



RESEARCH INNOVATION AND EXPANSION FUND

# From education to employment: how long does it take?

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Amendments made to table 2: 2006 Census data, 11.7.11.

Additional information relating to this research is available in *From education to employment: how long does it take? Support document*. It can be accessed from NCVER's website <<http://www.ncver.edu.au/publications/2373.html>>.

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## *From education to employment: how long does it take?*

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This report examines the experiences of young Australians during the transition from full-time student to worker using data from the 1995 cohort of the Longitudinal Surveys of Australian Youth (LSAY95). The authors focus on two aspects of the transition to employment: the time taken to find any job and the time taken to find a full-time permanent job. The type of job obtained is not the focus.

While the authors are specifically interested in the time taken to obtain a job, they also find that a substantial proportion (around 25%) of those who have not completed school or obtained a certificate III or higher qualification do not get a job at all. This group fails to make the transition from student to worker.

## Key messages

- ✧ Young people who are better educated find work faster: those who complete Year 12 or post-school qualifications will find employment more quickly than young people who leave school early. But Year 12 completion itself does not give the same advantage as completion of a post-school qualification when it comes to finding full-time permanent employment.
- ✧ The type of post-school qualification does not change the speed of finding any job; university and VET graduates have similar experiences.
- ✧ Importantly, gender matters. Better educated women attain employment faster than their less educated counterparts. This difference is not as apparent for men.

Tom Karmel  
Managing Director, NCVER



# Contents

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Tables and figures	6
Executive summary	7
Introduction	8
Existing theory and empirical approaches	10
Human capital theory and signalling theory	10
Job search modelling	11
Data and definitions	13
LSAY 1995 cohort data	13
How long does it take on average to get a job?	21
Multivariate estimation of duration to a job: overview	21
Setting up the estimation	22
Estimation results	24
Education and the average speed of finding a job for young labour market entrants	24
Discussion	28
Better educated youth get to work faster	28
Getting a 'good job' versus getting 'any job'	28
Differences between VET and university qualifications	28
Gender differences	29
Other influences	29
Conclusion	30
References	32
Appendix	34
Support document details	35

# Tables and figures

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## Tables

1	Summary for each wave of the LSAY 1995 cohort, 1995–2006	13
2	Comparison of the LSAY 1995 cohort sample and the ABS 2006 Census: percentage of the cohort for each education qualification (highest level attained), by sex	15
3	Job type by wave after completing highest level of education	16
4	Estimating the average length of time from education to employment	25
5	Summary of the notional average durations (in days)	27
A1	Duration estimation: from education to employment	34

## Figures

1	Time from completion of education to employment in any job: men	18
2	Time from completion of education to employment in any job: women	19
3	Time from completion of education to employment in FIP job: men	20
4	Time from completion of education to employment in FIP job: women	20



# Executive summary

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This report examines the time it takes young Australians to obtain their first job after they complete their education. This is an important issue because the first experiences of young people entering the labour market may affect their future labour market successes or failures. The unique information contained in the employment calendar of the 1995 cohort of the Longitudinal Surveys of Australian Youth (LSAY) is used to estimate the factors associated with the length of time between completing education and commencing work.

The report distinguishes between different levels of education, the most pertinent distinction being between: (i) less than Year 12, (ii) Year 12, (iii) vocational education and training (VET), and (iv) higher education (university). It also distinguishes between getting any job (including casual, fixed-term, and part-time) and getting a full-time continuing job with paid leave entitlements. Since gender differences were found to be empirically strong from the outset, the analysis is performed for men and women separately.

Considerable work went into the preparation of the data, in particular through the construction of a complete monthly employment calendar for all those who reported their post-school education qualifications. A number of sensitivity analyses were necessary due to the high attrition present in the data, and to determine the appropriate handling of factors for which we have limited information. All such work is reported in a support document.

The report employed multivariate regression analysis to estimate the duration between completing education and obtaining work using the method of piecewise constant hazards. This method is known to be particularly powerful and robust for handling data that may be problematic in ways that are not clearly known, or which cannot be explicitly modelled even when known. These regression methods are called 'flexible' or 'semi-parametric'.

The report finds that level of education is the prime factor influencing the speed at which young people obtain work after they leave the education sector. When it comes to getting any job, completion of Year 12 is almost as useful as a VET or university qualification for getting a job quickly. The disadvantaged group are those who did not complete school. When it comes to getting a full-time permanent job, the advantage of Year 12 completion is smaller, but still present. About 40 months after completing their education, those with Year 12 only had similar job participation results to those with VET and university qualifications.

The report finds strong gender differences. Education appears to play a smaller role for the men in the sample than it does for the women. The differences are large. A man with a degree obtains work five times faster than a man who did not complete Year 12, while a woman with a degree obtains work eight times faster than a woman having less than Year 12. Similar differences are present when we consider the speed of getting a full-time continuing job.

This report shows very clearly that the importance of education for labour market entrants is that it not only leads to better wages, but also to obtaining a job faster. About a quarter of the sampled youth with less than Year 12 education had not obtained any work by the end of the LSAY observation period. This provides a serious warning regarding the long-term prospects of this subset of the younger Australian workforce. The prognoses for skills and career development for these young people are grim.

# Introduction

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The unprecedented ageing of the Australian workforce in the last decades might be expected to produce a premium for youth in the labour market and new job opportunities for each cohort of young entrants to the workforce. Contrary to this expectation, the number of young people in full-time employment has remained almost unchanged since 1994 in Australia. While the stock of full-time jobs increased by 1.7 million between 1994 and 2008, the stock of young people aged between 20 and 24 years in full-time employment remained unchanged at 800 000, even while the size of that cohort grew by 70 000.

The 2008–09 financial crisis did not change matters; older workers largely retained their employment while young adults were mainly adversely affected. Young adults' job losses were 61% of all the full-time jobs lost economy-wide (ABS 2009). Under-employment of Australia's youth remains a substantial problem. In August 2009, 19% of those aged between 15 and 24 years were unemployed, or were working part-time but wanted more hours, or were not in the labour force but wanted to work. The percentage of young people wanting but not being able to work was up from 11% in 2007 (ABS 2009). It is in this broader economic context that our report investigates how young Australians make their first move from education to work.

Recent changes in the labour market have made the transition of younger Australians from full-time education to full-time employment more difficult. Employment growth has been concentrated in professional, managerial, and semi-professional jobs, which typically require higher levels of education and, often, experience also. Casual and part-time employment have grown more rapidly than have full-time and continuing employment, especially for younger people. The growing share of higher-end jobs has meant that when younger people try to enter the labour market they increasingly find that they need to have completed secondary school, and even to have obtained post-school qualifications. This explains why many who obtain post-school qualifications are the first generation in their family to do so.

The first experiences of young labour market entrants are important, not only regarding the present benefits they confer on the young workers, but also regarding their effect on future labour market successes or failures. It has been recognised internationally that early career experiences can have profound influences on later career outcomes (OECD 2008). For example, people who spend less search time between leaving education and finding their first job tend to have higher earnings and are less likely to experience unemployment and/or underemployment in their later careers. One explanation could be that early career experiences provide a credible signal of productive ability, which is then used by potential employers throughout the career of an employee (Margolis et al. 1999; 2000). An additional explanation could be that, on top of the signalling effect, adverse early career experiences damage the human capital development of people who are subjected to such adversity. The argument here would be that early career experiences play a vital formative role for the development of new labour market entrants. This latter argument is one that extends over much earlier individual social and education experiences; it has been shown by Heckman (2000) to be strongly supported by evidence. Both arguments suggest that the way the transition of young labour market entrants from full-time education to employment happens is a crucial part of their long-term career development. While the international literature clearly supports this view, and often explains how early labour market entry experiences matter, the corresponding Australian

literature is far less developed (Lamb 2001; McMillan & Marks 2000; Marks 2006).<sup>1</sup> A crucial element of education-to-work experience is the time that it takes a young labour market entrant to become full-time employed after they complete their education. The transition to work is not a simple step. It often involves a number of short-term jobs and intervening periods of joblessness and/or search. The nature of these jobs is often not conventional, which makes them difficult to identify and categorise. Further, the nature of the not-in-work spells between education and work are also difficult to categorise, as they can be very variable. Inevitably, the theoretical modelling of this process is often as complicated as is the empirical verification of the theoretical models.

The purpose of this report is to shed some light on this relatively unexplored part of the labour market using the most up-to-date and pertinent Australian data available—the Longitudinal Surveys of Australian Youth. The report uses the longitudinal nature of LSAY to ask the question of how quickly young Australians obtain their first job after completing their full-time education. To answer this question we use two different definitions of a ‘first job’. First, we say that employment has been obtained when a young person obtains their first job, no matter what the characteristics of this job may be. To make the definition clear, we call this type of employment ‘any job’. Second, we say that employment has been obtained when a young person gets their first full-time continuing job. We call this type of employment ‘full-time permanent job’.<sup>2</sup> These two definitions were chosen to reflect the current broader thinking in academic and policy circles regarding the long-run implications of different transitions into work where there are competing views. The first view suggests that rushing to get any job is better than getting no job at all. The idea is that obtaining any job reduces the risk of scarring and the human capital deterioration that follows prolonged periods of being out of work. The second view suggests that rushing to get any job increases the risk of getting a bad or a mismatched job, which in itself may reduce the chances of getting a better job later, thus locking the employee into a vicious circle of low-quality employment. The matching and unemployment duration empirical literatures show that both views have elements of truth in them and that the level of education of employees has a strong influence on the speed of their transition to work. The formative nature of the first job and the signals it may convey to future employers make the transition to work by young adults a special and important event in their careers. We investigate both types of ‘first job’ in recognition of the complexity of the underlying economic process. The main conclusion of this research is that education level and gender are closely associated with how long it takes young labour market entrants to get their first job.

