Longitudinal Surveys of Australian Youth

**Research Report 39**

# Course Change and Attrition from Higher Education

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## EXECUTIVE SUMMARY

This report examines the pathways of recent school leavers who enter the higher education sector in Australia. The focus is on the first three years after completing senior secondary school. The report has four broad aims:

- to provide estimates of the proportions of entrants who change courses or leave the higher education sector before completing a course;
- to identify factors associated with course change within the higher education sector;
- to identify factors associated with attrition from the higher education sector; and
- to examine the initial education, training and labour market destinations of those who leave the higher education sector before completing a qualification.

The report uses data from the Longitudinal Surveys of Australian Youth to address each of these aims. The findings are based upon a sample of young people who had been in Year 9 in 1995 and who commenced higher education in 1999 or 2000. Their education, training, and labour market activities were tracked until late in 2001 when they were approximately 20 years of age.

Among young people who first commenced higher education in 1999 or 2000, 13 per cent had changed courses within the higher education sector by 2001, and 14 per cent left the higher education sector without completing a qualification and had not returned by late in 2001. It must be emphasised, however, that attrition is not necessarily a permanent state; some course non-completers may return to the higher education sector at a later date to complete their course or to commence another course.

### Factors associated with course change and attrition

The characteristics of students who changed courses and persisted in a subsequent course were compared to those of students who persisted in their original course of study. Groups that displayed relatively *high* levels of course change included students whose parents had a university degree or diploma, students from independent schools, students with moderately high ENTER scores, students whose initial course was not their first preference, students who commenced higher education immediately after completing Year 12, full-time students, students in fields of education such as the natural and physical sciences, medicine/dentistry/veterinary science/law, society and culture, and engineering and related technologies, and students who spent over 15 hours per week in paid work.

The characteristics of young people who left the higher education sector before completing a qualification were compared to those of young people who persisted in the higher education sector. Groups that displayed relatively *low* levels of attrition included students from language backgrounds other than English, students from small provincial cities, students whose parents have a university degree or diploma, students with high ENTER scores, and students in fields of education such as health and law. Students working up to 10 hours per week were no more likely to leave the higher education sector than students who were not in paid work, but long hours of paid work while studying were associated with higher levels of attrition.

The reasons that students give for both course change and attrition suggest that interests play a major role as well. In contrast, students less commonly cited academic difficulties, difficulties juggling work and study, or financial difficulties as their main reason for changing courses or leaving the higher education sector.

### Educational, training and labour market destinations of the attrition sub-group

The initial educational and labour market destinations of the higher education attrition sub-group suggest that many are faring well. Attrition from the higher education sector did not signify the end of education and training for the third of the attrition sub-group who moved to the VET sector by age 20. Seventy-six per cent of the attrition sub-group were in full-time education, training or employment activities at age 20. In the short-term, the attrition sub-group did not appear to face disadvantage in gaining access to such activities relative to Year 12 graduates who did not enter higher education, or recent higher education graduates.

### Implications

The findings of this report suggest that some course change and attrition may be regarded as part of a settling-in period in the transition from school to higher education. Furthermore, course change or attrition can be a positive outcome for some students. For example, interests are more commonly cited than academic difficulties as a reason for changing or leaving, and the majority of the attrition sub-group entered full-time education, training or employment after leaving higher education.

However, not all course change and attrition can be viewed in positive terms. A very small proportion of students experienced a highly uncertain start in the higher education sector typified by multiple course changes or course change followed by attrition. Particular sociodemographic groups were more likely than others to experience course change or attrition, and just under a quarter of the attrition sub-group were in activities at age 20 such as part-time work/study, unemployment or being outside the labour market and not studying.

The findings also have implications for strategies aimed at minimising negative instances of course change and attrition. For example, school achievement is associated with student flows, especially attrition. In order to reduce attrition, institutions need to ensure that students enter with, or are provided with early opportunities to acquire the skills needed for success in a university environment. In addition, the variability in levels of course change and attrition between fields of education suggests the need for field-specific initiatives to improve student flows, or the need to examine particular courses when designing interventions at the university level.

Finally, the findings have a number of implications for estimating the incidence of course change and attrition. It is necessary to track the movement of students both within and between institutions as nearly one-half of the course changers in the present study moved to another higher education institution when they commenced their second course. The use of data such as the Department of Education, Science and Training's Higher Education Statistics Collection, which is restricted to student flows within institutions, will lead to an overestimate of the extent of attrition from the higher education sector as a whole. It is also necessary to track the movement of students over a substantial period of time. In the current study, a number of students in the attrition sub-group indicated that they had deferred their study; these young people (and others in the attrition sub-group) may return to the higher education sector at a future date to complete their course or commence a new course.

# 1. INTRODUCTION

Each year, a number of university students leave the courses in which they have enrolled; some change to other courses, and some leave university altogether. The level of course non-completion has implications for institutional accountability and efficiency, resource allocation, and student support services. It should not be assumed, however, that course non-completion is synonymous with failure or wastage of talent. Although some students change course for negative reasons such as not being able to meet the academic demands of the course, others change for positive reasons such as moving to their preferred course. Attrition from the higher education sector may signify the gaining of specific skills or employment in a desired field, or movement to a course within the vocational education and training (VET) sector. Additionally, attrition is not necessarily a permanent state; a past student may return to the higher education sector to complete the course at a later date.

In order to draw conclusions about the benefits of course completion, or the extent and problematic nature of course non-completion, it is necessary to track the education, training and labour market destinations of higher education entrants over a substantial period of time. The characteristics of students following particular pathways and the reasons given by past students for course non-completion can also further our understanding of student flows.

The purpose of this research report is to examine the pathways of recent school leavers who enter the higher education sector. It has four broad aims:

- to provide estimates of the proportions of entrants who change courses or leave the higher education sector before completing a course;
- to identify factors associated with course change within the higher education sector;
- to identify factors associated with attrition from the higher education sector; and
- to examine the initial education, training and labour market destinations of those who leave the higher education sector before completing a qualification.

The focus is on the first three years after completing senior secondary school.

**Measurement of student flows in past research**

The majority of research on higher education student flows has focussed on entry to or participation in higher education. Defining and measuring student flows after entry to higher education is a less straightforward matter. Flows can be described in relation to individual subjects, courses, institutions, or the sector as a whole. The focus of this report is on movement between courses within the higher education sector (course change), and out of the higher education sector before the completion of a course (attrition).

*Course change within the higher education sector*

The Department of Education, Science and Training (DEST) does not routinely report on the incidence of course change within institutions, and does not collect data on the incidence of course change between institutions as part of its Higher Education Statistics Collection. Other research on the extent of course change, especially at the national level, is relatively rare. There are suggestions, however, that a significant amount of movement between courses does occur. For example, two surveys of first year university students found that 5 to 7 per cent of students had changed course by May or August of their first year (McInnis, James & Hartley, 2000, p. 15; Walstab, Golding, Teese, Charlton & Polesel, 2001, p. 36). In one of these studies, a further 20

per cent of students indicated that they hoped to change to a different course after the completion of their first year, but whether they actually went on to change courses was not ascertained (McInnis, James & Hartley, 2000, p. 15). Taking a longer time frame, another study followed a sample of school leavers over a five-year period, finding that one in four tertiary entrants[1] underwent a course change (Dwyer & Wyn, 2001, pp. 18-19).

*Attrition from the higher education sector*

Researchers have used various terms to refer to attrition from the higher education sector, including drop-out, discontinuance, non-completion and withdrawal. Conversely, other studies have examined course completion or graduation, retention and persistence.

Research on completion rates, based upon data provided by universities to DEST, suggests that there is a considerable amount of attrition from the higher education sector. Martin, Maclachlan and Karmel (2001) analysed data on the 1992 and 1993 cohorts of commencing undergraduate students. By 1999, 63 per cent of the 1993 cohort had completed an award at the institution of commencement, 33 per cent had not completed an award and were not studying at the institution of commencement, and just over 4 per cent were still studying. The authors estimated final completion rates of 71 to 72 per cent for the two cohorts. In an earlier study, Shah and Burke (1996, p. 47) estimated slightly lower predicted probabilities of completion for persons commencing an undergraduate course by age 18 or age 19 (63% and 69%, respectively).

As the Higher Education Statistics Collection does not track students who change institutions, both of the above studies were restricted to student flows within institutions. This may result in an underestimate of the proportion of higher education entrants who receive a qualification and, conversely, an overestimate of the rate of attrition from the higher education sector as a whole. This has been proposed as a partial explanation for why earlier estimates of course completion, derived from a longitudinal survey that was able to track individuals across institutions, were somewhat higher than corresponding official statistics (Carpenter, Hayden & Long, 1998, p.418).

*Destinations of persons leaving higher education before completing a qualification*

As already indicated, leaving the higher education sector before the completion of a qualification does not necessarily signify a negative outcome. A student may move to the VET sector and successfully complete a qualification, or may gain full-time employment in their chosen field. Consequently, in order to assess whether attrition is problematic, it is necessary to continue to monitor students after they leave the higher education sector.

Data from the Australian Bureau of Statistics and the Graduate Outcomes Survey have been used to document the labour market outcomes of university graduates and to compare these with the labour market activities of other groups (e.g. Guthrie, 2003; Nelson, 2003, pp. 25-26). However, no national-level studies have attempted to identify the labour market destinations of persons who leave the higher education sector before completing a qualification.

