, such as information technology.

### **Effects of Factors other than Post-Secondary Education and Training**

Generally the effects of factors other than qualifications on earnings were small or negative. Table 24 presents the results of these regression analyses. Focusing first on model 1, living in a metropolitan area was associated with lower earnings, since there were positive effects for coming from other areas. In contrast to the findings for occupational status, a non-English speaking background was associated with 5 per cent lower earnings. The effect of socioeconomic background was negative: a one standard deviation difference in socioeconomic background, net of qualifications and other factors in model 1, reduced earnings by around 5 per cent. The addition of these factors to the model had little impact on the estimates for the effects of post-secondary education and training on earnings.

Model 2 adds achievement in literacy and numeracy, and school sector. Achievement had a negative impact on earnings, with a one standard deviation difference decreasing earnings by around 8 per cent. This effect was reduced to 4 per cent when taking into account prior earnings. The negative effect for achievement is unexpected and may be due to the age of the sample. Positive effects of academic achievement on earnings may not be evident until the late 20s or early 30s.

Attendance at a Catholic school or an independent school decreased earnings by about 5 per cent compared to having attended a government school, net of the other factors modelled.

Large effects were found for school leaving status (Model 3). Leaving school before completing Year 12 was associated with a 51 per cent increase in earnings for early leavers (before Year 11) and a 37 per cent increase in earnings for later leavers (Year 11 or 12). It should be noted that these effects are net of post-secondary school qualifications and other factors in the model. Nevertheless, this finding suggests that early schooling leaving is not necessarily detrimental in the early stage of the job market.

Finally, model 4 adds the earnings of the job at the time of the previous interview. 'Prior earnings' had a large impact on present job earnings. A \$100 difference in prior weekly earnings translates to a 5 per cent increase in earnings in the present job. The inclusion of prior earnings did not necessarily substantially reduce the estimates for the effects of post-secondary education and training. For example, the estimate of the independent effect of a bachelor degree qualification is slightly higher at 33 per cent, and for university and TAFE diplomas, largely unchanged at 20 and 12 per cent, respectively. In contrast, the independent effect of a TAFE certificate was much smaller, at 3.6 per cent.



**Table 24 Effects of qualifications and other factors on weekly earnings**

	Model			
	1	2	3	4
<b>Logged Effects</b>				
Intercept	495.1***	500.7***	489.6***	510.9***
Age	23.2***	22.7***	23.5***	16.0***
Apprenticeship	20.9***	19.3***	10.7***	7.4***
Traineeship	8.1***	7.2***	7.6***	7.6***
TAFE Certificate	5.7***	4.1*	1.8	3.6*
TAFE Diploma	12.9***	12.3***	14.9***	12.3***
University Diploma	21.0**	21.5***	22.5***	20.1**
Bachelor Degree	30.9***	33.4***	34.5***	32.8***
Post-Graduate University	9.9	12.1	12.2	7.8
Other Course	18.6***	18.2***	19.6***	11.8***
Male	23.2***	22.6**	19.9**	17.2***
% Time Working (excl. Full-Time Study)	3.3***	3.5***	1.6***	2.9***
% Unemployed (excl. Full-Time Study)	5.8***	5.0***	3.4***	6.3***
Regional Background	3.4*	2.2	0.9	2.4†
Rural Background	7.2***	6.0***	3.1*	4.5**
Father born English-Spkg. country	2.9	3.6*	3.2†	4.6**
Father born non-English-Spkg. country	-4.7**	-5.7***	-3.8*	0.0
Socioeconomic Background	-5.4***	-3.4***	-2.8***	-2.0***
Literacy & Numeracy Scores	.	-7.6***	-5.4***	-4.4***
Attended Catholic School	.	-5.2***	-3.3*	-3.3*
Attended Independent School	.	-5.1**	-3.8*	-2.1
Early School Leaver (Before Yr 11)	.	.	51.0***	24.7***
Later School Leaver (Yr 11 or 12)	.	.	36.6***	24.6***
Earnings Previous Year	.	.	.	4.8***

Note: Estimates multiplied by 100. \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted Estimates

### Earnings Trajectories

The earnings trajectories associated with different types of post-secondary education and training are shown in Figure 4 for participation and in Figure 5 for qualifications. Earnings appear to rise subsequent to participation for all types of post-secondary education and training. For participation, apprenticeships show the highest earnings trajectories, followed by bachelor degree courses. The earnings trajectories subsequent to other types of post-secondary education are very similar. The pattern for qualifications is slightly different, with university diplomas and bachelor degrees showing earnings trajectories comparable to those for apprenticeships. There appears to be a flattening out of the earnings trajectory for TAFE certificates, and possibly for TAFE diplomas.

Detailed summary statistics for earnings for each year subsequent to participation and qualifications are presented in Table 25 and Table 26, respectively.