The support document contains the considerable technical element of this report for the purpose of completeness and for the technically interested reader.

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<sup>1</sup> A comprehensive review of the education and labour economics literatures lies beyond the scope of this report. However we provide a brief review of pertinent national and international labour economics publications and a broader bibliography for the interested reader.

<sup>2</sup> Here we use the convention of the Australian Bureau of Statistics; a permanent job is one that provides paid leave entitlements, including annual and sick leave.

# Existing theory and empirical approaches

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## Human capital theory and signalling theory

From as early as the 1950s, with the development of the concept of human capital (Lewis 1954; Mincer 1958; Becker 1964), the influence of the accumulation of education, training and experience in the labour force on employment and earnings outcomes has formed a cornerstone of labour economics research. It also forms the theoretical framework for examining individuals' transitions from school to work.

Becker (1964) hypothesised that the investment of resources by governments, or by individuals, through the provision of education, training and medical treatment would improve the productivity of individuals and the workforce as a whole. In making the decision to invest, governments and individuals consider both the opportunity cost and the direct cost of investment. This type of investment decision is commonly observed when young people leave an educational institution for the first time and transit to the labour market with the aim of gaining paid employment. As noted by Bradley and Nguyen (2003), although there is an element of consumption in deciding to continue with post-compulsory education, the investment element of the decision is the key focus. As with all investment decisions, the individual compares the present value of the expected costs with the expected benefits of obtaining more education. Costs include tuition fees, foregone earnings from employment, and foregone labour force experience. Benefits include a better earnings trajectory, lower rates of unemployment, and generally better and more secure employment. When looking at this investment decision, human capital theory suggests that the marginal benefit and marginal cost of an individual's investment in education may be influenced by their ability and background (Becker 1993). Young individuals with greater academic ability can be expected to achieve a higher marginal benefit from investing in post-compulsory education. Young individuals from wealthier families can be expected to have a lower marginal cost of investing in post-compulsory education. Human capital theory in its most abstract form is formulated in a context where information is perfect. That is, information is costless and it is sufficiently transparent to facilitate the functioning of a competitive labour market. Although empirical evidence shows clearly that human capital investment decisions made by individuals are often based on imperfect and incomplete information, the basic tenets of human capital theory have been validated by empirical labour economics research. Becker's human capital model, suitably qualified, has proved to be one of the most empirically robust ideas in theoretical economics.

A major problem with imperfect information is that it can be one-sided—employees are likely to know more about their motivation and abilities than are prospective employers and they also have the incentive to present themselves in as good a light as possible. The same principle applies to employers when they try to hire. Signalling theory, developed by Spence (1973), explains the importance of asymmetric information as well as how there can be signals that may be used to reveal that information in a credible way. Education credentials are one such type of information in the labour market that is used to signal who the more productive potential employees may be. Spence explains how an individual's level of education can be used as a signal not only of knowing a specific subject, but also of their generally (otherwise) unobservable ability. Thus, we can observe the situation where a certain level or type of education may not be entirely necessary for a particular job, but it can be useful to a prospective employee—it can still impart information about their unobserved ability and their likely future productivity and thus help to acquire a better job. The

problem of using education in this manner is that it can also lead to socially inefficient outcomes, as it encourages the acquisition of education levels that may not be used in the workplace.

## Job search modelling

The traditional Beckerian neoclassical view of labour markets encounters difficulties when it tries to explain situations where wages do not adjust to reduce unemployment, especially long-run unemployment and non-participation. The empirical appeal and policy value of the model often shows its limitations. Eckstein and van den Berg (2007, p.532) mention this failing of the neoclassical model, alongside the presence of frictional unemployment built on the principle of imperfect information in the labour market (resulting in search frictions, or the time taken to ‘discover acceptable trading opportunities in the labour market’), as the principal reason for the birth of search theory in labour economics. The starting point for modern job search theory has been the seminal work of Stigler (1961; 1962). Strong interest continued in this area over the next 15 years (see, for example, Lippman & McCall 1976 a,b; Pissarides 1979), leading to the development of the micro-foundations of what was at that time the leading macroeconomic paradigm in understanding labour markets. The rapid development of job search theory and the micro-foundations of labour markets exposed how little data there were at that time with which to test the theories. The main problem then was that these new search theories required high-quality panel data, as they were focussing on the microeconomic process of turnover to model and explain a lot of observed labour market imperfections. It was only in the early 1980s that job search models started to be combined with individual level data in order to explore the links between labour market transitions and durations, with wages and individual characteristics. But the lack of data was still so intense that Lancaster (1979), who pioneered the econometric analysis of the duration of unemployment, researched his seminal paper using a database which contained 482 observations. Some of the key search theory developments were the standard search model of Mortensen (1986), the search-matching-bargaining model of Diamond and Maskin (1979), Mortensen (1982), and Pissarides (1979), and the wage-posting equilibrium search models of Albrecht and Axell (1984) and Burdett and Mortensen (1998). The theoretical findings of these models are still guiding empirical developments in labour economics.

Similarly, Yates (2005) expresses the view that the different ‘trajectories’ of youth in their transition from school to work are not well understood. Researchers did not know what determined a steady long-term employment relationship soon after completing education, or if periods of unemployment and moving from one job to another were beneficial or not.

The theoretical foundations of this paper rely heavily on search theory (in that young people decide when to stop searching and accept a job) combined with conventional human capital elements (in that young people invest in their education) and signalling (in that some of the education they obtain may have some strong signalling effects). The role of information imperfections (and their asymmetry), which is always crucial in labour market transitions, is probably more significant in the case of young people, as they have no past employment information to assist them and their prospective employers to achieve a good match, and they often treat their first years of employment as an integral part of building their human capital further. It is clear that considerable simplification has to be applied to make this problem tractable for estimation.

Empirically, modelling labour market transitions from education to work has allowed a variety of issues to be analysed. It is commonly used to examine the differences in the returns to schooling between high school and university graduates (Wolpin 1987; Eckstein & Wolpin 1995; Dustman, Euwals & van Soest 1997; Bratberg & Nilsen 2000; Nguyen & Taylor 2003), and between various education disciplines at the university level (Jensen & Westergaard-Nielsen 1987). In the United States, where racial discrimination is a prominent issue, it has been used to examine the outcomes of ‘blacks’ and Hispanics relative to ‘whites’ (Eckstein & Wolpin 1995; Bowlus et al. 2001). Moreover, in the United Kingdom for example, it has been used to examine the effectiveness of

government training and welfare measures on the outcomes of school leavers (Dolton, Makepeace & Treble 1995; Andrews, Bradley & Stott 2002). Interestingly, research by van der Klaauw, van Vuuren and Berkhout (2004) examined the employment outcomes of university undergraduate students varying the level of job search intensity.

Underlying the empirical implementation of search models is the econometric method of duration analysis. For the purposes of labour economics, the use of duration analysis in search models pertains to observing individuals moving from an initial state, for example education, to another, for example employment (or not, in which case the duration is said to be censored). Commonly, duration is expressed in terms of a hazard function, and duration models estimate the probability of exiting the initial state within a short interval, conditional on having survived up to the starting time of the interval. The impact of covariates or explanatory variables is typically also considered (Wooldridge 2002).

# Data and definitions

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## LSAY 1995 cohort data

### Overview of the data

In Australia, the most appropriate data source for the examination of employment and earnings outcomes of students completing their education and entering the workforce is the Longitudinal Surveys of Australian Youth. LSAY is one of few nationally representative longitudinal datasets in Australia (that is, a dataset that contains repeated sampling of the same people over a long period of time) and the only one that focuses on youth. The idea behind LSAY is that it samples young people when they are still at school and then follows them for a period after they leave school. This report uses the first LSAY cohort, which commenced in 1995 and was completed in 2006. The recent completion of the first 12-year tracking period of the LSAY 1995 cohort makes it a young data source that has not been widely researched to date.

The first cohort of LSAY sampled students undertaking Year 9 level education in Australia in 1995 and interviewed them annually over a 12-year period to 2006. All respondents could potentially have been questioned in all 12 survey waves. The initial wave of the LSAY 1995 cohort comprised a nationally representative sample of 13 613 Year 9 students, constructed by randomly selecting two Year 9 classes from a national sample of 300 schools designed to represent the state and private school sectors (that is, government, independent, and Catholic). Table 1 shows the time period covered by the LSAY 1995 cohort and the corresponding survey waves, age, school education year levels, and the number of respondents for each wave.<sup>3</sup>

**Table 1 Summary for each wave of the LSAY 1995 cohort, 1995–2006**

Year	Wave	Age	School level	Number of respondents
1995	a	14–15	Yr 9	13 613
1996	b	15–16	Yr 9, 10	9 837
1997	c	16–17	Yr 10, 11, 12	10 307
1998	d	17–18	Yr 10, 11, 12, 13	9 738
1999	e	18–19	Yr 11, 12, 13	8 783
2000	f	19–20	-	7 889
2001	g	20–21	-	6 876
2002	h	21–22	-	6 095
2003	i	22–23	-	5 354
2004	j	23–24	-	4 660
2005	k	24–25	-	4 233
2006	l	25–26	-	3 914

Source: NCVER, LSAY 1995

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<sup>3</sup> The LSAY data are now managed by the NCVER and to avoid replication we refer the reader who wishes to have more information on the general design and technical specifications of the data to the NCVER website and relevant publications ([www.lsay.edu.au](http://www.lsay.edu.au)).