Similarly, while there are suggestions that considerable movement between the higher education and VET sectors occurs *after* the completion of a qualification (e.g. Karmel & Nguyen, 2003, pp. 10-11), comprehensive national-level data are not available on the educational destinations of persons who leave the higher education sector *before* completing a qualification. Furthermore, studies that have included higher education course non-completers may not be applicable to recent school leavers. For example, Golding (1996) found that while persons moving from TAFE to university had a median age of 23, persons moving from university to TAFE had a median age

[1] This estimate is based upon higher education and TAFE students.

of 33. University-to-TAFE movement tended to occur after a considerable delay, and tended to be in response to an immediate or anticipated need for workplace skills or retraining[2].

Further research is required in order to understand the subsequent educational, training and labour market pathways and destinations of young people who depart from the higher education sector before completing a qualification.

**Factors associated with course change and attrition in past research**

The characteristics and practices of both institutions and students can influence student flows, and the extent to which progress through higher education differs between groups has important equity implications. It is unlikely that one single factor determines decisions to change course or leave the higher education sector. Rather, a range of factors is likely to exert an influence on one or more aspects of student flows.

*Course change within the higher education sector*

Very little research has attempted to identify factors associated with course change and this research has yielded inconsistent findings. A study of Victorian school leavers examined the association between a limited number of background characteristics and course change by May of the first year out of school. Gender, parental occupation and school sector were not associated with course change, but students who spoke both English and another language at home and students from non-metropolitan areas were more likely than other students to change course (Walstab, Golding, Teese, Charlton & Polesel, 2001, pp. 19-22). In contrast, in a study of school leavers followed over a five-year period, tertiary students from metropolitan areas were more likely than students from rural areas to change course (Dwyer & Wyn, 2001, p. 82). Both of these studies were based upon both higher education and TAFE students. As patterns of course change may differ between the two sectors, further research examining each sector separately is required.

*Attrition from the higher education sector*

Considerably more research attention has been focused on the identification of factors associated with attrition or, alternatively, with course completions. A wide range of factors has been examined: sociodemographic characteristics of students; achievement while at school; the experience of higher education; and external factors such as paid work. As the following review indicates, the findings are not consistent.

*Gender:* Data from DEST's Higher Education Statistics Collection appear to indicate that females take less time to complete a course and are more likely than males to complete a course (Martin, Maclachlan & Karmel, 2001; Shah & Burke, 1996). Studies based upon longitudinal surveys have reached somewhat different conclusions. Consistent with estimates based upon the Higher Education Statistics Collection, one study found that females take less time to complete and that at age 23 females have a higher graduation rate than males, but the study also reported that by age 30 males have a slightly higher graduation rate than females (Long, Carpenter & Hayden, 1995). Four other studies suggest that gender is unrelated to attrition (Lamb, Robinson & Davies, 2001; Vickers, Lamb & Hinkley, 2003; Walstab, Golding, Teese, Charlton & Polesel, 2001; Wooden, Robertson & Dawkins, 1992).

*Language background:* Recent research has found that students from language backgrounds other than English are less likely than students from English-speaking backgrounds to withdraw from higher education (Lamb, Robinson & Davies, 2001; Martin, Maclachlan & Karmel, 2001;

[2] The findings were based upon a survey of persons commencing in one sector in Victoria in 1995 after prior experience in another sector.

Vickers, Lamb & Hinkley, 2003; Walstab, Golding, Teese, Charlton & Polesel, 2001). Earlier longitudinal studies, however, yielded quite different findings (Long, Carpenter & Hayden, 1995; Wooden, Robertson & Dawkins, 1992). Changing patterns of migration to Australia and the changing ethnic mix of the higher education student population may partially explain the discrepancies between the earlier and later studies.

*Geographic background:* Research based upon the Higher Education Statistics Collection suggests that students from isolated areas are less likely than rural or urban students to complete their studies (Martin, Maclachlan & Karmel, 2001). Most studies based upon longitudinal data compare rural and urban students and report a disadvantage to rural students (Dwyer & Wyn, 2001; Long, Carpenter & Hayden, 1995; Walstab, Golding, Teese, Charlton & Polesel, 2001), although some studies have found non-significant results (Lamb, Robinson & Davies, 2001) or differences favouring rural females (Wooden, Robertson & Dawkins, 1992).

*Socioeconomic background:* Researchers using broad measures of socioeconomic status (SES) suggest that students from low SES backgrounds are slightly more likely than high SES students to leave the higher education sector before completing a qualification (Martin, Maclachlan & Karmel, 2001; Vickers, Lamb & Hinkley, 2003). Findings relating to the effects of specific aspects of SES are less conclusive. Positive, negative and non-significant relationships between course completions and parental occupation, and non-significant relationships between course completions and parental education have been reported (Carpenter, Hayden & Long, 1998; Wooden, Robertson & Dawkins, 1992). A declining relationship between family wealth and course completions has also been noted (Carpenter, Hayden & Long, 1998).

*Schooling:* The influence of factors associated with schooling has been investigated. Differences in course persistence/completion favouring government students have been noted in some studies (Long, Carpenter & Hayden, 1995; Walstab, Golding, Teese, Charlton & Polesel, 2001) but not in others (Lamb, Robinson & Davies, 2001; Wooden, Robertson & Dawkins, 1992). Evidence relating to the influence of achievement in literacy and numeracy during middle schooling on course persistence/completions is mixed, with positive, negative and non-significant relationships having been reported for various cohorts of young people (Long, Carpenter & Hayden, 1995; Vickers, Lamb & Hinkley, 2003). However, self-assessed ability, measured in Year 10, has been shown to have a positive association with retention (Wooden, Robertson & Dawkins, 1992), and Year 12 achievement, measured by tertiary entrance scores, has been shown to have a positive association with overall marks and course completions (McInnis & Hartley, 2002; Urban, Jones, Smith, Evans, Maclachlan & Karmel, 1999).

*The higher education experience:* Recent research has investigated how the experience of higher education influences attrition. Field of study is one significant factor. While estimates of attrition from various fields of study have differed across studies (and in one case, between cohorts within a study), students in generalist courses such as the humanities and behavioural sciences generally have higher rates of attrition than students in fields such as medicine, law and veterinary science (Lamb, Robinson & Davies, 2001; Martin, Maclachlan & Karmel, 2001; Shah & Burke, 1996; Vickers, Lamb & Hinkley, 2003). Mode of attendance is also a significant factor, with full-time students having higher graduation rates than part-time students, who in turn have higher graduation rates than external students (Martin, Maclachlan & Karmel, 2001; see also Lamb, Robinson & Davies, 2001). Other factors relating to the experience of higher education that have been investigated include course contact hours; teaching/pedagogy; academic and social integration; students' academic preparedness; learning strategies; goal commitment and academic motivation; the extent that a course meets a student's expectations; and parents' aspirations. For an overview of this literature, see Evans (1999) and McInnis, Hartley, Polesel & Teese (2000).

*Other factors:* External factors such as involvement in paid work, finances, and a range of other personal circumstances may also be relevant. McInnis (2001) argued that involvement in part-

time work limits the amount of available time a student has for study and integration into campus life. Consistent with this argument, Vickers, Lamb and Hinkley (2003) found that working more than 20 hours per week was linked with higher levels of attrition among university students. However, earlier studies found that hours of work were unrelated to continuing beyond first year (Wooden, Robertson & Dawkins, 1992) and that being in paid work was associated with lower attrition among university students in receipt of Youth Allowance (Lamb, Robinson & Davies, 2001). Persons who withdraw from higher education commonly cite financial reasons, although follow-up interviews suggest that such reasons may often be overstated (Tinto, 1995). Other personal factors such as health and relationship problems are also commonly cited by students as reasons for attrition (McInnis, Hartley, Polesel & Teese, 2000). Often students indicate that the decision to leave university is the result of a combination of factors rather than being due to one factor in isolation.

Overall, past research has identified a wide range of factors that may influence attrition from the higher education sector, and similar factors may be implicated in course change within the higher education sector. However, results differ across studies[3] and the influence of some factors may be changing over time. Consequently, it is important to continue to monitor the influence of these factors on recent entrants to higher education, and to consider additional factors such as educational aspirations.

### Contribution of the Longitudinal Surveys of Australian Youth (LSAY)

As indicated above, past research has a number of limitations when used to understand course change and attrition from the higher education sector amongst recent school leavers. National-level estimates of course change are not available for the higher education sector and very little research has focused on the identification of factors associated with course change. Estimates of attrition are typically based upon attrition from institutions rather than from the higher education sector as a whole, and research identifying factors associated with attrition has yielded discrepant findings. In addition, changes to the higher education sector—ranging from increases in the number of student places and changes in the composition of university entrants, to the introduction of new methods of course delivery, policy initiatives relating to student finances such as the introduction of Youth Allowance and revisions to the Higher Education Contribution Scheme (HECS), and possible changes in the motivation and values of students—signal the need to continue to monitor student flows. Finally, while the education and labour market outcomes of university graduates are well documented, the destinations of persons who leave the higher education sector before completing a qualification have not been examined.

In this report, recent data from the Longitudinal Surveys of Australian Youth (LSAY) will be used to address each of the above limitations. LSAY is the first large-scale national-level study to track the pathways of young people from school into higher education, between courses and institutions within the higher education sector, and from higher education into other education, training or labour market activities. The data permit an assessment of whether different types of educational pathways are related to a wide range of social background, schooling, and post-school factors.