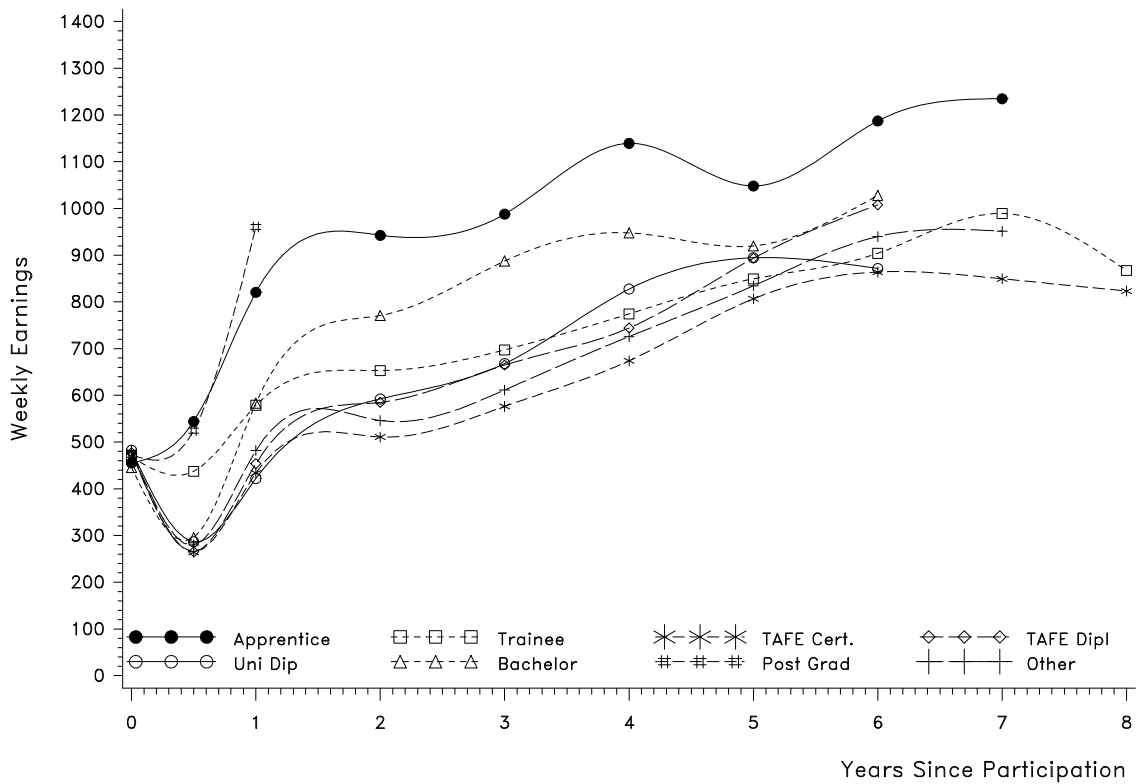


Figure 4 Plot of mean earnings by participation in education and training

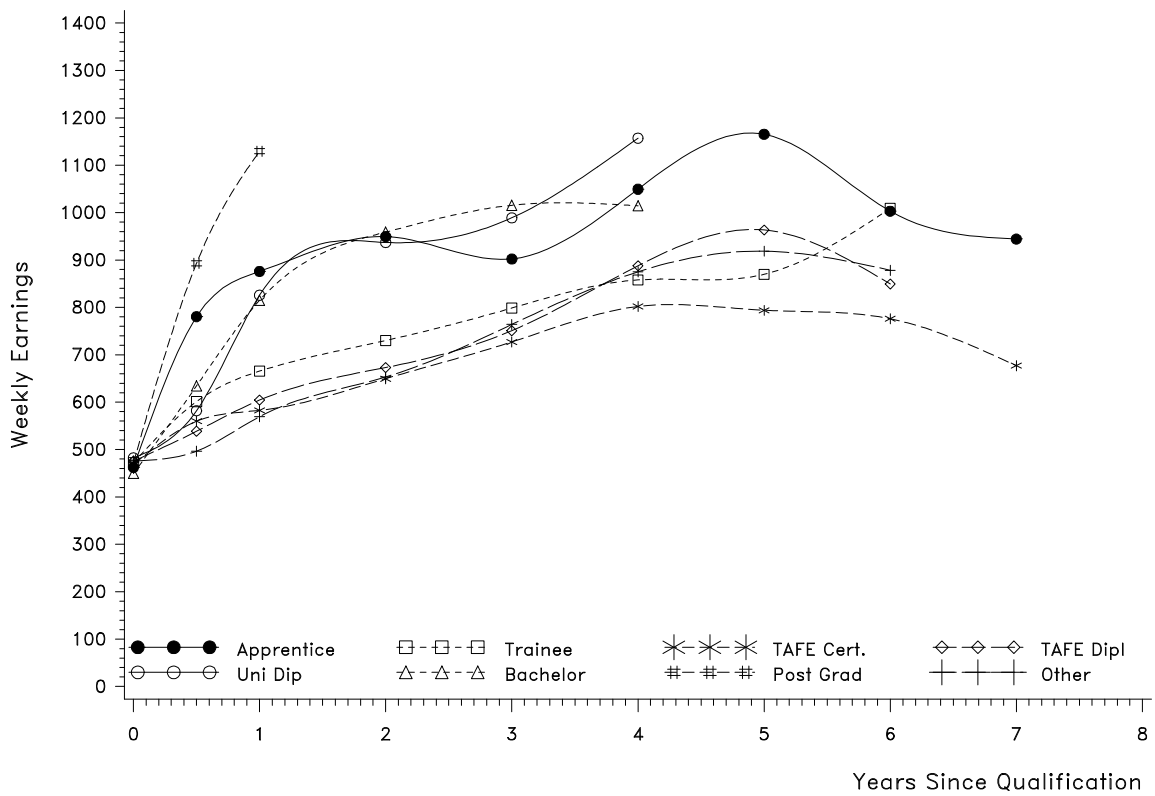


Figure 5 Plot of mean earnings by qualification

**Table 25 Earnings by years since participation (\$)**

Qualification	Statistic	Time since participation (years)							
		<1	1	2	3	4	5	6	7
Apprenticeship	<i>N of Obs.</i>	1016	561	433	328	262	123	45	21
	Mean	544	821	943	988	1139	1048	1187	1235
	Lower CL	528	781	898	932	1061	959	974	837
	Upper CL	560	860	987	1044	1217	1137	1400	1633
	Median	502	753	879	879	1004	1004	1067	879
	Quartile Range	275	351	414	439	628	552	628	1067
Traineeship	<i>N of Obs.</i>	979	696	590	500	400	299	174	50
	Mean	437	579	653	697	774	849	904	989
	Lower CL	423	560	631	671	745	810	840	842
	Upper CL	451	598	675	723	804	889	967	1137
	Median	377	565	653	690	753	816	866	941
	Quartile Range	250	320	282	323	286	307	385	388
TAFE certificate	<i>N of Obs.</i>	367	483	421	356	284	251	181	47
	Mean	264	434	511	576	674	807	864	850
	Lower CL	240	408	486	551	627	757	805	734
	Upper CL	289	459	535	602	721	856	923	965
	Median	188	408	502	565	665	753	816	753
	Quartile Range	251	345	282	272	314	339	260	338
TAFE diploma	<i>N of Obs.</i>	508	505	437	372	346	255	99	
	Mean	265	454	585	665	744	893	1008	
	Lower CL	247	431	554	624	705	840	873	
	Upper CL	284	476	616	706	784	947	1143	
	Median	201	439	592	640	722	860	879	
	Quartile Range	201	377	351	383	439	414	377	
University diploma	<i>N of Obs.</i>	120	130	119	101	88	74	22	.
	Mean	287	422	592	668	828	894	872	.
	Lower CL	245	376	537	607	686	803	665	.
	Upper CL	328	468	648	729	969	986	1078	.
	Median	213	377	565	690	753	879	816	.
	Quartile Range	176	361	377	314	433	377	377	.
Bachelor degree	<i>N of Obs.</i>	2366	1966	1846	1335	836	331	109	
	Mean	295	584	771	888	948	920	1028	
	Lower CL	287	568	753	863	916	878	938	
	Upper CL	304	599	789	912	980	961	1118	
	Median	238	565	784	879	941	885	954	
	Quartile Range	226	527	502	446	422	439	471	
Post-graduate degree	<i>N of Obs.</i>	43	16	9	.	.	.	.	.
	Mean	525	960	1352	.	.	.	.	.
	Lower CL	393	753	1112	.	.	.	.	.
	Upper CL	657	1168	1592	.	.	.	.	.
	Median	367	941	1371	.	.	.	.	.
	Quartile Range	628	560	377	.	.	.	.	.
Other	<i>N of Obs.</i>	123	162	147	111	84	89	60	12
	Mean	280	482	546	611	726	834	940	951
	Lower CL	232	426	489	545	540	690	779	403
	Upper CL	328	538	603	678	912	979	1101	1500
	Median	188	377	502	628	628	803	879	941
	Quartile Range	245	364	364	502	436	565	439	825

Note: Weighted estimates of 2005 dollars. CL= 95 % Confidence Limit.