Table 1 shows a rapid decrease in the number of respondents from the first to the second wave (from 13 613 to 9837). This attrition is not uncommon in similar datasets, but it is pronounced in the 1995 Longitudinal Surveys of Australian Youth. After that initial drop we note a steady attrition, reflecting the difficulties of following young people from the age of 14 when we know they are in full-time education, to the age of 25 when we know from national statistics that the majority are fully engaged in the labour market. An added difficulty in samples of this type is that the design of the data does not allow for ‘topping up’, maintaining the sample size.<sup>4</sup> The effect of these problems can be ameliorated, at least in part, by the use of appropriately constructed weights.

Since the main question of this report is to assess the transition from education to work, we focus our analysis on those who have provided information on both their *education* and their *first job*. For all others we do not have the necessary information to include them in the analysis. After excluding all those whose data would not allow us to calculate the length of time between their completion of education and the month they obtained their first job, we have a sample of 10 857 individuals for analysis, a number well above the sample size in the year 2006.<sup>5</sup> This definition of the sample for analysis allows us to use the information on many of the respondents who left the sample before 2006, but who had provided the necessary information for our analysis before doing so.

The next sections explain how we define the essential pieces of information for each person in the sample. These are:

- ✧ the date they completed their education
- ✧ the date they obtained their first job
- ✧ the length of time that elapsed between education and work.

## Defining the date of completion of education

This is defined for each respondent as the date at which the highest level of education was attained. The relevant date was determined from the set of derived variables provided in each wave of the LSAY 1995 cohort data. The date of completion for each respondent was derived using the education/apprenticeship/traineeship completion dates (that is, month and year) from the wave preceding the final observed change in the set of the highest level of education attainment derived variables.

Table 2 compares the educational structure of the LSAY sample with that of a nationally representative subsample from the ABS 2006 Census of Population and Housing for people aged 26. Table 2 suggests that the 1995 LSAY cohort over-represents school level qualifications (particularly Year 9 and below, Year 10, and Year 12 levels) and under-represents both VET and higher education qualifications (particularly certificate III, advanced diploma and diploma, and bachelor degree levels). This clearly occurs as a result of attrition in earlier years.<sup>6</sup>

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<sup>4</sup> In contrast, the HILDA dataset regularly tops up by allowing the new members of a household to become part of the sample, thus countering losses from attrition. Datasets that cannot do this, such as the UK National Child Development Study, are subject to high attrition rates (for example, the NCDS started with about 17 000 sampled newborns in 1958 and was down to about 5500 useable observations by 1998).

<sup>5</sup> Observations were dropped due to (i) missing, incomplete, or inconsistent information (both within and between waves); (ii) no observed change in respondents’ highest level of education attainment (beyond the lowest education classification ‘Year 9 and below’) between waves; the highest level of education attainment was classified as ‘Certificate not defined’ or ‘Undetermined’ in any of the waves.

<sup>6</sup> Approximately 2226 respondents, or 20% of the sample, indicated they were currently studying (either full-time or part-time) at the interview following their observed highest level of educational attainment; that is, either their long-run highest qualification was not observed due to attrition, or they were studying for a lower qualification than the one they already possessed, or they were studying for a higher qualification but did not complete it by the year 2006.



**Table 2 Comparison of the LSAY 1995 cohort sample and the ABS 2006 Census: percentage of the cohort for each education qualification (highest level attained), by sex**

Education qualifications	2006 Census (26 year olds)			LSAY 1995 cohort		
	Male	Female	Total	Male	Female	Total
	%	%	%	%	%	%
Postgraduate degree	3.4	3.4	3.4	0.8	1.3	1.0
Grad. dip. and grad. cert.	0.9	2.0	1.4	1.3	2.1	1.7
Bachelor degree	21.6	30.7	26.2	12.9	19.2	16.1
Adv. dip. and dip.	7.1	9.9	8.5	3.2	4.3	3.7
Certificate IV	2.4	3.2	2.8	1.6	2.0	1.8
Certificate III	22.8	9.9	16.3	2.1	4.1	3.1
Certificate II	0.4	0.7	0.5	1.5	2.3	1.9
Certificate I	0.0	0.0	0.0	1.6	0.6	1.1
Year 12	23.5	24.6	24.1	27.7	28.2	27.9
Year 11	5.5	5.3	5.4	8.8	5.0	6.9
Year 10	9.7	8.3	9.0	17.8	15.0	16.4
Year 9 and below	2.6	2.1	2.3	20.6	16.1	18.3
Total (number)	109 149	112 528	221 677	5 352	5 505	10 857

Note: The ABS 2006 Census proportions were derived using the HEAP (highest level of education attainment) variable.

Sources: ABS, Census of Population and Housing (2006); LSAY 1995 cohort.

The set of derived education variables, provided in the LSAY 1995 cohort data for each wave, followed the Australian Qualification Framework (AQF) conventions for classifying the hierarchy of school, VET, and higher education levels of education. Table 2 presents the highest possible level of disaggregation by education category. It suggests that some level of aggregation may be necessary in the analysis that follows in order to avoid small-cell-size problems, and in the process bunches together categories that are not distinguishable empirically with the data at hand. In the analyses that follow, we put together certificates I and II, certificates III and IV, diplomas and advanced diplomas, all university degrees and all school qualifications below Year 12. For reasons of clarity, we have aggregated education further into four main categories in the figures we present in the remainder of this section: Less than Year 12 (including certificates I/II); Year 12; vocational education and training (including all diplomas), and university (all degrees). The reader should note that in all the instances where we aggregated the data, we also carried out sensitivity analyses to ensure that this does not conceal any substantial variation that may be present within the aggregated categories.

## Defining a first job and the date it started

We needed next to define the commencement date of the respondents' 'first job' after completing their highest level of (observed) education. There is little consensus in the literature about what forms a 'first job' and to reflect this we have used two different definitions which imply a different length of time between education and work. As mentioned briefly in the introduction, the first definition takes the commencement of *any employment* following education as the time of entry to the labour market. This broad definition emphasises the importance of employment participation—that is, having any job is better than having no job at all, in terms of future labour market prospects and long-term labour force attachment.

The second definition takes the commencement of a full-time and continuing employment spell, which we call a 'full-time permanent job' as the time of entry to the labour market. This more specific definition of a job emphasises the importance of the quality and the formative capacity of the job. That is, full-time continuing jobs are not only the most desirable types of jobs in terms of security of tenure and financial security and independence, they also are a better human capital

investment, as they have a stronger formative capacity to build the present and future capacity of the young person.

To determine the date when the respondents commenced employment, the ‘work calendar’ information provided in the LSAY 1995 cohort data was used for each wave. The work calendar provided the specific months of employment (over a 12- to 19-month period, depending on the wave). For each respondent, a work calendar was built commencing at their date of education completion and continuing for their observed time in the survey. This provided us with two commencement dates, one to the very first employment called ‘any job’, and one to the first full-time permanent employment called ‘FTP job’.<sup>7</sup> Full-time employment was defined as ‘35 hours or more per week in their main job’. In line with the definition of the Australian Bureau of Statistics (2007), permanent employment was defined as ‘entitled to paid sick leave and annual leave’. It should be noted that the two definitions we use are *not* mutually exclusive: all FTP jobs are included in the ‘any job’ category. It should also be noted that although the work calendar provides monthly information, the derived variables provided in the LSAY files for each wave only relate to the status of the respondents at their date of annual interview. This implies that detailed information about employment arrangements in the period between interviews is not specified, a common feature of data derived from annual interviews.

Table 3 shows the proportion of respondents in the ‘any job’ type of employment (which includes full-time, part-time, permanent or casual) and in the ‘FTP job’ category by the data wave in which the transition to this employment is observed. All comparisons are for individuals who have completed their highest level of education and have moved into employment.

**Table 3 Job type by wave after completing highest level of education**

Year	Sample	Any job (AJ)		Full-time permanent (FTP)		Ratio: FTP to AJ * 100
		Freq.	%	Freq.	%	
1997	8805	4424	50	296	3	7
1998	8274	4415	53	503	6	11
1999	7368	5336	72	1905	26	36
2000	6607	5152	78	2061	31	40
2001	5756	4663	81	2029	35	43
2002	5105	4257	83	2172	42	51
2003	4497	3834	85	2327	51	61
2004	3915	3454	88	2371	60	69
2005	3562	3249	91	2361	66	73
2006	3297	3016	91	2250	68	75

Notes: (1) The first two waves are not reported, since most respondents were still at school full-time—that is, they had not commenced the transition to work. (2) Data on full-time permanent employment are only available relating to current job (at the time of interview). (3) Sample size is reduced at each wave (compared with table 1) because of missing information on a number of key variables.