### Organisation of the report

The following chapter describes the LSAY data in more detail and outlines the analytical techniques used in the report. The research findings are then organised into three chapters. The first of these, Chapter 3, describes student flows within and out of the higher education sector. The focus of the chapter is a description of the incidence and timing of course change and

[3] An extensive overview of earlier literature on the transition from school to tertiary study also noted the inconsistency of findings relating to the effects of a range of factors on attrition (Evans, 1999).

attrition. In addition, movement between the higher education and VET sectors, and the educational and labour market destinations of the attrition sub-group are examined. Chapter 4 focuses on factors associated with course change within the higher education sector, and Chapter 5 focuses on factors associated with attrition from the higher education sector. Chapter 6 provides a summary and discussion of the results.

# 2. DATA AND METHODS

## Data

*The 1995 Year 9 cohort*

Data for this report are based upon a cohort of students who were in Year 9 in 1995 and who form part of the Longitudinal Surveys of Australian Youth (LSAY) program. The sampling design for the LSAY 1995 Year 9 cohort was a two-stage cluster sample, with schools randomly selected in each State and Territory, and whole classes of students randomly selected within each participating school. The initial sample included 13,613 students from approximately 300 government, Catholic and independent schools (see Long, 1996 for details).

The students were surveyed in their school in 1995, where they completed a questionnaire about themselves and their families, and undertook reading comprehension and numeracy tests. Further data on educational, training and labour market activities have been collected from the sample members on an annual basis: by mail questionnaire in wave 2, and by computer-assisted telephone interviews in subsequent waves. The 2001 interview also collected extensive retrospective data on post-secondary education and training pathways.

For the majority of the 1995 Year 9 cohort, 1999 represented the first year after leaving secondary school. Of those who entered higher education, the majority commenced study in the first semester of 1999, and data are available on the pathways they followed over a three-year period up to late in 2001. The modal age of sample members in 2001 was 20.

At the time of the 2001 data collection, 6876 respondents remained in the active sample. All results presented in this report have been weighted to correct for the original sample design and subsequent survey attrition (Marks & Long, 2000).

*Sub-sample for analysis*

This report is based upon recent school leavers who enter higher education in Australia. Recent school leavers constituted over one-half of domestic commencing undergraduate students in Australia during the time period covered by this study.[4]

The sub-sample of recent school leavers that is analysed in this report is specified in Table 1. Analysis is restricted to persons in the 1995 Year 9 cohort who commenced higher education in 1999 or 2000, and who remained in the active sample at the time of interview in late 2001 (weighted n=2593). Students commencing after 2000 are excluded from analysis so as to allow time for all full-time students to potentially commence a second year of university study.[5] This represents a trade-off between analysing the effects of deferred entry on student flows, and permitting time for course change or attrition to occur.

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[4] In 2000, for example, 57 per cent of domestic commencing undergraduate students were under 20 years of age (DEST, 2003, p. 169).

[5] Persons whose date of leaving school was after their university start date were also excluded from analysis.

Thirty-seven per cent of the 1995 Year 9 cohort commenced higher education in 1999 or 2000 (Table 1).[6] It must be emphasised that young people who enter higher education are not representative of all school leavers. The characteristics of higher education entrants from the 1995 Year 9 cohort have been described by Marks, Fleming, Long and McMillan (2000). Young people from the following groups are more likely than other young people to enter higher education: females, those with parents in professional and managerial occupations, those whose parents have a degree or diploma, young people from language backgrounds other than English, those from metropolitan areas, those who attended independent or Catholic secondary schools, and those with high academic achievement while in secondary school. Whether factors such as these continue to exert an influence on student flows after entry to higher education will be examined in this report.

**Table 1 Semester commenced first higher education course (1995 Year 9 cohort)**

| | Sub-sample for analysis | Unweighted N | Unweighted % | Weighted N | Weighted % |
|---|---|---|---|---|---|
| 1999 | | | | | |
| Semester 1 | Include | 2618 | 38 | 2271 | 33 |
| Semester 2 | Include | 16 | 0 | 13 | 0 |
| Semester unknown | Include | 1 | 0 | <1 | 0 |
| 2000 | | | | | |
| Semester 1 | Include | 344 | 5 | 294 | 4 |
| Semester 2 | Include | 12 | 0 | 12 | 0 |
| Semester unknown | Include | 1 | 0 | 3 | 0 |
| 2001 | Exclude | 187 | 3 | 183 | 3 |
| Did not commence higher education (1999-2001) | Exclude | 3697 | 54 | 4100 | 60 |
| Total | | 6876 | 100 | 6876 | 100 |

Note: Column percentages may not sum to 100 due to rounding.

*Measures*

LSAY data permit the tracking of student flows, including course change within the higher education sector, attrition from the higher education sector, and destinations of the attrition sub-group. LSAY also includes a wide range of potential explanatory variables, including:

- sociodemographic characteristics, which provide indicators of the cultural, educational and economic resources and constraints of the student and their family;
- achievement and aspirations while in secondary school, which provide indicators of the academic background and predispositions that a student brings to the university setting;
- factors relating to the experience of higher education; and
- paid work and finances while at university, which are indicators of some of the competing demands that may impact upon integration into university life.

[6] The proportion of sample members entering higher education is similar to Australian Bureau of Statistics' estimates derived from a supplementary survey to the May 1999 Labour Force Survey and the 2001 Survey of Education and Work; 29-33 per cent of recent school leavers (or 42-48 per cent of recent school leavers who had completed Year 12) were in higher education in the year after leaving school (ABS, 1999, 2002). LSAY estimates are similar: 33 per cent of the 1995 Year 9 cohort (or 41 per cent of Year 12 completers in the sample) commenced higher education in the first semester of 1999.

Data are also available on the reasons given for course change and attrition by students who did not persist in their original course of study. A full list of the variables analysed in this report is provided in Figure 1. Detailed variable descriptions are provided in Appendix 1.

There are some limitations on the range of potential influences on student flows that can be examined when using LSAY data. Due to the sample design, the influence of age and/or mature age entry cannot be assessed. Indigenous status cannot be examined due to the small number of Indigenous students among higher education entrants in the sample. Similarly, the effect of course level (Bachelor degree versus other) cannot be examined due to the small number of higher education students who were enrolled in university diplomas, advanced diplomas or associate degrees. Only a limited range of data on the experience of higher education was collected; data on mode of entry (with or without ENTER score), mode of delivery (internal/external), course results, and academic and social integration were not collected.

| Sociodemographic characteristics |
|---|
| Gender |
| Language background |
| Home location |
| Parents' education |
| Parents' occupation |
| School sector |

| The experience of higher education |
|---|
| Was course first preference? |
| Deferred entry |
| Mode of enrolment |
| Field of education |

| Higher education student flows |
|---|
| Persist in first course |
| Change course |
| Attrition from higher education sector |
| Students' reasons for course change and attrition |

| Achievement and aspirations while in secondary school |
|---|
| Self-assessed ability |
| Academic achievement |
| Educational aspirations |
| - Student |
| - Parent |

| Paid work and finances while at university |
|---|
| In paid work |
| Hours of paid work |
| Youth Allowance recipient |

| Activities after leaving higher education |
|---|
| VET |
| Full-time employment |
| Part-time employment |
| Unemployment |
| Not in the labour force |

**Figure 1 Variables**

**Analytic techniques**

Percentages are used to describe the pathways of entrants to higher education, including the educational/labour market destinations of those who withdraw from higher education (Chapter 3). Cross-tabulations and logistic regression are used to assess whether a range of factors are associated with course change, and percentages are used to describe the reasons course changers gave for moving between courses (Chapter 4). Similarly, cross-tabulations and logistic regression are used to assess whether a range of factors are associated with attrition, and percentages are used to describe the reasons past students gave for leaving the higher education sector before completing a qualification (Chapter 5).

*Model specification*

Multivariate techniques such as logistic regression allow for the identification of factors that exert an independent or net effect, after controlling for all other factors in the model. The use of multivariate techniques raises the question of model specification; that is, which factors should be included in the analysis. While it could be argued that the models should include all variables that influence course change or attrition, there are likely to be dozens of factors that are correlated

with student flows. Including all these factors in a single analysis would increase the complexity in the interpretation of the results and may cause statistical problems. Rather, model specification should be guided by the most appropriate and parsimonious specification for the particular research question. The analyses in this report are based on models that include theoretically and empirically important influences. The key variables identified for inclusion have been selected on the basis of an extensive review of the literature (Chapter 1), earlier analyses of LSAY data (Long, Carpenter & Hayden, 1995; Vickers, Lamb & Hinkley, 2003), and their policy relevance.

*Logistic regression*

Multivariate logistic regression is used because of the dichotomous nature of the two dependent (outcome) variables, course change and attrition. Unstandardised logistic regression coefficients are presented in a number of tables throughout the report. The sign of the logistic coefficient indicates if the factor has a positive influence (that is, whether it increases course change or attrition) or a negative influence (that is, whether it decreases course change or attrition). The interpretation of the results differs according to whether the independent variable is dichotomous, categorical or continuous. In this report, dichotomous and categorical independent variables are analysed.

For dichotomous independent variables (that is, variables which have only two categories such as full-time/part-time), the size of the logistic regression coefficients can be compared. The further away the coefficient is from zero, the stronger its effect. For example, the effects of parental education and mode of enrolment can be compared using the data contained in Table 11 (p. 22): the effect of parent's education on course change (0.34) was weaker than the effect of mode of enrolment (1.07).