**Table 26 Earnings by years since qualification in education and training (\$)**

Qualification	Statistic	Time since qualification (years)							
		<1	1	2	3	4	5	6	7
Apprenticeship	<i>N of Obs.</i>	460	400	330	170	140	94	44	26
	Mean	781	876	949	902	1049	1165	1003	944
	Lower CL	736	825	889	829	957	1031	822	751
	Upper CL	825	927	1010	975	1142	1299	1184	1138
	Median	703	816	879	778	941	1004	847	866
	Quartile Range	496	540	596	515	540	471	628	565
Traineeship	<i>N of Obs.</i>	497	416	358	281	254	49	13	3
	Mean	601	665	730	799	858	870	1009	877
	Lower CL	580	637	702	763	810	773	787	507
	Upper CL	623	694	759	835	906	966	1230	1247
	Median	597	689	753	803	816	791	879	941
	Quartile Range	311	314	299	276	339	282	314	277
TAFE certificate	<i>N of Obs.</i>	708	632	534	429	352	171	78	41
	Mean	524	582	650	727	802	794	776	677
	Lower CL	500	558	624	690	755	722	694	571
	Upper CL	547	607	675	764	849	866	858	783
	Median	502	577	640	690	753	778	753	690
	Quartile Range	390	377	320	439	364	408	383	345
TAFE diploma	<i>N of Obs.</i>	429	348	305	266	192	49	12	.
	Mean	539	604	673	751	888	963	849	.
	Lower CL	509	565	631	705	808	775	629	.
	Upper CL	568	644	715	797	968	1151	1069	.
	Median	521	602	681	753	816	853	753	.
	Quartile Range	377	377	471	377	345	314	477	.
University diploma	<i>N of Obs.</i>	57	50	41	26	17	.	.	.
	Mean	582	826	937	989	1157	.	.	.
	Lower CL	481	704	643	729	829	.	.	.
	Upper CL	683	947	1231	1249	1486	.	.	.
	Median	565	728	728	816	858	.	.	.
	Quartile Range	502	547	446	565	463	.	.	.
Bachelor degree	<i>N of Obs.</i>	1416	1369	935	535	114	.	.	.
	Mean	634	815	959	1016	1014	.	.	.
	Lower CL	614	795	932	976	939	.	.	.
	Upper CL	655	835	986	1055	1090	.	.	.
	Median	628	879	973	1035	1067	.	.	.
	Quartile Range	633	377	377	439	439	.	.	.
Post-graduate degree	<i>N of Obs.</i>	28	17	7	5	.	.	.	.
	Mean	893	1130	1115	1079	.	.	.	.
	Lower CL	734	904	815	781	.	.	.	.
	Upper CL	1053	1355	1415	1378	.	.	.	.
	Median	960	1067	1217	1130	.	.	.	.
	Quartile Range	577	430	314	251	.	.	.	.
Other	<i>N of Obs.</i>	312	276	241	207	182	175	54	.
	Mean	496	569	653	764	875	919	878	.
	Lower CL	459	532	606	686	792	842	735	.
	Upper CL	534	607	700	842	958	995	1021	.
	Median	439	527	628	690	816	845	791	.
	Quartile Range	345	339	377	464	502	459	276	.

Note: Weighted estimates of 2005 dollars. CL= 95 % Confidence Limit.

## Modelling Earnings Trajectories

Table 27 presents the findings from analyses of the effects of participation in post-secondary education and training on earnings trajectories. Table 28 presents the estimates from corresponding analyses of qualifications.