Source: NCVET, LSAY 1995 cohort

Table 3 presents interesting information regarding the interval between education and work. By 1997, when respondents are 16 to 17 years old, half have a job of some sort, but only 3% have a full-time permanent job. The proportions of both any job and FTP job rise steadily as the cohort gets older, but it is not until they are aged 22 to 23, in 2003, that half of them have an FTP job.

<sup>7</sup> Of the respondents who reported a date for the completion of their highest level of education attainment, approximately 4% exited from the survey before their first period of employment was observed. In this small number of cases, the respondents’ ‘date of attrition’ was also made their employment commencement date, and it was noted that this date was censored.

## The time spent between education and work

As the final step in putting the data together, we combine the two major events of completion of education and start of work to calculate the length of time between the two events. The data do not offer sufficient information to distinguish between time spent searching for work and time spent on other activities that may have occupied the period between education and work. Detailed information about employment arrangements or other main activities (that is job search, study, and holiday) were only available for the interview dates and these are incomplete. In order to use as much information as possible from the data, we define the length of time between education and work using the monthly employment calendars, which means that we know whether someone is at work or not, but we do not know what they are doing if not at work. We define this duration as the length of time, in months, between the date of ‘education completion’ and the date of commencement in ‘first job’, for each respondent, for any point in time between 1995 and 2006. The reader must bear in mind the caveat that the time between education and work, or part of it, may have been spent in activities unrelated to the labour market, but this we cannot observe.<sup>8</sup>

## A first look at how long it takes to get a job

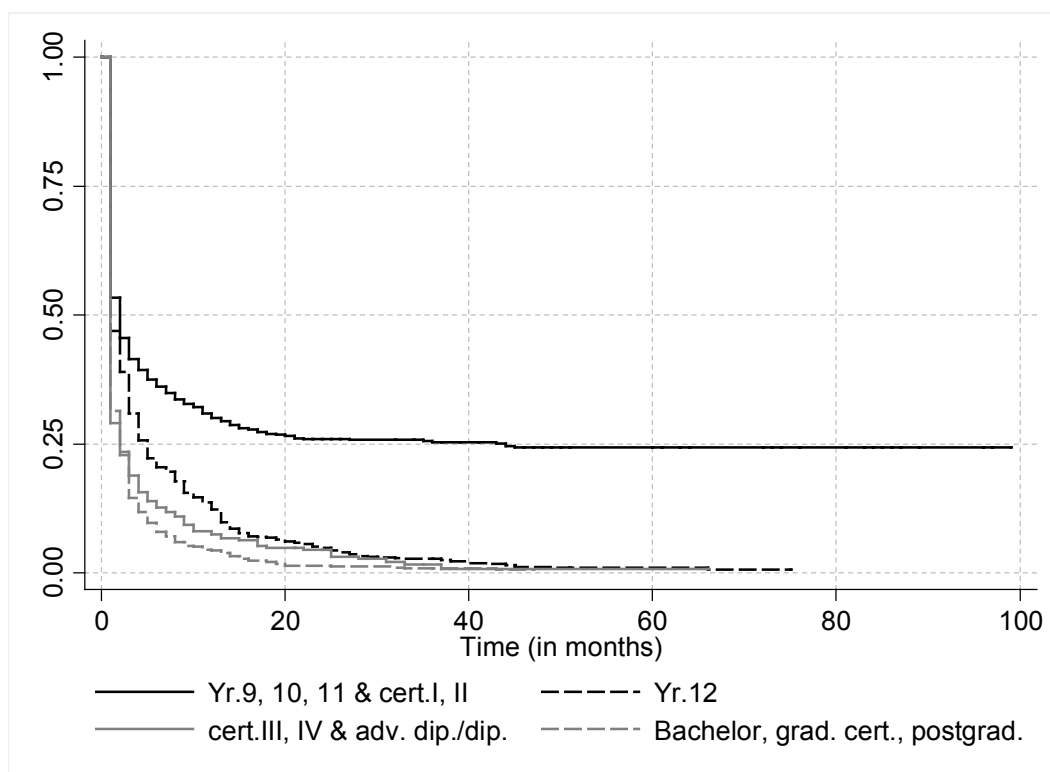
It is always useful to have a closer look at the pertinent parts of the data before we develop the multivariate regression analysis. The main distinctions we will focus on will be (i) gender, (ii) type of job, and (iii) education level. One of the best ways to represent duration data as a summary is by using Kaplan-Meier survival curves. These curves summarise the development of a duration event and allow for easy visual comparisons between groups along the whole range of the duration data. The easiest way to understand Kaplan-Meier curves is as a proportion that changes over time. In our case we need to begin with all people who complete their education and then follow them until they find a job. Let us use figure 1 as our example. The vertical axis measures the proportion of people who are still out of work at any point in time. The horizontal axis measures time elapsed after education completion.

The first important conclusion to draw from Figure 1 is that a large proportion of the young people were employed within the first month after completing their education (hence they are recorded as employed at time 0). A proportion of them already had employment while they were finishing their education. There are four lines for the four different levels of education. Take the solid bold line at the top as an example (those with less than Year 12 education). We see that about 55% of this group were not employed within a month of completion of their education and conversely 45% either already had or quickly found a job. Those with Year 12 education were similar. Both university and VET (certificate III and higher) graduates had a smaller percentage (about 30%) that did not have jobs within a month of graduating. So about half of those without post-school education and about three-quarters of those with post-school education obtained (or already had) a job almost immediately after completing their education. The curves in figure 1 show how long it took the remainder to find their first job.

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<sup>8</sup> In the small number of cases where the duration between education and work is not completed because we do not observe a transition into work, we say we have a ‘censored’ duration. This is often a case of attrition. Also, in the descriptive analyses, we allowed for the length of the duration between education and work to be equal to zero if the respondents indicated they were employed in the same month in which they completed their education. For the descriptive analyses, only the respondents’ duration between education and any first job—following their highest level of education attainment—is examined. For the multivariate analyses, we look at both the duration up to any first job and the duration up to an FTP job.

**Figure 1 Time from completion of education to employment in any job: men**

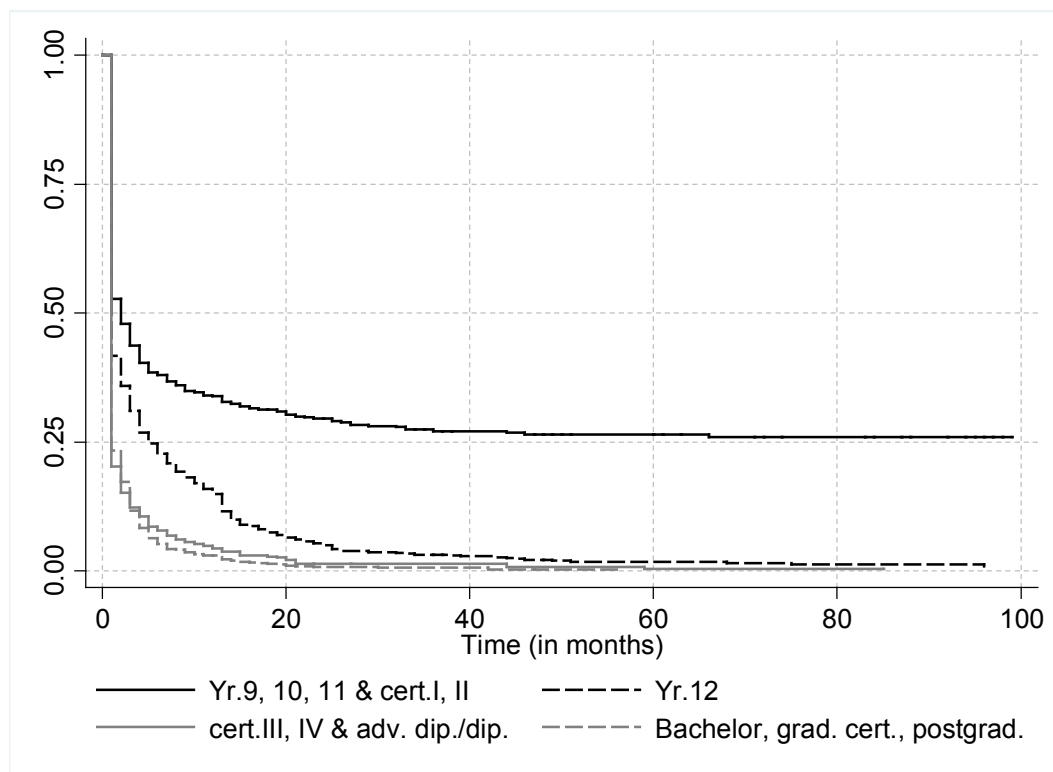


We can see that those with less than Year 12 and with only Year 12 part ways in the speed with which they find employment, with the Year 12-qualified obtaining employment faster than those who had less than Year 12. Young people with post-school qualifications moved more rapidly into employment than those who had completed Year 12. After 20 months, most of the three better educated groups had jobs, but this is not true for those who had not completed Year 12. Of this latter group, a quarter had not found work of any kind over the eight or so years that they were observed. This is an important and concerning finding.