For categorical independent variables (which comprise three or more categories, such as field of education), the size of the regression coefficients can also be compared, but the size is always relative to the reference category. For example, Table 11 shows that the effect on course change of initially enrolling in a course in the natural and physical sciences (relative to a course in education) is greater than the effect of initially enrolling in a course in engineering and related technologies (relative to a course in education). The choice of the reference category does not change the relative differences in the logistic regression coefficients between categories.

The significance tests for logistic regression are the same as for other parametric statistics; that is, they are tests of the probability of the null hypothesis. Statistically significant estimates are indicated in the tables by asterisks if the probability of the null hypothesis is less than 0.05 (that is, five chances in 100) (*), less than 0.01 (**), or less than 0.001 (***).

# 3. STUDENT FLOWS

This chapter provides a description of student flows of recent school leavers through and out of higher education. In particular, it provides estimates of the incidence and nature of course change and attrition. A description of the educational, training and labour market destinations of the attrition sub-group is also provided.

### Definitions

For the purposes of this report, a course refers to a program of study which leads to an academic award (for example, Bachelor of Arts). This can be distinguished from an individual subject or unit of study (for example, Introduction to Sociology), a broad field of education (for example, Society and Culture), and a level of education (for example, bachelor (pass) degree).

Course changers are defined as higher education entrants who commence a second university course before completing their first. Course change may occur through direct transfers, or may be the result of discontinuing a particular course of study and commencing another course at a later point in time. It can occur between courses at the same institution, or in conjunction with an institution change.

The attrition sub-group is defined as students who left the higher education sector before completing a qualification, and who had not returned to higher education by the time of data collection in late 2001. Attrition could occur as a result of withdrawing from a course, or as a result of deferring and not subsequently returning. It could occur after a course change.

### Higher education student flows

A summary of major pathways followed by university entrants from the 1995 Year 9 cohort is provided in Figure 2. The majority of students who first commenced higher education in 1999 or 2000 persisted in their initial course: by late 2001, just under three-fourths of the entrants were still enrolled in, or had completed, their original course of study. There was, however, some movement within the higher education sector. Thirteen per cent of entrants had withdrawn or deferred from their initial course and had not returned to the higher education sector. Twelve per cent underwent at least one course change and remained in higher education by late 2001. A very small group underwent at least one course change, left the higher education sector without a qualification, and did not return. In total, 13 per cent of university entrants changed courses (*the course change group*), and 14 per cent left university without completing a qualification and did not return (*the attrition group*).[7]

The overall attrition rate derived from the LSAY 1995 Year 9 cohort (14%) is lower than attrition rates derived from the Australian Department of Education, Science and Training's Higher Education Statistics Collection (HESC). For example, using the latter data, Lukic, Broadbent and Maclachlan (2004) calculated a first year attrition rate of 17 per cent for school leavers commencing in undergraduate courses in 2002, and higher attrition rates again for older students.

A number of factors contribute to the differences in attrition rates yielded from the two data sources. Most significantly, the HESC comprises data from individual higher education institutions and does not include information that would permit the tracking of student movements between these institutions. Instead, students who change institutions are classified in the attrition group in statistics derived from the HESC, resulting in an overestimate of attrition from the higher education sector as a whole. In contrast, LSAY does track student movements

[7] The attrition total comprises attrition during first course (12.7%) and attrition during most recent course (1.6%).

between institutions; students who changed institutions but remained in the higher education sector were excluded from the attrition group in the LSAY estimates used in this report.[8]

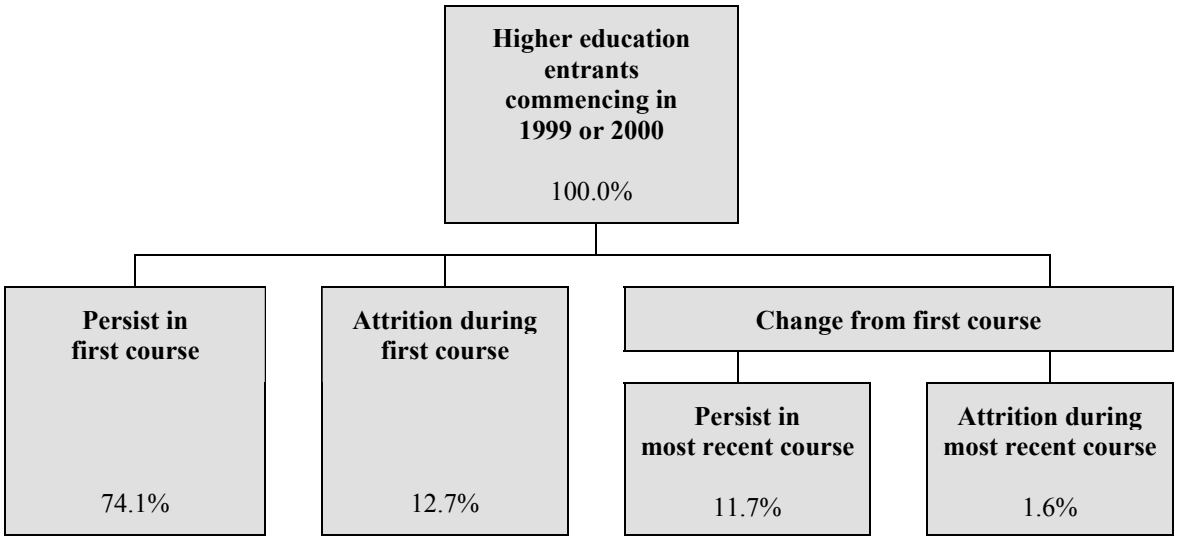


**Figure 2 Student flows within the higher education sector, 1999-2001 (weighted n = 2593)**

*The nature of course change within the higher education sector*

Ninety-two per cent of course changers in the 1995 Year 9 cohort had only undergone one course change within the higher education sector by late 2001, while 8 per cent had undergone two or more course changes. All analyses of course change in this report refer to students' first course change.

Most course changers stopped their first course within a year of commencement: 11 per cent commenced and stopped their first course in the same semester, while 52 per cent stopped in the following semester. Just under a third of course changers stopped their first course during the second year (2-3 semesters after commencement), and relatively few (6%) stopped their first course in the third year (4-5 semesters after commencement). Similar results are evident if the analysis is restricted to persons commencing full-time university study immediately after leaving secondary school (that is, in the first semester of 1999) (Table 2).

The majority of course changers moved directly from one course to the next; that is, they stopped their first course and commenced their second course in the same or the following semester (85%). Thirteen per cent of course changers started their second course a year after stopping their first and a further 2 per cent started their second course following a longer interval. Identical results are obtained when the sample is restricted to course changers who commenced full-time university study immediately after leaving secondary school.

[8] Other factors also contribute to the differences in attrition as measured in this report and the attrition rates calculated from the HESC by Lukic, Broadbent and Maclachlan (2004). These include the period of time covered (a one-year period in the Lukic report compared to the first three post-school years in this report); the classification of students who defer (deferrers were classified in the attrition group in the Lukic report but deferrers were not classified in the attrition group in this report if they returned to higher education within the first three post-school years); and the design of the data collections (the HESC is a full census whereas LSAY is subject to potential bias due to sample attrition, although this is partially corrected through the application of weighting procedures).

**Table 2 Number of semesters between commencing and stopping first higher education course (course changers)(weighted column per cent)**

| | All course changers | Course changers who commenced full-time study in Semester 1, 1999 |
|---|---|---|
| Semester commenced | 11 | 10 |
| Semester after commencement | 52 | 52 |
| 2 semesters after commencement | 14 | 14 |
| 3 semesters after commencement | 17 | 18 |
| 4-5 semesters after commencement | 6 | 6 |
| (Total N) | (338) | (314) |

Note: Column percentages may not sum to 100 due to rounding.

Just under one-third of course changers (31%) remained in the same broad field of education for their first and second higher education courses, and just over one-half of the course changers were enrolled at the same institution for both higher education courses (54%).

An examination of factors associated with course change and the reasons given by students for course change is provided in Chapter 4.

*The nature of attrition from the higher education sector*

Attrition tended to occur within two years of commencing the most recent course: 48 per cent of the cases of attrition occurred by the end of the first year, and a further 35 per cent occurred some time in the second year (2-3 semesters after commencement), while only 17 per cent occurred in the third year (4-5 semesters after commencement). Similar results are evident when analysis is restricted to attrition among students who commenced full-time university study immediately after leaving secondary school (that is, in the first semester of 1999) (Table 3).

**Table 3 Number of semesters between commencing and stopping most recent course (attrition sub-group) (weighted column per cent)**

| | All cases of attrition | Cases of attrition among students who commenced most recent course as a full-time student in Semester 1, 1999 |
|---|---|---|
| Semester commenced | 16 | 13 |
| Semester after commencement | 32 | 29 |
| 2 semesters after commencement | 15 | 13 |
| 3 semesters after commencement | 20 | 23 |
| 4-5 semesters after commencement | 17 | 22 |
| (Total N) | (367) | (264) |

Note: Column percentages may not sum to 100 due to rounding.