Apprenticeships are associated with earnings progression. According to the estimates in Table 27, participation in an apprenticeship increased earnings by about 2 per cent per year when taking into account labour market experiences. However, the positive effects of apprenticeships on earnings trajectories were limited to men. Among women there were no significant effects, with completion of an apprenticeship making little difference to earnings trajectories. Among males, however, a completed apprenticeship increased earnings by about 3 per cent per year.

The effects of other forms of vocational training on earnings trajectories were small and in some instances not statistically significant. A TAFE certificate qualification had a negative impact on earnings trajectories.

Bachelor degree qualifications increased earnings by about 8 per cent per year. Among men, a bachelor degree qualification increased earnings by about 5 per cent per year, and among women the effect was larger at 9 per cent. Participation in bachelor degree course had a weaker positive effect of around 4 per cent for all cohort members, and had barely significant weak effects among men.

The findings from the analyses of trajectories may appear to contradict those on the effects of vocational education and training on earnings. This difference is in the measurement of the predictor variables. In the analysis of effects, the measures of post-secondary education and training were scored 1 for prior participation or qualification and 0 otherwise. In the analyses of trajectories, the scoring was the number of years since participation or qualification (0.5 if earnings and participation or qualification were measured in the same year and 0 otherwise). The explanation for the apparent contradiction is that traineeships, TAFE certificates and TAFE diplomas produced immediate increases in earnings, but they were short-lived. In the effects analysis, the person-year observations of earnings were mostly at one or two years after participation or qualifications, so these observations dominated the estimation of the regression coefficients. That is why there were reasonably substantial effects. However, the earnings associated with these types of post-secondary education and training, four, five or more years after training, are much the same as or lower than the earnings one year after participation or qualification, leading to flat earnings trajectories.

This suggests that only apprenticeships and bachelor degrees have enduring effects on earnings trajectories up to the mid-20s at least. Traineeships, TAFE certificates and TAFE diplomas are associated with short-lived increases in earnings but these increases are not sustained at this stage.

**Table 27** Effects of participation in education and training on earnings trajectories

	Model			
	1	2	3	4
<b>All</b>				
Intercept	513.1***	502.1***	501.5***	498.4***
Age	24.6***	24.5***	24.8***	24.6***
Apprenticeship	5.1***	3.6***	2.1**	2.1**
Traineeship	1.1*	1.5**	0.6	0.3
TAFE Certificate	-2.1***	-1.8**	-1.8**	-2.0***
TAFE Diploma	0.4	0.5	0.6	0.8
University Diploma	-1.9	-2.4†	-2.0	-1.8
Bachelor Degree	2.1***	2.7***	3.2***	4.0***
Post-Graduate University	-14.8	-15.5	-13.5	-13.0
Other Course	-3.0**	-2.5*	-2.3*	-2.4*
Male	.	23.0**	23.2***	22.8***
% Time Working (excl. Full-Time Study)	.	.	3.0***	3.7***
% Unemployed (excl. Full-Time Study)	.	.	.	6.4***
<b>Men</b>				
Intercept		529.3***	530.4***	527.1***
Age		23.8***	23.8***	23.6***
Apprenticeship		4.7***	2.7**	2.9***
Traineeship		1.7*	0.5	0.4
TAFE Certificate		-3.0***	-2.7***	-2.8***
TAFE Diploma		0.9	1.3	1.5†
University Diploma		-1.0	-0.1	0.1
Bachelor Degree		-0.6	0.7	1.6†
Post-Graduate University		-29.1†	-26.6	-25.7
Other Course		0.0	0.5	0.5
% Time Working (excl. Full-Time Study)		.	4.3***	4.9***
% Unemployed (excl. Full-Time Study)		.	.	5.8***
<b>Women</b>				
Intercept		497.6***	496.4***	493.0***
Age		25.1***	25.5***	25.4***
Apprenticeship		-0.5	-1.2	-1.7
Traineeship		1.1	0.5	0.1
TAFE Certificate		-0.7	-0.7	-1.1
TAFE Diploma		0.3	0.2	0.5
University Diploma		-3.1†	-3.1†	-2.9
Bachelor Degree		5.0***	5.1***	5.8***
Post-Graduate University		-8.6	-7.5	-7.1
Other Course		-3.9**	-3.9**	-4.1**
% Time Working (excl. Full-Time Study)		.	1.8***	2.6***
% Unemployed (excl. Full-Time Study)		.	.	6.8***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

**Table 28** Effects of qualifications on earnings trajectories

	Model			
	1	2	3	4
<b>All</b>				
Intercept	513.3***	502.3***	501.7***	498.5***
Age	25.1***	24.8***	25.2***	25.1***
Apprenticeship	4.4***	3.0***	1.7*	1.6†
Traineeship	-2.0*	-1.4	-2.2*	-2.6**
TAFE Certificate	-4.3***	-3.4***	-3.6***	-3.9***
TAFE Diploma	-1.7†	-1.2	-1.0	-0.8
University Diploma	4.5	4.0	3.5	3.7
Bachelor Degree	4.9***	6.2***	6.9***	7.9***
Post-Graduate University	7.7	8.7	7.7	7.3
Other Course	0.0	0.1	-0.1	-0.4
Male	.	23.1***	23.1***	22.7***
% Time Working (excl. Full-Time Study)	.	.	3.1***	3.8***
% Unemployed (excl. Full-Time Study)	.	.	.	6.4***
<b>Men</b>				
Intercept		529.4***	530.5***	527.2***
Age		24.1***	24.0***	23.9***
Apprenticeship		4.0***	2.5**	2.4*
Traineeship		-1.3	-2.4†	-2.7*
TAFE Certificate		-2.9**	-2.4*	-2.6**
TAFE Diploma		-3.4*	-2.6†	-2.3
University Diploma		7.8†	7.5†	7.9†
Bachelor Degree		2.3	3.8*	5.0**
Post-Graduate University		8.2	10.4	9.6
Other Course		0.3	0.3	0.0
% Time Working (excl. Full-Time Study)		.	4.4***	5.0***
% Unemployed (excl. Full-Time Study)		.	.	5.9***
<b>Women</b>				
Intercept		497.8***	496.5***	493.1***
Age		25.7***	26.2***	26.1***
Apprenticeship		-2.6	-3.5†	-3.7†
Traineeship		-1.5	-2.2†	-2.6*
TAFE Certificate		-3.9***	-4.2***	-4.6***
TAFE Diploma		0.2	0.1	0.3
University Diploma		0.2	-0.5	-0.3
Bachelor Degree		7.9***	8.0***	8.9***
Post-Graduate University		6.6	5.9	5.4
Other Course		-0.1	-0.3	-0.5
% Time Working (excl. Full-Time Study)		.	1.9***	2.7***
% Unemployed (excl. Full-Time Study)		.	.	6.9***