University and VET (certificate III and higher) graduates moved into employment at about the same speed, although university graduates had some advantage. Looking further to the right of figure 1, say to 40 months, we see where things settled. About a quarter of those with less than Year 12 were still not in work, while the rest seemed to have found a job.

Figure 2 shows a very similar picture for females for the 'any job' type of employment. Marginally more had a job immediately after they completed their education. Also, the female VET and university graduates seemed to find jobs relatively faster than their male counterparts (the curve for women is falling faster towards zero than is that for men). By contrast, although women with Year 12 education finally became employed at about the same employment rate as did men, after 40 months they took a bit more time than men to get there. The main difference between the sexes is that women with post-school education had a greater advantage over those with Year 12, only in the speed with which they found a job. Women without Year 12 had similarly high rates of continuing joblessness as did the men in the longer run, approximately 25% without employment. However, women without Year 12 took longer to find a job than men (for example, at 20 months after leaving school before Year 12, about 26% of men were without a job compared with 33% of women).

**Figure 2 Time from completion of education to employment in any job: women**

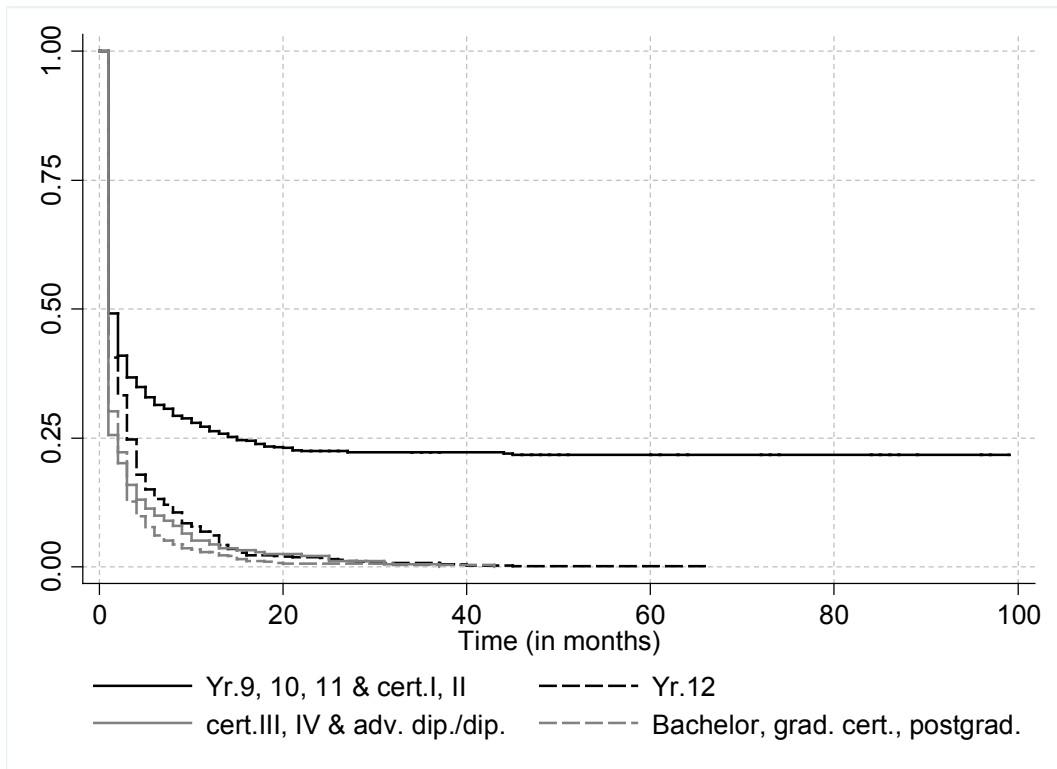


We next examine the time taken to obtain full-time permanent work.

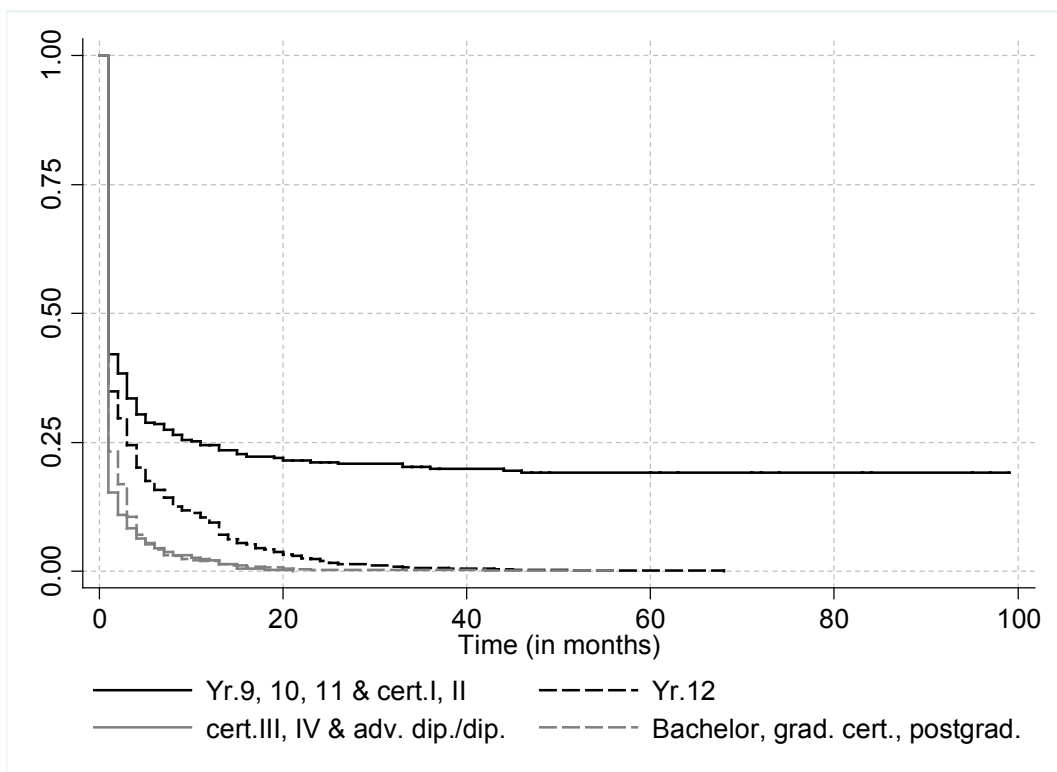
Figures 3 and 4 show a very similar picture to that of the ‘any job’ category, as they are indeed a subset of that group’s employment, the main difference being that those with Year 12 now look more similar to university and VET (certificate III and higher) graduates.

The main message from looking at the Kaplan-Meier survival curves is that those with less than Year 12 education took much longer to find work, and a much higher proportion had not found any work by the end of the survey period. By contrast, Year 12 graduates took more time to get there, but in the end their outcomes were very similar to those of university and VET (certificate III and higher) graduates, especially in terms of getting a full-time job. Finally, VET and university graduates were largely indistinguishable from each other in the speed with which they found work, though male VET (certificate III and higher) graduates took a little longer than male university graduates.

**Figure 3 Time from completion of education to employment in FTP job: men**



**Figure 4 Time from completion of education to employment in FTP job: women**



# How long does it take on average to get a job?

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## Multivariate estimation of duration to a job: overview

In the previous section, we mapped the time path followed by the cohort of young people to find employment after completing their education. We distinguished men from women and those with different levels of education. But we did not control for other factors that are likely to affect the speed with which people find work, such as type of school attended, socio-economic and educational background of parents, country of birth of self and parents, and region. Further, we did not identify how long it took on average for people to find a job. We know that the time it takes to get a job is jointly and simultaneously influenced by education, gender, and other socioeconomic and demographic factors, for some of which we have reliable information in our dataset and for some we do not. In this section, we estimate the impact of type and level of education on the average time taken to get a job, while controlling for these independent factors and for unobserved heterogeneity among the sample members.

The duration model that we use for our estimations asks the simple question of how long it takes to get a job and it estimates the joint and simultaneous effect of all variables on this. Some estimation details are presented in box 1 and much more detail can be found in the support document, but these will not be part of the discussion. Suffice to say that duration analysis is one of the most complex statistical methodologies in the trade, but has now become a fully-fledged part of econometrics. The main contribution of econometrics in this area has been the development of methods to handle the problems caused by the imperfect, messy, and non-experimental data with which economics often needs to work. All the non-technical reader needs to know about the method that we use in this section is that it models and estimates regularities in the timing of events that are not explicitly present in the data, but that are implied by the recorded durations. The main advantage of using this type of flexible estimation method is that it has been shown to provide a good control for the biases that would result in its absence, and it does not place any further demands on the data. This is important in a more general sense as a guarantee for unbiased estimation results.

### Box 1: Some of the nuts and bolts of estimating a duration model

This report uses a specific type of regression analysis which is called 'duration analysis' or 'survival analysis'. This estimation tries to explain how long it takes people to move from one state to another. In our case this is the transition to work. Respondents are observed for a period of time (which need not necessarily be of the same length for all respondents); all respondents start with the completion of their education and one of the outcome variables counts the time spent until each respondent obtains a job. In our case time starts when education is completed; we follow each subject until they have a job and we note how long it took them to obtain that job; we also end up with some people who never obtain a job before the last time we observe them in the survey (that is, they are censored) and we note that too. The outcome variable is often referred to as the 'hazard rate' which measures the probability that a change in state will occur in each time period.