Among the attrition sub-group, 53 per cent stated that they had withdrawn from their most recent course or changed to a course outside the sector, while 47 per cent stated that they had only deferred their most recent course. It must be emphasised that attrition is not necessarily a permanent state. Just under 40 per cent of the 'deferrers' were last enrolled in 2001 and may not have had time to return by the final data collection point in late 2001. Other course non-completers (both 'deferrers' and 'withdrawers') may also return to the higher education sector at a later date to complete their course, or to commence a new course.

An examination of factors associated with attrition and the reasons given by past students for attrition is provided in Chapter 5.

**Movement between the higher education and VET sectors**

While the tertiary education pathways of the majority of higher education entrants are confined to the higher education sector, some movement does occur between the higher education and VET[9] sectors. The various patterns of movement between the sectors are depicted in Table 4. Points to note include the following:

- Three per cent of higher education entrants were in the VET sector prior to first commencing their university studies (paths 1 & 2).
- Five per cent of entrants left the higher education sector to undertake VET and did not return to the higher education sector by 2001 (paths 2 & 3). This represented one-third of the higher education attrition sub-group.
- Multiple moves between the two sectors were very uncommon: less than 1 per cent of students moved from VET to higher education before returning to VET (path 2) or from higher education to VET before returning to higher education (path 4).
- In total, 8 per cent of higher education entrants in the 1995 Year 9 cohort had participated in VET by 2001. Participation in apprenticeships and traineeships was less common than participation in other TAFE courses.

**Table 4 Participation in the VET sector by higher education entrants (weighted n = 2593)**

| | Per cent of higher education entrants |
|---|---|
| Movement between the higher education and VET sectors | |
| Path 1: Started in VET, moved to higher education, did not return to VET | 3 |
| Path 2: Started in VET, moved to higher education, returned to VET | <1 |
| Path 3: Started in higher education, moved to VET, did not return to higher education | 5 |
| Path 4: Started in higher education, moved to VET, returned to higher education | <1 |
| Total ever in the VET sector | 8 |

Among students moving between the two sectors, there was a large amount of movement between broad fields of education. For example, of those who initially started in the VET sector (paths 1 & 2), 61 per cent changed to a different field of education when they commenced their higher education studies. The amount of movement between fields of education was even greater among those who initially started in higher education (paths 3 & 4): 77 per cent changed to a different field of education when they commenced their VET studies.

Academic achievement while at secondary school was associated with patterns of movement between the higher education and VET sectors (Table 5). Students who initially started in the VET sector before moving to higher education (column 1) tended to have lower ENTER scores than students who started in the higher education sector before moving to VET (column 2), who in turn tended to have lower ENTER scores than higher education entrants with no VET experience (column 3).

[9] For the purposes of this report, VET is defined as apprenticeships, traineeships and other TAFE courses including single modules that have been undertaken since leaving secondary school.

**Table 5 ENTER scores of higher education entrants, by student flows between the higher education and VET sectors (weighted column per cent)**

| ENTER score | Column 1<br>Started in VET, moved to higher education<br>(Paths 1 & 2) | Column 2<br>Started in higher ed., moved to VET<br>(Paths 3 & 4) | Column 3<br>All tertiary study in the higher education sector |
|---|---|---|---|
| < 70 | 46 | 29 | 18 |
| 70-79 | 18# | 29 | 20 |
| 80-89 | 10# | 16# | 26 |
| 90-99 | 2# | 6# | 26 |
| Missing | 23# | 19# | 9 |
| (Weighted n) | (77) | (133) | (2382) |

Notes: # Results should be treated with caution (unweighted cell size < 30).
Column percentages may not sum to 100 due to rounding.

Students' interests, however, may play a larger role than academic ability in the decision to move from higher education to the VET sector. Students who moved into VET were asked to indicate whether a range of factors influenced the decision to discontinue their university course. Poor results were cited by 23 per cent of the higher education-to-VET movers, and 16 per cent reported that a heavy study load was a consideration.[10] In contrast, nearly three-quarters of the higher education-to-VET movers stated that a consideration in their decision to discontinue their university course was that it turned out not to be what they wanted.

**Educational and labour market destinations of the attrition sub-group**

Attrition from the higher education sector does not necessarily signify the end of tertiary study. As noted above, one-third of the attrition sub-group undertook VET at some stage after leaving the higher education sector.

Another way of describing the educational and labour market destinations of the attrition sub-group is to examine their activities at particular time points. The most detailed information on the labour market activities of the 1995 Year 9 cohort relates to the time of the annual interviews, which were usually conducted between September and December of each calendar year. This information is used to describe the main activities of the attrition sub-group at the time of the first and second annual interviews after the semester in which they left the higher education sector, and to compare the activities of the attrition sub-group with two other groups: young people who completed senior secondary school but did not enter higher education, and university graduates.

*Destinations of the attrition sub-group*

The majority of the attrition sub-group engaged in full-time education, training or labour market activities after leaving higher education. At the time of their first interview following the semester of attrition, 13 per cent of the attrition sub-group were in full-time study, 14 per cent were combining full-time work with education or training, and 50 per cent were in full-time work but were not in education or training. However, a significant proportion of the attrition sub-group were engaged in other activities: 14 per cent were in part-time work or part-time study, 4 per cent were unemployed, and 5 per cent were not in the labour force and not studying (Table 6, column 1). One year later, the proportion in education and training had declined (from 27% to 20%), the proportion in full-time employment that was not coupled with education or training had increased (from 50% to 59%), and a similar proportion were engaged in other activities such as

[10] As data on academic results while in tertiary education are not available, it is not possible to directly assess whether difficulties in coping with the academic demands of university life are related to decisions to move to the VET sector.

part-time work/study, unemployment and outside the labour force (just over 20% at both time points) (Table 6, columns 1 & 2).

**Table 6 Main activities of the attrition sub-group, at the time of the first and second annual interviews after the semester of attrition (column per cent)**

| | First interview following semester of attrition | Second interview following semester of attrition |
|---|---|---|
| **Full-time education, training and employment activities** | | |
| Full-time study (non-apprenticeship TAFE) | 13 | 10 |
| Full-time employment plus study/training[a] | 14 | 10 |
| Full-time employment, no study/training | 50 | 59 |
| **Other activities** | | |
| Part-time employment and/or part-time study | 14 | 15 |
| Unemployment | 4 | 3 |
| Not in the labour force | 5 | 4 |
| (Total N)[b] | (325) | (172) |

Notes: a. Includes apprenticeships and traineeships.
b. Persons who had been out of higher education sufficiently long to participate in the interview.
Column percentages may not sum to 100 due to rounding.

The association between paid work while studying and being in full-time employment after leaving the higher education sector is shown in Table 7. As hours of paid work while studying were measured near the end of the year in which the student commenced their most recent course, the analysis was restricted to members of the attrition sub-group who left the higher education sector after this date.[11] Persons who were in paid work while at university were more likely than jobless students to be in full-time employment at the first interview following the semester of attrition. Higher hours of paid work while a student, however, were not associated with an increased likelihood of a transition to full-time employment after leaving higher education.

**Table 7 Main activity at the time of the first annual interview after the semester of attrition, by hours of paid work while at university (row per cent)**

| Hours of paid work while at university | N[a] | Full-time study (non-apprenticeship TAFE) | Full-time employment[b] | Other activity |
|---|---|---|---|---|
| 0 hours | 50 | 16 | 55 | 29 |
| 1-10 hours | 40 | 12 | 69 | 19 |
| 11+ hours | 84 | 7 | 70 | 22 |

Notes: a. Sample restricted to persons who had been out of higher education sufficiently long to participate in the interview.
b. Includes apprenticeships and traineeships
Row percentages may not sum to 100 due to rounding.

*Comparisons with other groups*

Table 8 compares the educational and labour market activities of the attrition sub-group with the activities of the 1995 Year 9 cohort members who completed senior secondary school but did not enter higher education, when both groups were approximately 20 years of age (late in 2001). Similar proportions of the two groups were in full-time education, training or employment activities at the time of the 2001 interview (76%), and similar proportions of the two groups were

[11] LSAY does not contain information on hours of paid work at the commencement of a course, but does have information on hours of paid work at the time of each annual interview (usually conducted between September and December of each calendar year).

engaged in other activities—part-time work/study, unemployment or not in the labour market (23–25%). Within these broad activity groupings, however, some differences were evident: the attrition sub-group was slightly more likely than the group who did not enter higher education to be in full-time non-apprenticeship TAFE, full-time employment that was not coupled with education/training, part-time employment/study, or outside the labour force. The attrition sub-group was less likely than the group who did not enter higher education to be in full-time employment that was coupled with education or training, or to be unemployed.

**Table 8 Main activities of the attrition sub-group and Year 12 graduates who did not enter higher education, 2001 (column per cent)**

| | Attrition sub-group | Year 12 graduates who did not enter higher education |
|---|---|---|
| **Full-time education, training and employment activities** | | |
| Full-time study (non-apprenticeship TAFE) | 8 | 5 |
| Full-time employment plus study/training[a] | 10 | 18 |
| Full-time employment, no study/training | 58 | 53 |
| **Other activities** | | |
| Part-time employment and/or part-time study | 15 | 14 |
| Unemployment | 3 | 7 |
| Not in the labour force | 5 | 4 |
| (Total N) | (369) | (2678) |

Notes: a. Includes apprenticeships and traineeships.
Column percentages may not sum to 100 due to rounding.