Note: \*\*\* P<0.001, \*\* 0.001<P<0.01, \* 0.01<P<0.05 † 0.05<P<0.10. Weighted estimates.

## 6. SUMMARY AND IMPLICATIONS

The report has investigated the influence of post-secondary education and training on the occupation and earnings of young people. It examined young people's levels of occupational status and weekly earnings both before and after undertaking post-school study, over a number of years. The longitudinal nature of the data set allowed the examination of trajectories, by examining how occupational status and weekly earnings changed over time. For this cohort the analyses covered the period from average age 14 (1995) to 24 years (2005).

Participation in education and training was considered separately from obtaining a qualification. For example, the structure of study in the VET sector may allow module completion relating to specified competencies without completing a full qualification. Comparisons were made with those young people who did not participate in post-school education and training at all. The richness of the LSAY data enabled separation of the effects of post-school education and training from those of social background and labour market experience.

### **Main Findings**

In regard to occupations, a bachelor degree qualification had the strongest impact on occupational status trajectories. This finding is not surprising, given that most higher-status occupations require university qualifications. Other types of university education—university diplomas and post-graduate degrees—were also associated with higher occupational status. In general, TAFE courses and apprenticeships/traineeships were associated with little increase in occupational status in the early career, which probably reflects the fact that the young people in such programs are often already working in a similar occupation. The occupational trajectories associated with vocational education and training were basically flat for this age group.

In regard to earnings, bachelor degree qualifications again had the strongest impact, increasing weekly earnings by around 30 per cent. Vocational education and training qualifications were to a lesser extent, also associated with higher earnings. This is especially true of apprenticeships, which increased earnings by more than 20 per cent and had sustained effects during the early occupational career. However, the beneficial effects of apprenticeships on earnings are largely limited to men, which may reflect the nature of the fields in which young women enter apprenticeships. Traineeships, TAFE certificates and diplomas, on the other hand, increased earnings initially but then the trajectories were fairly flat (at least up until the mid-20s period covered by these data).

For most types of post-secondary education and training, completion was more important for occupations and earnings than participation. This was especially the case for bachelor degrees and university diplomas. This reinforces the importance of encouraging young people to complete their courses, and reducing attrition rates. The exceptions are apprenticeships, where there was little difference between participation and completion in the effects on occupational status and earnings, and traineeships, where for earnings the effects were generally larger for participation than for completion.

Factors other than post-secondary education and training – such as social background -- generally had only weak effects on occupational status and earnings. Estimates for the different types of post-secondary education and training did not change substantially with the addition of these factors. Skills in literacy and numeracy did not have direct effects on the occupational career: their effects were indirect, mediated through post-secondary education and training. Overall, such results suggest that education and training make a substantial contribution to social mobility in Australia.



## Discussion

The analyses revealed that almost 90% of the Year 9 class of 1995 had commenced some form of post-school education and training by age 24. In terms of the measures used here – occupational status and earnings -- these were positive choices. In general, post-school education and training leads to higher status occupations and, in particular, higher earnings compared to not doing any post-school education or training. If anything, these benefits of education and training are stronger for young women than young men, especially for those who enrol in bachelor degrees (but the gender effect works in the other direction for apprenticeships).

The analyses indicated that for some VET qualifications occupational status changed little after the course and, although earnings increased initially, the effect was not sustained. These findings suggest two things: first, that there is often a close link between the occupation in which the VET training is undertaken (e.g. in a traineeship) and the occupation in which people subsequently work; and second, that the types of work taken up after study in the VET sector are not in high-status fields, or in occupations which provide opportunities for growth.

It is not clear why TAFE certificates and TAFE diplomas are in general not delivering sustained increases in earnings. There may be selection effects operating, in that some who pursue TAFE certificate and TAFE diploma qualifications do so because they have already experienced difficulties in the labour market. Alternatively or in addition, some TAFE certificate and diploma courses are not necessarily developing the skills required for higher returns in the labour market.

Generally, young women had slightly higher levels of occupational status than did young men, but even during the early career their weekly earnings were about 20 per cent less. Men did not gain higher returns from a bachelor degree and other university courses suggesting that differential rates of university completion do not contribute to a gender gap in earnings. The major sources of the gender differences at this stage of the career are most likely to be hours worked per week.

It has long been accepted that university education generally provides access to higher status occupations, with more opportunities for continuing investment in learning and higher earnings. Entry into higher status occupations often requires the completion of a university degree. The findings in this report do indeed show that university completion is associated with higher status jobs and higher earnings, and that these effects are apparent immediately after degree completion and are sustained. Even in the first years of participation in the labour market, young people who completed university qualifications experienced more marked increases in occupational status and earnings than did those with other types of qualifications, or no qualifications at all.