An important feature of duration analysis is how it treats the possibility that the data may contain considerable unobserved heterogeneity that is related to the duration variable which we try to explain. Given that the bias from such duration-dependent unobserved heterogeneity can be considerable (see Lancaster 1990), an important feature of a duration model is the degree of flexibility that it incorporates in its design to counter possible heterogeneity biases.

There are different methods for introducing flexibility in duration analysis, principally depending on the reason for introducing it and on the level of flexibility that we would wish to achieve. Typically, adding flexibility will increase the complexity of estimation considerably. More flexible models offer more robust results (that is, it is less likely that one gets it wrong), but they produce less precise estimates (results can be less detailed and less informative). We have opted for a type of estimation called the cloglog model (refer to the support document for more detail) which offers considerable flexibility, especially through the estimation of what is called the 'baseline hazard'. The intuition behind the estimation of the baseline hazard is that we estimate simultaneously (i) the conventional hazard for each explanatory variable (note that each hazard is assumed to be constant across the sampling frame) and (ii) an additional hazard for each time period. Combining the two hazards gives us an overall estimate that reflects both the differences between each explanatory variable and between each point in time within the sampling frame of the data. This estimation method confers two advantages. First it controls for duration dependence and second, it reveals time patterns which can often be informative. However, the lack of any assumptions about the nature of the baseline hazard limits the interpretation we can give to its estimates. For example, if there were to be more than one time pattern in the data, the baseline hazard would simply average them and offer no further information.

## Setting up the estimation

Separate duration models are estimated for males and females in their first employment after completing their highest level of education. Employment outcomes are defined in the same way as in the previous sections: 'any job' and 'good job'<sup>9</sup>. Time to employment is translated into days. The association between the duration until getting a job and the explanatory variables is reported as odds ratios, which are also translated into expected number of days. The odds ratio is a measure of probability and should be interpreted as a higher or a lower probability of starting a job in each time period, relative to a reference category. By definition, odds ratios are always positive. An odds ratio equal to 1 signifies no association between a particular explanatory variable and the average

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<sup>9</sup> We define a full-time permanent job as a 'good job'.



probability of getting a job. Odds ratios above or below 1 indicate an increased or decreased likelihood of getting a job.

Two variables played an important role in deciding the precise estimations we performed: the gender of individuals and their level of education. Model results consistently indicate that there are important differences in the influence of education (and some control variables) between males and females, and hence the analysis is reported for males and females separately.

There are several acceptable ways to aggregate educational categories. Experimentation has shown that while different, the relative impact of education levels does not change in any substantial way by the level of aggregation. We report results based on the following aggregation:

- ✧ less than Year 12 high school (the base case in the regression models)
- ✧ Year 12
- ✧ certificate I or certificate II
- ✧ certificate III or certificate IV
- ✧ diploma or advanced diploma
- ✧ higher education (bachelor degrees to postgraduate qualification).

A sensitivity analysis provided in the support document (following the provision of complete duration model outcomes, on which the following section is based) suggests that core results have remained unaffected by our choice of aggregation.

# Estimation results

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This section reports the results of the multivariate duration regressions which estimate the average time between completing education and starting work for Australian youth, and identifies the factors that influence time to first job. The major factor influencing the speed at which Australian youth become employed after they leave full-time education is the level of education with which they enter the labour market; hence this is the focus of the results presented and discussed here. Using the advantages of multivariate regression, we explored a variety of factors including demographic, social and economic and found some that make some difference. The level of education proves to be by far the main influence for labour market entry. This is not surprising, as both economic theory predictions and labour market evidence show this general result. Economic theory would suggest that those who have made the stronger investment have more to lose by staying without work; hence we can expect them to look for work more actively. At the same time, in a world where skills are sought, we can also expect the same better educated youth to receive more job offers. Both supply of and demand for labour work here in the same direction, predicting that in the current economic climate better educated youth will become employed faster. This report goes further by investigating this transition, after accounting for what we find to be considerable gender and modest socio-economic differences among the young labour market entrants, and also by making the clear distinction between the types of jobs they obtain and levels of education they are equipped with at the point of entry. Because gender differences are clearly too large to ignore, we chose to estimate the two genders separately.

## Education and the average speed of finding a job for young labour market entrants

Table 4 presents two sets of regressions, one for the duration until getting into any type of employment (any job), and one for the duration until getting into a full-time permanent type of employment (FTP job) for both males and females. We present in the main text the results for the education variables, as they are the most important ones. The main parts of the remaining results are discussed briefly here and the full estimation results can be found in the appendix. The ‘dependent’ or ‘explained’ variable is the number of days it takes to move from education to work. For Models 1 and 2 this is the duration until any job. For Models 3 and 4, this is the duration until an FTP job. The key ‘independent’ or ‘explanatory’ variables are listed with the measure of their association with duration—the odds ratio. The full regression results are in the appendix. What the estimation does is to find the set of odds ratios that will maximise the probability that the explanatory variables will predict the explained variable.

It is best to explain how to read each odds ratio result by way of example. Each model has a base average duration, which tells us the expected number of days that the base person will take to

move into employment after they have completed their education. This is in essence the average duration of all persons with the base characteristics (in days).<sup>10</sup>

**Table 4 Estimating the average length of time from education to employment**

Variable	Model 1	Model 2	Model 3	Model 4
Odds ratio for each level of education	Any job (Males)	Any job (Females)	FTP job (Males)	FTP job (Females)
Education < Yr12 (base category)				
Education Yr12	3.52	4.47	1.54	2.13
Education cert. I or II	4.20	7.47	2.55	5.16
Education cert. III or IV	5.03	7.23	2.65	4.36
Education diploma or adv. dip.	4.37	8.66	2.18	4.21
Education university	5.35	8.04	2.73	4.94
Base average duration (in days)	435	550	481	584

Note: Full estimation results are in table A1. All estimates in table 4 are highly significant (at the 1% level). The dependent variable for each individual is the number of days between the completion of their highest education qualification and obtaining their first job. The base education category is 'Less than Year 12 schooling'.

Now, let us take the odds ratio estimate of 1.54 for Model 3 (males into full-time permanent jobs) and the variable Education Year 12 as our example in order to explain how odds ratios work. The base average duration for Model 3 is 481 days and applies to a person with education of less than Year 12 and other baseline characteristics. The estimate of 1.54 tells us that a male youth who is the same as the base youth in everything except education and has an education level of Year 12 will be 1.54 times faster in finding a full-time permanent job than the base person with education of less than Year 12. We can write this as follows:

$$\begin{aligned}
 &\text{Average duration [male FTP job with Yr12]} \\
 &= \text{Average duration [base male FTP job; <Yr12]} / 1.54 \\
 &= 481 / 1.54 = 312 \text{ days}
 \end{aligned}$$

What this equation says is that, given that for the base category (which is a male with less than Year 12 education and with all the other reference characteristics) the average duration is 481 days, the result of an odds ratio of 1.54 implies that a male with all the base characteristics, *but with Year 12 education*, will have an average duration of  $481 / 1.54 = 312$  days.<sup>11</sup>

There is a very large number of profiles that can be derived from the results of our estimations, and the choice of what profiles would be of interest would depend on the specific interests of each reader. For example, just combining the education results with the three variables on the country of birth of respondents and their parents, would generate 540 predictions, the regional split of which would take the number up to 4340. It would be impractical for this report to attempt to provide a comprehensive profiling exercise. Instead we focus on some core results and present the reader with a simple way to derive, using a simple pocket calculator, profiles for subgroups of interest. Box 2 explains how we can use the estimation results to do this.

<sup>10</sup> The base or reference person is one whose characteristics are marked in table 4 as 'base'. We defined this to be an individual with (i) less than Year 12 education, (ii) average age, (iii) not Indigenous, (iv) with no disability, (v) living in ACT, (vi) living in a metropolitan area, (vii) who has attended a government school, (viii) who was born in Australia and (ix) whose mother and father were also born in Australia. The choice of base categories does not alter the essence of the estimation at all; we could have used another base category as the reference group, and the relative probabilities would have remained the same. This implies that although the choice of the base category is always arbitrary, at the same time it is of no consequence regarding the estimates that we derive.

<sup>11</sup> An odds ratio that is above 1 implies a faster transition into work and a lower average duration. By contrast an odds ratio of less than 1 implies a slower transition into work and a longer duration.