By the time of the 2001 interview, very few higher education entrants in the 1995 Year 9 cohort had sufficient time to graduate. Therefore, data from the Graduate Destination Survey (GDS) on the activities of bachelor degree graduates approximately four months after graduation was used to make rough comparisons with the activities of the LSAY attrition sub-group at the time of their first annual interview after attrition.[12] Compared to university graduates in the GDS, a lower proportion of the attrition sub-group was in full-time study and a higher proportion of the attrition sub-group was in full-time work. Roughly similar proportions of both university graduates and the attrition sub-group were in other activities—part-time employment/study, unemployment or not in the labour force (Table 6 and Table 9).

**Table 9 Main activities of bachelor degree graduates, Graduate Destination Survey 1999-2001 (column per cent)**

| | 1999 | 2000 | 2001 |
|---|---|---|---|
| **Full-time education, training and employment activities** | | | |
| Full-time study (includes higher education, TAFE) | 24 | 24 | 23 |
| Full-time employment | 53 | 55 | 56 |
| **Other activities** | | | |
| Part-time/casual employment | 14 | 12 | 13 |
| Unemployment (not working, seeking employment) | 6 | 5 | 5 |
| Not in the labour force (unavailable for full-time study or full-time employment) | 4 | 4 | 3 |
| Total | 100 | 100 | 100 |

Notes: Source: Adapted from Guthrie (2003, Table 2, Table2a).
Column percentages may not add exactly to 100 due to rounding.

[12] These comparisons should be treated with caution due to the different age structure of the two samples and the different activity classifications used in the two studies.

## Summary and discussion

*Incidence of course change, attrition and movement between sectors*

Among students who first commenced higher education in 1999 or 2000, 13 per cent changed courses within the higher education sector by late 2001, and 14 per cent left the higher education sector without completing a qualification and had not returned by late 2001. It must be emphasised, however, that attrition is not necessarily a permanent state, and some past students may return to the higher education sector at a future date.

Nearly one-half of the course changers moved to another higher education institution when they commenced their second course. This suggests that data on student flows within institutions—such as the Higher Education Students Collection and various institution-specific data collections—should not be used to draw conclusions about course change or attrition from the higher education sector as a whole.

Student flows between the higher education and VET sectors were relatively small. By age 20, 8 per cent of university entrants had also participated in VET: 3 per cent prior to first entering higher education and 5 per cent following attrition from the higher education sector. Previous research on student flows has also reported a net movement from higher education to VET (Golding, 1996; Walstab et al, 2001).

*A settling-in period in the transition to tertiary study*

Among higher education entrants who did not persist in their initial university course, most movement occurred within a year of enrolment (63% of the cases of course change and 48% of the cases of attrition). Very few students changed course on more than one occasion or experienced a course change followed by attrition. The timing of course change and attrition, coupled with the low incidence of multiple moves, suggests that much of the observed movement was part of a settling-in period in the transition to higher education, and that course change may be protective against attrition for some students.

Movement between sectors was related to academic achievement while at school, with persons whose tertiary study was confined to the higher education sector having higher ENTER scores, on average, than persons who moved from the higher education sector to VET. This raises the question of whether lower achievers should be encouraged to consider VET rather than higher education in the first instance. However, the answer is not straightforward. Just under one-quarter of persons moving from higher education to VET indicated that poor grades were a factor in their decision to discontinue their higher education course, but the majority did not cite academic difficulties. Furthermore, students moving to VET were much more likely to nominate interests, rather than difficulties meeting academic requirements, when giving reasons for leaving their higher education course. This supports the view that prospective students often feel pressured to apply for entry into the 'highest' course that their ENTER score will allow, rather than following their interests.

There was a large amount of movement between broad fields of education among students moving between courses or sectors: 61 per cent of students moving from VET to higher education, 69 per cent of course changers within the higher education sector and 77 per cent of students moving from higher education to VET moved to courses in different broad fields of education. The higher propensity of students to change to a new field of education when moving from the higher education sector than when moving to the higher education sector has also been noted by Golding (1996). The amount of movement between fields of education and the conclusion that much course change and attrition is part of a settling-in period suggests the need for students to have better access to course and career information prior to entry to tertiary study,

or possibly the need for generalist first year courses. This issue will be revisited after examining the factors associated with course change and attrition in the following two chapters.

*Destinations of the attrition sub-group*

Finally, an examination of the educational and labour market destinations of the higher education attrition sub-group suggests that many are faring well. Attrition from higher education did not signify the end of education and training for the one-third of the attrition sub-group who had moved to the VET sector by age 20. The majority of the attrition sub-group moved into full-time education, training or employment activities (76% of the attrition sub-group were in such activities at age 20). Furthermore, in the short-term the attrition sub-group did not appear to face disadvantage in gaining access to such activities relative to Year 12 graduates who did not enter higher education, or recent higher education graduates.[13] Nevertheless, a significant proportion of the attrition sub-group were engaged in main activities such as part-time work/study, unemployment or being outside the labour force and not studying (23% of the attrition sub-group were in such activities at age 20). Further research is required in order to ascertain the longer-term consequences of attrition from higher education, including both destinations and a range of other consequences such as psychological impacts and attitudes towards education and lifelong learning.

[13] However, there are some between-group differences when this broad activity grouping is broken down into smaller categories of activity.

# 4. FACTORS ASSOCIATED WITH COURSE CHANGE

This chapter identifies a range of factors associated with course change among recent school leavers within the higher education sector. In the first section, the characteristics of students who change courses are examined. This is followed, in the second section, by an examination of the reasons that students give for changing courses. The chapter ends with a brief summary.

## Characteristics of course changers

In the analyses presented in this section, the characteristics of students who change courses and persist in a subsequent course are compared to students who persist in their original course of study.[14] The characteristics examined include sociodemographic factors (gender, language background, home location, parents' occupation, parents' education, school sector), achievement and aspirations while in secondary school (ENTER scores, self-assessed academic ability, student's educational aspirations, parents' educational aspirations for their child), the higher education experience during the first course (whether course was first preference, deferred entry, mode of enrolment, field of education), and paid work and student finances (whether in paid work, hours of paid work, receipt of Youth Allowance). Characteristics that were statistically significant at either the bivariate or multivariate level are presented in Table 10, and the multivariate results are presented in Table 11.

### *Sociodemographic factors*

Parental education was related to course change among young people who persisted in the higher education sector. Young people whose parents had a degree or diploma were more likely than other young people to change course. For example, 16 per cent of students with university-educated parents changed courses, compared to 10 per cent of students whose parents did not complete secondary school (Table 10). This relationship remained statistically significant after controlling for the other sociodemographic, educational and labour market variables included in the multivariate model (Table 11).

School sector was also related to course change among young people who persisted in the higher education sector. Students from independent schools were more likely than students from Catholic and government schools to change courses (17%, 13% and 12%, respectively) (Table 10). This relationship remained statistically significant after controlling for the other sociodemographic, educational and labour market variables included in the multivariate model (Table 11).

As preliminary analyses showed that gender, parental occupation, language background and home location were not statistically significant at the bivariate or multivariate level, these variables were not included in the final model reported in Table 11.

### *Achievement and aspirations while in secondary school*

Achievement while at secondary school, measured by ENTER scores, was related to course change among young people who persisted in the higher education sector, but the relationship was not linear. Students with ENTER scores between 80 and 89 had a higher rate of course change than both higher achievers (students with ENTER scores of 90 and over) and lower achievers (students with ENTER scores less than 80) (18%, 13%, less than 14%, respectively) (Table 10). This relationship remained statistically significant, after controlling for the other

[14] The attrition sub-group has been excluded from the analyses so as to facilitate interpretation of the results. The majority of the attrition sub-group had not experienced a course change and if they had been retained in the analysis, the contrast would have been between course changers and a group that included all students who persisted in their original course and the majority of the attrition sub-group.

sociodemographic, educational and labour market variables included in the multivariate model (Table 11).

**Table 10 Course change status, by sociodemographic, educational and labour market group (weighted n=2223)**

| | N | Row per cent | |
|---|---|---|---|
| | | No course change | Course change |
| Total (All persons who commenced higher education in 1999/2000 and were still in higher education in 2001) | 2223 | 86 | 14 |
| **Parents' education** | | | |
| Degree or diploma | 938 | 84 | 16 |
| Trade or technical qualification | 297 | 88 | 12 |
| Completed secondary school | 340 | 87 | 13 |
| Did not complete secondary school | 298 | 90 | 10 |
| Don't know | 350 | 89 | 11 |
| **School sector** | | | |
| Independent | 473 | 83 | 17 |
| Catholic | 591 | 87 | 13 |
| Government | 1158 | 88 | 12 |
| **School achievement (ENTER score)** | | | |
| 90-99 | 604 | 87 | 13 |
| 80-89 | 579 | 82 | 18 |
| 70-79 | 444 | 86 | 14 |
| <70 | 392 | 90 | 10 |
| Missing | 204 | 92 | 8 |
| **First course was first preference** | | | |
| Yes | 1531 | 88 | 12 |
| No | 690 | 82 | 18 |
| **Commenced in semester following Year 12** | | | |
| Yes | 2011 | 86 | 14 |
| No | 210 | 92 | 8 |
| **Mode of enrolment (first course)** | | | |
| Full-time | 2082 | 86 | 14 |
| Part-time | 141 | 95 | 5 |
| **Field of education (first course)** | | | |
| Education | 178 | 94 | 6 |
| Agriculture, Environmental and Related Studies | 33 | 92 | 8 |
| Health (excluding Dentistry, Medicine, Veterinary Science) | 264 | 91 | 9 |
| Management & Commerce | 405 | 90 | 10 |
| Information Technology | 122 | 89 | 11 |
| Creative Arts | 167 | 89 | 11 |
| Engineering and Related Technologies | 159 | 87 | 13 |
| Architecture & Building | 45 | 86 | 14 |
| Society and Culture (excluding Law) | 445 | 83 | 17 |
| Medicine, Dentistry, Veterinary Science, Law | 101 | 83 | 17 |
| Natural & Physical Sciences | 256 | 78 | 22 |
| Other | 48 | 68 | 32 |
| **In paid work**[#] | | | |
| Yes | 1170 | 85 | 15 |
| No | 1051 | 88 | 12 |

Notes: Analysis restricted to persons who first commenced higher education in 1999/2000 and remained in the higher education sector in 2001. N's sum differently due to varying student response. Row percentages may not sum to 100 due to rounding.