The results also indicate that not all forms of post-secondary education and training are equally beneficial, at least in terms of the measures of occupation and earnings used in this report. Apprenticeships and especially university degrees tend to have stronger effects on earnings and occupations than other forms of post-secondary education and training at this early stage of young people's careers. This variability suggests that there needs to be continuing attention to the relationship between the knowledge and skills produced through different forms of education and training and those required by the labour market.

The results also reinforce the benefits of gaining experience in employment. Experience of unemployment tended to have a larger negative effect on occupational status than on earnings, supporting the notion that unemployment does have a scarring effect in terms of reducing access to good jobs. From a policy perspective this underlines the need to monitor school-leavers' labour market experiences and to offer guidance and support to those who appear to be at most risk in the school-to-work transition.

## REFERENCES

- ABS. (1997). *Australian Standard Classification of Occupations (ASCO) Second Edition, 1997 (Cat no. 1220.0)*. Canberra: Australian Bureau of Statistics.
- ABS. (1999). *Transition from education to work*. Canberra: Australian Bureau of Statistics.
- ABS. (2002). *Education and training indicators, Australia 2002*. Canberra: Australian Bureau of Statistics.
- Ainley, J., & Corrigan, M. (2005). *Participation and Progress through New Apprenticeships* (LSAY Research Report No. 44). Melbourne: ACER.
- Allison, P. D. (1995). *Survival Analysis using the SAS System. A Practical Guide*. Cary, NC: SAS Institute.
- ANTA. (2002). *TAFE and University Graduates, 15-24 Years. Statistics 2001. At a Glance*. Melbourne: Australian National Training Authority.
- AQF. (2006). Australian Qualifications Framework. from <http://www.aqf.edu.au/aboutaqf.htm>
- Arulampalam, W. (2001). Is Unemployment Really Scarring? Effects of Unemployment Experiences on Wages. *The Economic Journal*, 111(475), F585-F606.
- ATO. (2006). Australian Tax Office, Consumer Price Index. from <http://www.ato.gov.au/taxprofessionals/content.asp?doc=/content/cpi.htm>
- Blundell, R., Dearden, L., Goodman, A., & Reed, H. (2000). The returns to higher education in Britain: evidence from a British cohort. *The Economic Journal*, 110, F82-F99.
- Borland, J. (2002). *New Estimates of the Private Rate of Return to University Education in Australia* (Melbourne Institute Working Paper No. 14/2002): Melbourne Institute of Applied Economic and Social Research, The University of Melbourne.
- Broom, L., & Jones, F. L. (1976). *Opportunity and Attainment in Australia*. Canberra: Australian National University Press.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical Linear Models: Applications and Data Analysis Methods*. New York: Sage.
- Curtain, R., & Sweet, R. (1998). *Young People and Work: Is VET the Answer? Summary Report on the National Issues Forum (1st, Sydney, New South Wales, Australia, December 1997). Working Paper*. Melbourne: ANTA.
- Curtis, D. D. (2008). *VET Pathways: Participation, Persistence and Possibilities* (LSAY Research Report No. 52). Melbourne: Australian Council for Educational Research.
- Falaris, E. M., & Peters, H. E. (1998). Survey Attrition and Schooling Choices. *Journal of Human Resources*, 32(2), 531-534.
- Ganzeboom, H. B. G., & Treiman, D. J. (1996). Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classifications of Occupations. *Social Science Research*, 25, 201-239.
- Goldstein, H. (1995). *Multilevel Statistical Models* (2 ed.). London New York: Edward Arld Halstead Press.
- Hauser, R. M., Warren, J. R., & Huang, M.-H. (2000). Occupational Status, Education, and Social Mobility in the Meritocracy. In K. Arrow, S. Bowles & S. Durlauf (Eds.), *Meritocracy and Economic Inequality* (pp. 177-298). Princeton Princeton University Press.
- Jacobson, L. S., LaLonde, R. J., & Sullivan, D. G. (1993). Earnings Losses of Displaced Workers. *American Economic Review*, 83(4), 685-709.
- Jones, F. L. (1989). Occupational Prestige in Australia: A New Scale. *Australian and New Zealand Journal of Sociology* 25(2), 187-199.
- Jones, F. L., & McMillan, J. (2001). Scoring Occupational Categories for Social Research: A Review of Current Practice with Australian Examples. *Work, Employment and Society*, 15(3), 539-563.
- Karmel, T., & Maclachlan, M. (1988). Occupational Sex Segregation —Increasing or Decreasing? *Economic Record*, 64(3), 187-195.