## Box 2: Interpreting the odds ratio results and deriving predictions for specific sub-groups of data

The interpretation of an odds ratio in table 4 (and its extended counterpart in the appendix, table A1) runs as follows. Each model or estimation has an underlying base category average duration, which is clearly denoted with the results of the estimation. This is the 'base average duration' of the reference person. Each variable in the estimation has a reference category. In the case of education, this is 'less than Year 12'. The base average duration is the building block for all predictions. We explain how these can be calculated by way of example. To start we need a copy of table A1 and a pocket calculator and the arbitrary choice of a profile. Let us say we wish to find out what the average duration between education completion and getting any job is for a male whose highest education attainment is a Year 12 school leaving certificate, who is Australian born, with an Australian-born father and a mother born overseas in a non-English speaking country, and who is living in Sydney (that is, in a metropolitan area of New South Wales). We begin with the base average duration from Model 1 (male and any job), which is 435 days. We then find the odds ratio from Model 1 for each of the characteristics we are interested in: Year 12: 3.52; Australian born: 1 (the reference category takes the value 1); Australian-born father: 1 (again the reference category); for mother born in a non-English speaking background (NESB): 0.82; for New South Wales: 0.94; metropolitan: 1 (reference category). The average duration that it will take this type of person to get a job after completing education will be the base average duration divided by all the odds ratios we mentioned:

$$\begin{aligned} \text{Average duration [profiled male finding any job]} \\ &= (\text{Base average duration}) / (3.52 \times 1 \times 1 \times 0.82 \times 0.94 \times 1) \\ &= 435 / 2.71 = 161 \text{ days} \end{aligned}$$

The way to think about this duration is as the outcome of a draw that happens at the start of every day, the outcome of which is to get a job or not, and the probability is the inverse of the average duration. This exercise can be repeated to get the prediction for any profile in which we are interested.

Sometimes we may be uncomfortable expressing the speed at which a young person is likely to get a job in terms of average durations. An alternative measure to express the concept of an average duration is the probability per unit of time. In other words, how long we could expect a young person to wait until a job is found. It is easy to convert a probability into an expected duration. An expected duration of 161 days can equally well be expressed as a daily probability of 0.621% using the formula below (provided that both are measured in the same time units).

$$\text{Probability} = 100 / \text{expected duration}$$

Simply put, a young person with the characteristics that result in a daily probability of 0.621% can be expected to take  $(100/0.621=)$  161 days on average until they get a job.

It is important to bear in mind that this statement is a simplification in two ways. First, this is a statistical statement and cannot apply to an individual. What the estimation says is: 'if we were able to repeat the process many times, we would get a ratio of employed to not employed every day, which would be close to the estimated probability or average duration'. But we must remember that social processes cannot be repeated many times, so what we actually get may be an outcome that is not close to the probability (something like tossing a coin and getting tails seven times in a row: not likely, but possible). Second, in the process of finding a job, the probability changes with duration. This can be seen in figures 1 to 4, where the probability of gaining employment at each point of time decreases in a non-linear fashion (for example, as the curve of probabilities becomes less steep over time, until it is almost horizontal and close to zero for all people after about 40 months).<sup>12</sup>

<sup>12</sup> The expected duration is calculated at the time a student leaves education, and refers to the best estimate we have about the expected complete duration until they find a job. The model allows for more complex predictions which would reflect the way the probability of finding employment drops with duration (for example, expected duration until one gets a job, given that they have not found a job for 100 days). We do not present such calculations here.

The main results from table 4 (also represented in days in table 5) can be summarised as follows:

- ✧ Better educated youth get to work faster, with those who do not complete Year 12 taking much longer than the rest.
- ✧ There are clear differences between getting any type of work and getting a full-time permanent job, with completion of Year 12 being of particular importance in getting any job.
- ✧ University and VET qualifications show few differences, though a university degree reduces the time to first full-time permanent job.
- ✧ Education works differently for men and women.

**Table 5 Summary of the notional average durations (in days)**

Education attainment (highest level)	Model 1	Model 2	Model 3	Model 4
	Any job (Males)	Any job (Females)	FTP job (Males)	FTP job (Females)
Less than Year 12				
Year 12	124	123	312	274
Certificate I or II	104	74	189	113
Certificate III or IV	86	76	182	134
Diploma or adv. dip.	100	64	221	139
University	81	68	176	118

# Discussion

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## Better educated youth get to work faster

The analysis shows that any level of qualification, including only having completed Year 12 at school, is associated with faster entry into paid employment than that experienced by those who do not complete school. This result highlights the disadvantage that is associated with non-completion of school education. Attaining Year 12 substantially reduces the time it takes to get a job, especially any job. The main reason for this is likely to be the high proportion of early school leavers who do not get a job at all within the period of the survey. The strong disadvantage for those who do not complete school suggests the least educated youth are the ones who are most in need of improving their human capital through the main alternative to formal education: on-the-job training.

## Getting a ‘good job’ versus getting ‘any job’

We have made the distinction between getting any job and getting a full-time permanent job; the latter is considered a ‘good job’. Education is shown to help get any job much more strongly than getting an FTP job. This may sound counter-intuitive but it is not so. The estimates give us a measure of the relative advantage of youth with education compared with youth without education. The larger odds ratios in Models 1 and 2 (any job) than in Models 3 and 4 (FTP job) are the result of better educated youth opting to search for the better jobs as they grow older and complete more advanced qualifications. Although we have controlled for some relevant socio-demographic factors, it will still be the case that the FTP job market necessitates longer search or waiting periods, even for the more advantaged who opt to go into that part of the labour market. An interesting distinction between getting any job and getting an FTP job is the relevant cut-off level of education. For any job, school completion is almost as good as post-school education for males and still strong for females. For getting the better jobs, however, the education cut-off point shifts to post-school education. Given that FTP jobs are the ones that matter in the long run, this cut-off point indicates that entering the labour market without post-school qualifications is likely to be disadvantageous in the long run.

## Differences between VET and university qualifications

Typically, university education is considered to create the greatest labour market advantages. This is not the case regarding the speed at which youth enter the labour market: there are no clear differences between the speed to employment of those with a VET or university qualification, although the university-educated mostly find FTP jobs a little more quickly. This result suggests that when it comes to participation, university and vocational education and training are on a par, though not all VET levels give equal benefit. Except for women looking for any job—who do best with a diploma—having certificate III or IV confers the greatest advantage. We cannot explain the apparent strong advantage in getting an FTP job that women with certificate I or II have. Most other evidence suggests that these certificates do not directly lead to good employment outcomes.

## Gender differences

In general, women get into jobs after their education is completed a little slower than do men. However, for both types of jobs, educated women distinguish themselves from less educated women more than men do. Gender differences are not the focal point of this report, but all results have indicated strong gender differences. The levelling effect of education on labour market opportunities has been strongly indicated in the literature, and this is one more case where women are shown to be using their opportunities more strongly than men.

## Other influences

Few of the other characteristics that we were able to control for had a significant impact on the speed with which young people found their first job. For both men and women, time to first job was shorter if they had attended an independent school and were non-English-speaking-background migrants. For men, being in a regional location was found to slow the time to their first job; while for women, having a father from a non-English speaking background accelerated the time to their first job.

# Conclusion

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We have presented a careful empirical examination of the education-to-work experiences of Australian youth who enter the labour market for the first time, using the best dataset that is presently available in Australia—LSAY. Our statistical techniques have been chosen to address some of the difficulties in the data that are provided by LSAY. We have examined the speed at which young people who complete their education find a job. We have distinguished between two types of employment outcomes: the first being finding any job and the second being finding a full-time job with paid leave entitlements. Preparation of the data for statistical analysis required complex manipulations. We used descriptive and multivariate regression methods to analyse the data. After experimentation, we found that what matters for the majority of young people, in the context of how quickly they move into employment after they complete their education, is the level of their education, the type of their first job and their gender.

One key finding is that youth who are better educated get to work faster. There appears to be three main categories: those who did not finish school—who are the slowest; those who finished school but gained no further qualifications—who are in the middle; and those who have completed a post-school qualification—who are the fastest. The differences in time taken to find their first job are substantial. For example, for women seeking a full-time permanent job, those who did not complete school took on average 584 days. By contrast, those with a university degree took on average 118 days.

We also found that there are differences between getting any job and getting the (better) full-time jobs with paid leave. Typically, being educated has its most powerful effect amongst those who apply for any jobs, so the better educated (including those with only Year 12 education) are a lot faster at getting these jobs than are the less educated. By contrast, in the tougher competition for the better jobs, education still plays an important role, but now just having a school certificate does not confer a big advantage. One needs post-school qualifications.

Another important finding is that there is little difference between VET and university education in terms of the speed at which young people get their first job.

All results suggest that, even after controlling for a number of socio-demographic factors, gender matters. Men and women are entering the labour market in different ways. In the context of the present research on how quickly young people get their first job, the difference between better educated and less educated women is higher than the difference between better educated and less educated men.

Our analysis shows that it is important not just to focus on the average time that it takes to obtain a job. The duration patterns that we display show that there are three distinct groups in the transition from school to work. The first is the large proportion (over half) which either already has or very quickly obtains a job on finishing education. These young people effectively have a search time of zero. The second group takes some time to get a job, some individuals needing as long as 30 months before obtaining work. The third group did not find a job at all in the period covered by the survey. This group almost entirely consisted of youth who had left school without completing Year 12 or obtaining a certificate III or higher. This is most likely an under-estimate, since the high level of attrition in the survey is likely to be disproportionately focused on this group. Policies that emphasise increased participation in post-school education miss this substantial very disadvantaged



group. The group needs specific, carefully crafted strategies to engage them in work and other pathways to skill development to prevent them from becoming excluded from the opportunities for a decent life.