# The bivariate relationship is not statistically significant.

**Table 11 Influences on course change - main model**

| | Unstandardised logistic regression coefficient |
|---|---|
| Intercept | 4.43 *** |
| Parents' education (relative to no higher education) | |
| Degree or diploma | 0.34 * |
| School sector (relative to government and Catholic sectors) | |
| Independent | 0.31 * |
| School achievement (ENTER score) (relative to 90-99) | |
| 80-89 | 0.45 ** |
| 70-79 | 0.25 |
| < 70 | -0.13 |
| Missing | -0.39 |
| First course was first preference (relative to not first pref.) | |
| First preference | -0.54 *** |
| Timing of entry (relative to deferred entry) | |
| Direct entry (commenced in semester following Year 12) | 0.59 * |
| Mode of enrolment in first course (relative to part-time) | |
| Full-time | 1.07 ** |
| Field of education in first course (relative to Education) | |
| Agriculture, Environmental and Related Studies | 0.26 |
| Health (excluding Dentistry, Medicine, Veterinary Science) | 0.37 |
| Management & Commerce | 0.54 |
| Information Technology | 0.61 |
| Creative Arts | 0.66 |
| Engineering and Related Technologies | 0.80 * |
| Architecture & Building | 0.89 |
| Society and Culture (excluding Law) | 1.06 ** |
| Medicine, Dentistry, Veterinary Science, Law | 1.14 ** |
| Natural & Physical Sciences | 1.38 *** |
| Other | 2.02 *** |
| In paid work (relative to not in paid work) | |
| In paid work | 0.30 * |

Notes: Analysis restricted to persons who first commenced higher education in 1999/2000 and remained in the higher education sector in 2001.

* p<0.05, ** p<0.01, *** p<0.001

As preliminary analyses showed that self-assessed academic ability, aspirations for university education, and parental aspirations for their children to participate in post-secondary education did not have a statistically significant association with course change at either the bivariate or multivariate level, these variables were not included in the final model reported in Table 11.

*The university experience*

Course preferences, deferred entry, mode of enrolment and field of education were associated with course change among young people who persisted in the higher education sector (Table 10).

- Students who enrolled in their course of first preference were less likely to change course than other young people who persisted in the higher education sector (12% and 18%, respectively).
- Students who commenced higher education immediately after the completion of secondary school were more likely to change courses than students who deferred their entry to higher education for one or more semesters (14% and 8%, respectively).
- Full-time students were more likely than part-time students to change courses (14% and 5%, respectively).

- Field of education was related to course change. The highest levels of course change were displayed by students who initially enrolled in fields such as natural and physical sciences (22%), medicine, dentistry, veterinary science and law (17%), society and culture (17%), and engineering and related technologies (13%). In contrast, students in the field of education displayed the lowest level of course change (6%).

The association between each of these factors and course change remained statistically significant, after controlling for the other sociodemographic, educational and labour market variables included in the multivariate model (Table 11).

*Paid work and student finances*

The bivariate association between course change and whether or not a student was in paid work at the commencement of their initial course did not reach statistical significance (Table 10). However, after controlling for the sociodemographic and educational variables in the multivariate model, engagement in paid work displayed a statistically significant relationship with course change. Students who were in paid work at the commencement of their initial course were slightly more likely than other students to undergo a course change, other things being equal (Table 11).

In order to assess whether higher hours of paid work were associated with an increased likelihood of course change among young people who persisted in the higher education sector, it was necessary to conduct a supplementary analysis. Hours of paid work were measured near the end of the year in which the student first commenced higher education, and the dependent variable was whether or not a student changed course *after* this date.[15] Students who changed course before this date were excluded from analysis. The bivariate results are presented in Table 12 and the multivariate results are presented in Table 13. Hours of paid work were not related to course change at the bivariate level, but did display a statistically significant association with course change after controlling for the effects of a range of sociodemographic and educational factors. Compared to students not in paid employment, persons working over 15 hours per week were significantly more likely to change course after the end of the calendar year in which they first enrolled, other things being equal.

**Table 12 Course change, by hours of paid work – supplementary sample (n=2024)**

| Hours of paid work | N | Row per cent | |
|---|---|---|---|
| | | No course change | Course change |
| 0 hours | 802 | 95 | 5 |
| 1-5 hours | 158 | 95 | 5 |
| 6-10 hours | 385 | 94 | 6 |
| 11-15 hours | 319 | 93 | 7 |
| 16-20 hours | 191 | 90 | 10 |
| 21+ hours | 168 | 93 | 7 |

Notes: Analysis restricted to persons who did not change course before the end of the calendar year in which they first commenced higher education, and who remained in the higher education sector in 2001. Row percentages may not sum to 100 due to rounding.

[15] LSAY does not contain information on hours of paid work at the commencement of a course, but does have information on hours of paid work at the time of each annual interview (usually conducted between September and December of each calendar year).

**Table 13 Influence of hours of paid work on course change – supplementary sample**

| | Unstandardised logistic regression coefficient |
|---|---|
| Intercept | -4.85 *** |
| Hours of paid work (relative to 0 hours) | |
| 1-5 hours | -0.08 |
| 6-10 hours | 0.11 |
| 11-15 hours | 0.32 |
| 16-20 hours | 0.72 * |
| 21+ hours | 0.64 |

Notes: Analysis restricted to persons who did not change course before the end of the calendar year in which they first commenced higher education, and who remained in the higher education sector in 2001. The analysis controlled for the effects of parents' education, school sector, school achievement (ENTER score), course preference, timing of entry, mode of enrolment and field of education.

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

The supplementary sample was also used to test whether receipt of Youth Allowance was related to course change. Both the bivariate and multivariate results suggested that Youth Allowance was unrelated to course change occurring after the end of the calendar year in which a student commenced higher education. It was not possible to test the effects of Youth Allowance on course change occurring before the end of the first calendar year.

**Reasons given by course changers for discontinuing first course**

Another way of examining influences on student flows is to ask course changers why they left their first course. These subjective explanations have the potential to provide a greater understanding of the influences on student flows. In particular, students' reasons can help in the assessment of whether course change represents a positive or a negative outcome.

All university entrants who were no longer in their first course of study were asked whether they had completed, withdrawn from, or deferred their studies, or changed to another course. In response to this question, 65 per cent of the students who had started a second course before completing their first stated that they had changed to another course (*transfer sub-group* [16]); while 35 per cent indicated that they had withdrawn or deferred from their first course and then later in the interview stated that they had commenced a second course (*withdrawal/deferral sub-group*). These two sub-groups of course changers received different sets of questions aimed at eliciting reasons for leaving their first course. The questions were designed to cover a range of issues including interests and course preferences, study load, academic results, career and work issues, finances, and health and personal factors. The transfer sub-group were presented with a set of nine reasons why people might change from one course to another. They were asked to indicate whether each reason was a factor in their decision to change courses, and were then asked to indicate the main reason why they changed course. They were permitted to specify a reason other than those listed. A summary of their responses is provided in Table 14 (columns 1 and 3). Similarly, the withdrawal/deferral sub-group were presented with a list of eleven reasons why people might defer or withdraw from a course of study. A summary of their responses is provided in Table 14 (columns 2 and 4).

*Interests and course preferences:* The most common set of reasons given for leaving a course related to interests and course preference considerations. They were nominated as a main reason by 67 per cent of the transfer sub-group, and 60 per cent of withdrawal/deferral sub-group. Initial aspirations played a role. For example, 79 per cent of the transfer sub-group indicated that a consideration in their decision to change courses was that they really would have preferred to do the second course; and 15 per cent of the withdrawal/deferral group indicated that a consideration

[16] 'Transfer' in this context refers to students who explicitly stated that they had changed from one course to another. It does not imply credit transfer.

in their decision was that they had never intended to complete the first course. Changing interests as a result of being in a course also played a role. For example, over three quarters of both sub-groups stated that one of the factors influencing their decision was that the first course turned out to be not what they wanted.