- Littell, R. C., Milliken, G. A., Stroup, W. W., & Wolfinger, R. D. (1996). *SAS System for Mixed Models*. Cary, NC: SAS Institute.
- Little, R. J. A., & Rubin, D. B. (2002). *Statistical Analysis with Missing Data* (Second ed.). Hoboken, New Jersey: John Wiley & Sons.
- Long, M. (1996). *Samples and sampling for the Y95 LSAY cohort* (LSAY Technical Report No. 8). Melbourne: ACER.
- Long, M., McKenzie, P., & Sturman, A. (1996). *Labour Market Participation and Income Consequences in TAFE* (ACER Research Monograph Series). Melbourne: Australian Council for Educational Research.
- MaCurdy, T., Mroz, T., & Gritz, R. M. (1998). An Evaluation of the National Longitudinal Survey on Youth. *Journal of Human Resources*, 33(2), 345-436.
- Marks, G. N. (2006). *The Transition to Full-Time Work of Young People who do not go to University* (LSAY Research Report No. 49). Melbourne: ACER.
- Marks, G. N. (2007). *Completing University: Characteristics and Outcomes of Completing and Non-completing Students* (LSAY Research Report No. 51). Melbourne: Australian Council for Educational Research.
- Marks, G. N., & Fleming, N. (1998). *Youth Earnings in Australia: 1980-1994*. (LSAY Research Report No. 8). Melbourne: Australian Council for Educational Research.
- Marks, G. N., Fleming, N., Long, M., & McMillan, J. (2000). *Patterns of Participation in Year 12 and Higher Education in Australia: Trends and Issues* (LSAY Research Report No. 17). Melbourne: Australian Council for Educational Research.
- Marks, G. N., & Long, M. (1996). *Weighting the 1995 Year 9 Cohort Sample for Differential Response Rates and Sample Attrition* (LSAY Technical Report No. 15). Melbourne: ACER.
- Marks, G. N., & Rothman, S. (2003). Longitudinal Studies of Australian Youth. *Australian Economic Review*, 36(4), 428-434.
- McMillan, J., & Jones, F. L. (2000). The ANU3\_2 Scale: a Revised Occupational Scale for Australia. *Journal of Sociology*, 36(1), 64-80
- McMillan, J., & Marks, G. N. (2003). *School Leavers in Australia. Profiles and Pathways* (LSAY Research Report No. 31). Melbourne: Australian Council for Educational Research.
- McNabb, R., & Richardson, S. (1989). Earnings, Education and Experience: Is Australia Different? *Australian Economic Papers*, 28(52), 57-75.
- Miller, P., Mulveya, C., & Martin, N. (2005). Birth weight and Schooling and Earnings: Estimates from a sample of twins. *Economics Letters*, 86(3), 387-392.
- NCVER. (2000). *Statistics 1999: TAFE and University Graduates at a Glance. Australian Vocational Education & Training*. Leabrook, Australia: National Centre for Vocational Education Research.
- OECD. (2005). *Education at a Glance. OECD Indicators 2005*. Paris: Organisation for Economic Co-operation and Development.
- Rimmer, S. M. (1991). Occupational Segregation, Earnings Differentials and Status among Australian Workers. *Economic Record*, 67(3), 205-216.
- Rothman, S. (2008). *Estimating Attrition Bias in the Year 9 Cohorts of the Longitudinal Surveys of Australian Youth* (LSAY Technical Paper). Melbourne: ACER.
- Ryan, C. (2000). *Where to Next? Graduate Outcomes from the Australian Higher Education and Vocational Education and Training Sectors*. Leabrook, Australia: National Centre for Vocational Education Research.
- Stanwick, J. (2006). *Outcomes from higher-level vocational education and training qualifications*. Adelaide: National Centre for Vocational Education Research.
- Trostel, P., Walker, I., & Woolley, P. (2002). Estimates of the economic return to schooling for 28 countries. *Labour Economics*, 9, 1-16.
- Vella, F. (1993). Gender Roles, Occupational Choice and Gender Wage Differential. *Economic Record*, 69(4), 382-392.

## APPENDIX: OTHER MEASURES

A large number of measures were constructed for this report. The most important measures are the outcome variables — main activity, occupation and earnings — and the predictor variables: participation in post-secondary study; qualifications from post-secondary study; labour market experiences; and demographic and sociological factors. In addition, several variables were constructed for illustrative purposes: main activity; occupational group; and hourly earnings.

### *Main Activity*

Main activity was assessed by the respondent's major activity at the time of interview, usually conducted between September and November. It was categorised into five groups: full-time study; full-time work; part-time work (with and without part-time study); looking for work (unemployed); and 'other'. Respondents were allocated hierarchically according to this ordering of activities. For example, those working full-time and studying part-time were categorised as working full-time. Similarly, respondents working part-time but looking for work were defined as working part-time. This is the same categorisation used in previous LSAY reports (Marks, 2006; McMillan & Marks, 2003).

Full-time study includes full-time study at a school, university, TAFE or private institution. Apprentices are classified as full-time workers. Full-time work is defined as working 30 or more hours per week, and part-time work less than 30 hours. There are additional categories for *full-time work and part-time study*, which was reasonably common, and *part-time work and part-time study*, which was uncommon. Unemployed is defined as looking for work anytime during the four weeks prior to the interview and not presently engaged in full-time study or either full-time or part-time work. 'Other' is defined residually, comprising those not allocated to any of the other four categories. The main activities of this group include 'ill/unable to work', 'travel and holidays' and 'home duties'.

### *Post-Secondary Education and Training*

Each year, respondents were asked if they had obtained a qualification since the previous interview; whether they had stopped or were still doing the course, apprenticeship or traineeship that were doing at the last interview; and whether they had begun any new post-secondary course or training. From the responses to these questions, two groups of measures of education and training were constructed, the first focusing on participation and the second on qualifications (certificates, diplomas and degrees). The types of participation and qualifications are:

- Apprenticeships
- Traineeships
- TAFE Certificates
- TAFE Diplomas
- University Diploma
- Bachelor Degree
- Post-Graduate Degree
- Other, such as those offered by private providers.

In this report apprenticeships refer to the 'traditional' apprenticeship, not Australian Apprenticeships which include traditional apprenticeships and traineeships. Previous LSAY reports have found it helpful to distinguish between traditional apprenticeships and traineeships. Traditional apprenticeships are usually in the trades area and take up to four years to complete. Traineeships most often involve non-trade work and are much shorter.

These types of post-secondary education and training courses are documented in the Australian Qualifications Framework (AQF, 2006).

Apprentices and trainees were asked if they completed their apprenticeship or traineeship. This was deemed equivalent to qualifying. Apprentices and trainees were not asked about completion in the 2002 questionnaire but were asked in a special section in the 2003 questionnaire.

A TAFE certificate included certificates at AQF levels 1 to 4 and level unknown. A TAFE diploma included both a TAFE diploma and an advanced diploma. A bachelor degree included degrees both with and without honours. A university diploma is a two-year undergraduate course, sometimes referred to as an 'associate degree'. In the 2001 and later questionnaires, the set of response options combined graduate certificates with graduate diplomas. However, too few respondents participated in these courses or obtained qualifications. Up until 2005, 102 respondents (1.5% of the sample) had participated in these courses and only 60 (0.9%) had obtained either qualification.