# References

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- ABS (Australian Bureau of Statistics) 2007, *Labour statistics: concepts, sources and methods*, cat.no.6102.0.55.001, Canberra, Australia.
- 2009, *Labour force, Australia*, cat.no.6291.0.55.001, detailed—electronic delivery.
- Andrews, M, Bradley, S & Stott, D 2002, 'The school-to-work transition, skill preferences and matching', *Economic Journal*, vol.112, pp.C201–C219.
- Albrecht, JW & Axell, B 1984, 'An equilibrium model of search unemployment', *Journal of Political Economy*, vol.92, pp.824–840.
- Becker, GS 1964, *Human capital: a theoretical and empirical analysis, with special reference to education*, National Bureau of Economic Research, distributed by Columbia University Press, New York.
- 1993, *Human capital: a theoretical and empirical analysis with special reference to education*, University of Chicago Press, Chicago.
- Bowlus, AJ, Kiefer, NM & Neumann, GR 2001, 'Equilibrium search models and the transition from school to work', *International Economic Review*, vol.42, no.2, pp.317–43.
- Bradley, S & Nguyen, AN 2003, 'The school-to-work transition', *Lancaster University Management School*, working paper 2003/044.
- Bratberg, E & Nilsen, OA 2000, 'Transitions from school to work and the early labour market experience', *Oxford Bulletin of Economics and Statistics*, vol.62, no.s1, pp.909–29.
- Burdett, K & Mortensen, DT 1998, 'Wage differentials, employer size, and unemployment', *International Economic Review*, vol.39, pp.257–73.
- Diamond, PA & Maskin, E 1979, 'An equilibrium analysis of search and breach of contracts', *Bell Journal of Economics*, vol.10, pp.282–316.
- Dolton, P, Makepeace, G & Treble, J 1994, 'The Youth Training Scheme and the school-to-work transition', *Oxford Economic Papers*, vol.46, no.4, pp.629–57.
- Dusseldorp Skills Forum 2007, *How young people are faring 2007*, Dusseldorp Skills Forum, Sydney.
- Dustman, C, Euwals, R & van Soest, A 1997, 'Wages in the first job after apprenticeship: movers versus stayers', *Mitteilungen aus der Arbeitsmarkt-und Berufsforschung*, vol.30, no.3, pp.671–74.
- Eckstein, Z & van den Berg, GJ 2007, 'Empirical labor search: a survey', *Journal of Econometrics*, vol.136, pp.531–64.
- Eckstein, Z & Wolpin, K 1995, 'Duration to first job and the return to schooling: estimates from a search-matching model', *The Review of Economic Studies*, vol.62, no.2, pp.263–86.
- Heckman, JJ 2000, 'Policies to foster human capital', *Research in Economics*, vol.54, no.1, pp.3–56.
- Jensen, P & Westergaard-Nielsen, NC 1987, 'A search model applied to the transition from education to work', *Review of Economic Studies*, vol.54, pp.461–72.
- Lamb, S 2001, *The pathways from school to further study and work for Australian graduates*, LSAY research report no.19, ACER, Melbourne.
- Lancaster, T 1979, 'Econometric methods for the duration of unemployment', *Econometrica*, vol.47, no.4, pp.939–56
- 1990, *The analysis of transition data*, Cambridge University Press, New York.
- Lewis, WA 1954, 'Economic development with unlimited supplies of labour', *The Manchester School*, vol.2, no.2, pp.139–91.
- Lippman, SA & McCall, JJ 1976a, 'The economics of job search: a survey (Part 1)', *Economic Inquiry*, vol.14, no.2, pp.155–89.
- 1976b, 'The economics of job search: a survey (Part 2)', *Economic Inquiry*, vol.14, no.3, pp.313–460.
- Margolis, D, Plug, E, Simonnet, V & Vilhuber, L 1999, 'The role of early career experiences in determining later career success: an international comparison', unpublished paper, TEAM-Université de Paris 1 Pantheon-Sorbonne.
- 2000, 'Using early career experiences and later career outcomes to distinguish between models of labour market behavior under institutional constraints', unpublished paper, TEAM-Universite de Paris 1 Pantheon-Sorbonne.
- Marks, G 2006, *The transition to full-time work of young people who do not go to university*, LSAY research report, no.49, ACER, Melbourne.

- McMillan, J & Marks, G 2003, *School leavers in Australia: profiles and pathways*, LSAY research report, no.31, ACER, Melbourne.
- Mincer, J 1958, 'Investment in human capital and personal income distribution', *The Journal of Political Economy*, vol.66, no.4, pp.281–302.
- Mortensen, D 1982, 'The matching process as a non-cooperative bargaining game', in *The Economics of Information and Uncertainty*, ed. JJ McCall, University of Chicago Press, Chicago.
- 1986, 'Job search and labor market analysis', in *Handbook of Labor Economics*, eds O Ashenfelter & R Layard, North-Holland, Amsterdam.
- Nguyen, AN & Taylor, J 2003, 'Transition from school to first job: the influence of educational attainment', *Lancaster University Management School Working Paper*, 2003/009.
- OECD (Organisation for Economic Co-operation & Development) 2008, *Employment outlook—how does Australia compare?*, OECD, Paris.
- Pissarides, CA 1979, 'Job matching with state employment agencies and random search', *Economic Journal*, vol.89, pp.818–33.
- Spence, M 1973, 'Job market signaling', *The Quarterly Journal of Economics*, vol.87, no.3, pp.355–74.
- Stigler, GJ 1961, 'The economics of information', *The Journal of Political Economy*, vol.69, no.3, pp.213–25
- 1962, 'Information in the labor market', *The Journal of Political Economy*, vol.70, no.5 (part 2), pp.94–105
- Van der Klaauw, B, van Vuuren, A & Berkhout, P 2004, 'Labor market prospects, search intensity and the transition from college to work', *IZA Discussion Paper*, no.1176.
- Wolpin, KI 1987, 'Estimating a structural search model: the transition from school to work', *Econometrica*, vol.55, pp.801–17.
- Wooldridge, JM 2002, *Econometric analysis of cross section and panel data*, MIT Press, Cambridge, Mass.
- Yates, JA 2005, 'The transition from school to work: education and work experience', *Monthly Labour Review*, vol.128, pp.21–32.

# Appendix

Table A1 is the full version of table 4 in the main text. It is also used to calculate the profiles in box 1.

**Table A1 Duration estimation: from education to employment**

Variable	Model 1:	Model 2:	Model 3:	Model 4:
	Any job (Males)	Any job (Females)	FTP job (Males)	FTP job (Females)
Education < Yr12 (base)				
Education Yr12	3.52***	4.47***	1.54***	2.13***
Education cert. I or II	4.20***	7.47***	2.55***	5.16***
Education cert. III or IV	5.03***	7.23***	2.65***	4.36***
Education diploma or adv. dip.	4.37***	8.66***	2.18***	4.21***
Education university	5.35***	8.04***	2.73***	4.94***
Age	0.97	1.01	0.97	0.96
Indigenous (base, not Indigenous)	0.70**	0.69**	0.81	0.95
Disability (base, no disability)	0.89	1.03	1.03	0.59*
ACT (base)				
NSW	0.94	0.92	0.98	1.11
Vic.	0.99	0.91	0.98	1.02
QLD	1.00	0.87	1.08	0.94
SA	0.99	0.92	0.96	0.94
WA	0.99	1.05	1.11	1.07
Tas.	0.94	0.77	0.92	1.12
NT	1.23	0.99	1.27	1.43
Metropolitan (base)				
Regional	0.96	0.89**	1.14*	0.97
Rural/remote	0.94	0.89*	1.12	0.97
School – government (base)				
School – Catholic	1.10	1.08	0.90	0.94
School – independent	0.99	0.94	0.77***	0.83**
Country of birth – Aust. (base)				
Country of birth – ESB	0.91	0.81*	0.77	0.89
Country of birth – NESB	0.76***	0.77**	0.76*	0.77*
Country of birth – mother Aust. (base)				
Country of birth – mother ESB	1.06	0.97	0.93	0.96
Country of birth – mother NESB	0.82**	0.90	0.85	0.95
Country of birth – father Aust. (base)				
Country of birth – father ESB	1.01	1.21**	1.05	0.91
Country of birth – father NESB	0.89	0.78***	0.93	0.85*
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Base average duration	435	550	481	584
Wald Chi2 test (p-value)	9 982 (0.00)	9 783 (0.00)	21 951 (0.00)	22 377 (0.00)

Notes: (1) Stars denote statistical significance \* p<0.05; \*\* p<0.01; \*\*\* p<0.001. (2) The model is a complementary log-log (cloglog) model. Reported estimates are the 'odds ratio' calculated as  $e^{\beta}$ . (3) Sample sizes do not match across models due to differing rates of missing values (or item non-response).

# Support document details

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Additional information relating to this research is available in *From education to employment: how long does it take? Support document*. It can be accessed from NCVER's website <<http://www.ncver.edu.au/publications/2373.html>>.

- ✧ Tables and figures
- ✧ Attrition estimates
- ✧ Descriptive statistics
- ✧ Detailed TPS tabulations
- ✧ Econometric models of duration
- ✧ Cloglog discrete-time flexible hazard model extended results
- ✧ Sensitivity analysis of grouping education levels
- ✧ Complete estimation
- ✧ Flexible baseline hazard estimates



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