Respondent status for completion or qualification was not dependent on various episodes of participation identified in the data.

Measures of 'None' were created comprising respondents who had not participated or gained qualifications from any of these types of post-secondary education and training. It is assumed that those who participated in graduate certificates or diplomas had graduated from a degree course.

### *Labour Market Experience*

Two types of labour market experience variables were created: experience of employment; and experience of unemployment. Cohort members were asked which months they worked since the previous interview. In the question, no distinction was made between full-time and part-time employment. Annual leave or sick leave was deemed as equivalent to employment. Later in the questionnaire cohort members were asked which months, since the previous interview, they were looking for work and not working. This definition is consistent with that for activity. To avoid double counting, experience of employment and unemployment was calculated by dividing the number of months employed or unemployed by the time elapsed since January 1 of the respective year.

For experience of both employment and unemployment, three measures were constructed. The first made no adjustment for time spent in full-time work, the second excluded time spent at school (assumed to be full-time), and the third excluded time spent at school or in full-time post-secondary study. This includes full-time study for TAFE diplomas and certificates, and bachelor and post-graduate degrees. Time spent in full-time study was measured using the start and finish dates of study, as obtained in the telephone interviews. Time spent in apprenticeships or traineeships was not adjusted for.

### *Demographic Measures*

*Age:* For each year, age of respondent was measured accurately by subtracting birth date from date of interview, then dividing by the average number of days in a year. For the regression analysis age was centred at age 18 to provide meaning to the intercept term.

*Gender:* Information on the sex of the respondents was obtained from responses to the 1995 questionnaire and confirmed in subsequent telephone interviews.

*Indigenous status:* In the 1995 interview, cohort members were asked: 'Are you an Aboriginal person or Torres Strait Islander person?' A dichotomous measure was constructed from responses to this question, permitting contrasts between Aboriginal and Torres Strait Islander students, and other students.

*Ethnicity:* Ethnicity was based on father's country of birth. The measure comprised three categories: Australia; another English-speaking country (Canada, Ireland, New Zealand, South Africa, the United Kingdom and the United States); and a non-English-speaking country. If information on father's country of birth was not available, information on mother's country of birth was used.

*Region* was measured by two categories—metropolitan and non-metropolitan—based on the number of people in the locality of the student's place of residence in 1995 (Year 9). Metropolitan regions were defined as centres with populations of 100,000 persons or more.

### *Socioeconomic Measures*

*Parental Occupation:* Sample members were asked in 1995 to report the occupations of their father (or male guardian) and mother (or female guardian), and to describe their work. If a parent was not employed at the time of the interview, respondents were asked to describe that parent's last job. Respondents were asked to provide information on both parents, even if their mother or father was not living with them. The information provided by respondents was coded to the four-digit level of the first edition of the Australian Standard Classification of Occupations (ASCO).

*Parental occupational status.* The parents' occupations were assigned occupational status scores based on the ANU3 scale, as was the case for cohort members' occupation.

*Parent's Education:* In 1995 cohort members were asked to report the highest level of education completed by each parent. This is a continuous measure based on the average years of education undertaken by the respondents' parents. Years of education was standardised to a mean of 0 and a standard deviation of 1.

*Socioeconomic background* was constructed by combining parental occupational status and parent's education. The measured was standardised to a mean of 0 and a standard deviation of 1.

### *Schooling Measures*

*Achievement* measures were based on students' performance in ACER developed tests of literacy and numeracy, administered in 1995 when the students were in Year 9. Each test comprised 20 short answer or multiple answer items. The tests included many items used in previous national studies of literacy and numeracy (the 1975 and 1980 ASSP studies) and in longitudinal studies (*Youth in Transition* and the *Australian Youth Survey*). The scores for the literacy and numeracy tests were centred about the means and summed to produce a combined measure. The combined measure was then standardised to a mean of 0 and a standard deviation of 1.

*School sector:* This measure refers to the school attended at the time of sample selection (Year 9, 1995), based on the sample design. Three categories are used: government schools, Catholic and independent.

*School completion status:* This measure distinguishes between school completers and non-completers, and identifies two groups of non-completers: early school leavers; and later school leavers. The measure is the same as that used in an earlier LSAY report on school leavers (McMillan & Marks, 2003). School non-completers were identified by questions in the 1996, 1997, 1998 and 1999 survey instruments on whether respondents were at school and, if they were not, the year level (grade) and month in which they left school. The surveys clearly distinguished between students who changed schools and those who had permanently left school. *Early school leavers* were defined as persons who left school on or before the end of Year 10 (for most this was December 1996). *Later school leavers* were defined as persons who left school between the commencement of Year 11 and August of Year 12. For the majority of later school leavers, this refers to the period from 1997 to August 1998. The August threshold was chosen to be consistent with the census date for the National Schools Statistics Collection (ABS, 2002). *Completers* were defined as persons who commenced Year 12 and remained in school until at least August of that year.

*Prior occupational status* is the occupational status of the respondent's job in the previous year. To facilitate interpretation in the regression analyses it was centred at ANU3 score of 20. In the multilevel model it is important that the intercept is meaningful because the estimates for the random effects are relative to the intercept (Bryk & Raudenbush, 1992; Goldstein, 1995) For example, if the predictor variable, ANU3 score of previous job, is not centred then the intercept is the expected occupational status or earnings when prior occupational status is zero which is an extreme or in some instances, a non-existent value. The estimates for the single years are relative to the value of the intercept. An ANU3 score of 20 is close to the average occupational status of all cases in these data.

*Prior weekly earnings* are the weekly earnings from the job in the previous year. For the regression analysis, prior weekly earnings were centred at \$200 per week.