**Table 14 Reason stopped first higher education course, by method of course change (course changers) (weighted)**

| | **Columns 1-2** A consideration (per cent agreeing with statement) | | **Columns 3-4** Main reason (column per cent) | |
|---|---|---|---|---|
| | Transfer sub-group (n=222) | Withdraw/ defer sub-group (n=119) | Transfer sub-group (n=222) | Withdraw/ defer sub-group (n=119) |
| **Interests and course preferences** | | | | |
| You didn't like the first course | 62 | - | 24 | - |
| The (first) course turned out to be not what you wanted | 76 | 77 | 20 | 40 |
| You would really have preferred to do the 2nd course | 79 | - | 19 | - |
| You just lost interest, you never really wanted to study | - | 57 | - | 16 |
| The first course was a pre-requisite for the second | 4 | - | 4 | - |
| You never really intended to complete the course | - | 15 | - | 4 |
| Sub-total | | | 67 | 60 |
| **Career and work** | | | | |
| There were better career prospects from the 2nd course | 65 | - | 22 | - |
| It wouldn't have led to a good job or career | - | 26 | - | 6 |
| Had problems juggling study & work commitments | - | 19 | - | 3 |
| Wanted to get a job, apprenticeship or traineeship | - | 16 | - | 2 |
| Sub-total | | | 22 | 11 |
| **Study load and results** | | | | |
| You had been getting poor results | 16 | 20 | 1 | 5 |
| The study load was too heavy | 10 | 20 | 2 | 4 |
| Sub-total | | | 3 | 9 |
| **Financial** | | | | |
| Course costs were too high in the first course | 2 | - | <1 | - |
| Financially you couldn't afford to continue | - | 13 | - | 6 |
| Sub-total | | | <1 | 6 |
| **Other** | | | | |
| Because of health or personal reasons | 24 | 13 | 5 | 6 |
| Because of problems with access or transport | - | 10 | - | 1 |
| Other | - | - | 4 | 6 |
| Sub-total | | | 9 | 13 |

- Not asked

*Career and work:* The next most common group of reasons related to career and work issues. These reasons were more commonly given by the transfer sub-group. Among the transfer sub-group, 22 per cent said the pull factor of better career prospects associated with the second course was their main reason for changing. Among the withdrawal/deferral sub-group, 6 per cent indicated that the main reason for leaving their first course was that it would not have led to a good job or career, while 5 per cent indicated more immediate work-related issues such as problems juggling study and work commitments, or wanting to get a job, apprenticeship or traineeship.

*Study load and results:* Difficulties in meeting course requirements were more likely to be an issue for the withdrawal/deferral sub-group than for the transfer sub-group. Nine per cent of the withdrawal/deferral sub-group, compared to only 3 per cent of the transfer sub-group, indicated

that their study load being too heavy or poor results was the main reason for leaving their first course. This difference is also reflected in the proportions of each sub-group agreeing that these issues were one of the considerations in their decision-making.

*Financial:* Overall, relatively few course changers nominated finances as a main reason. Financial issues were more likely to be an issue for the withdrawal/deferral sub-group than for the transfer sub-group. In addition to the immediate paid work concerns noted above, 6 per cent of the withdrawal/deferral sub-group stated that their main reason for leaving their first course was that financially they could not afford to continue. In contrast, less than 1 per cent of the transfer sub-group nominated high course costs in the first course as their main reason for changing.

*Health and personal reasons:* Roughly similar proportions of the two course change sub-groups nominated health and personal factors as their main reason (5–6%). Interestingly, however, 24 per cent of the transfer sub-group, compared to only 13 per cent of the withdrawal/deferral subgroup, stated that health and personal factors had played a role in their decision-making process.

**Summary**

Very little past research has attempted to identify factors associated with course change in higher education. This chapter identified a number of characteristics of course changers, and described the reasons given by students for course change.

The findings presented in the first section of this chapter suggest that a number of student background, educational and labour market characteristics are related to course change among young people who persist in higher education. Groups that display relatively high levels of course change include students whose parents have a university degree or diploma, students from independent schools, students with moderately high ENTER scores, students whose initial course was not their first preference, students who commenced higher education immediately after completing Year 12, full-time students, students in fields of education such as the natural and physical sciences, medicine/dentistry/veterinary science/law, society and culture, and engineering and related technologies, and students who spent over 15 hours per week in paid work.

The reasons that students give for course change can add to our understanding of student flows. The results presented in the second section of this chapter suggest that interests play a major role. Initial interests (indicated by statements such as ‘really would have preferred to do the second course’ or ‘never really intended to complete the initial course’) were a factor, consistent with the finding from the multivariate analysis that students whose initial course was not their first preference were more likely to undergo a course change. Changing interests were also important (indicated by statements such as ‘the first course turned out to be not what you wanted’). This is consistent with the suggestion in Chapter 3 that many instances of course change can be viewed as part of a settling-in process in the transition to higher education, and that there is a need for students to have better access to course and career information prior to entry to tertiary study, or possibly the need for generalist first year courses. Other research has shown that many persons applying for university places have relatively low levels of knowledge of the characteristics of their preferred courses and universities (James, Baldwin & McInnis, 1999).

Very few course changers cited academic difficulties as the main reason for course change, although a (non-linear) relationship between school achievement and course change was noted in the first section of the chapter. Similarly, difficulties in juggling study and work were not commonly cited by students as the main reason for course change, although the earlier multivariate analysis suggested that longer hours of paid work were associated with course change. Finally, financial reasons were not a large factor in the decision to change courses. This is consistent with the multivariate analysis, which suggested that receipt of Youth Allowance is not related to course change.

# 5. FACTORS ASSOCIATED WITH ATTRITION

This chapter identifies a range of factors associated with attrition from the higher education sector among recent school leavers. In the first section, the characteristics of students who leave higher education before completing a course are examined. This is followed, in the second section, by an examination of the reasons given by past higher education students for discontinuing their most recent course. The chapter ends with a brief summary.

## Characteristics of the attrition sub-group

The analyses presented in this section are based upon all members of the 1995 Year 9 cohort who commenced higher education in 1999 or 2000. The characteristics of the attrition sub-group are compared to the characteristics of students who were still studying late in 2001. The characteristics examined include sociodemographic factors (gender, language background, home location, parents' occupation, parents' education, school sector), achievement and aspirations while in secondary school (ENTER scores, self-assessed academic ability, student's educational aspirations, parents' educational aspirations for their child), the higher education experience (whether course was first preference, deferred entry, mode of enrolment in most recent course, field of education in most recent course), and paid work and student finances (whether in paid work, hours of paid work, receipt of Youth Allowance). Characteristics that were statistically significant at either the bivariate or multivariate level are presented in Table 15 and the multivariate results are presented in Table 16).

### *Sociodemographic factors*

Students with language backgrounds other than English had a lower attrition rate than students from English-speaking backgrounds (7% and 16%, respectively) (Table 15). This relationship remained statistically significant, after controlling for the other socio-demographic, educational and labour market variables included in the multivariate model (Table 16).

Home location was also related to attrition at both the bivariate and multivariate level (Table 15 and Table 16). Students from small provincial cities were less likely than students from mainland state capital cities to leave the higher education sector before completing a qualification. The attrition rates of students from remote areas were not significantly different from the attrition rates of students from mainland state capital cities, although this finding should be treated with caution due to the small number of remote students in the sample.

Students whose parents had not completed high school were more likely than students whose parents had a degree or a diploma to leave the higher education sector before completing a qualification (19% and 12%, respectively) (Table 15). This relationship remained statistically significant after controlling for the other socio-demographic, educational and labour market variables included in the multivariate model (Table 16). However, another aspect of family socioeconomic background—parental occupation—was not associated with attrition at either the bivariate level or multivariate level.

School sector displayed a statistically significant bivariate association with attrition. Sixteen per cent of higher education students who had attended a government school left the higher education sector before completing a qualification, compared to 11 per cent of students who had attended a Catholic school and 14 per cent of students who had attended an independent school (Table 15). However, school sector did not have a significant influence on attrition, after controlling for a range of other socio-demographic, educational and labour market factors (Table 16).

**Table 15 Attrition from the higher education sector, by sociodemographic, educational and labour market group (weighted n=2593)**

| | N | Row per cent | |
|---|---|---|---|
| | | Persisted | Attrition |
| Total (All persons who commenced higher education in 1999/2000) | 2593 | 86 | 14 |
| **Language background** | | | |
| English | 2143 | 84 | 16 |
| Other | 385 | 93 | 7 |
| **Home location** | | | |
| Mainland state capital | 1588 | 86 | 14 |
| Major urban region | 239 | 85 | 15 |
| Large provincial city | 156 | 77 | 23 |
| Small provincial city | 101 | 93 | 7 |
| Other provincial area | 452 | 87 | 13 |
| Remote area | 57 | 87 | 13 |
| **Parents' education** | | | |
| Degree or diploma | 1063 | 88 | 12 |
| Trade or technical qualification | 360 | 83 | 17 |
| Completed secondary school | 394 | 86 | 14 |
| Did not complete secondary school | 367 | 81 | 19 |
| Don't know | 408 | 86 | 14 |
| **School sector** | | | |
| Independent | 550 | 86 | 14 |
| Catholic | 668 | 89 | 11 |
| Government | 1375 | 84 | 16 |
| **Educational aspirations** | | | |
| University | 2107 | 87 | 13 |
| Other | 486 | 81 | 19 |
| **Self assessed academic ability** | | | |
| Very high | 626 | 89 | 11 |
| Above average | 1183 | 86 | 14 |
| Average or lower | 710 | 82 | 18 |
| **School achievement (ENTER score)** | | | |
| <70 | 507 | 77 | 23 |
| 70-79 | 535 | 83 | 17 |
| 80-89 | 648 | 89 | 11 |
| 90-99 | 638 | 95 | 5 |
| Missing | 264 | 77 | 23 |
| **Commenced in semester following Yr 12** | | | |
| Yes | 2332 | 86 | 14 |
| No | 259 | 81 | 19 |
| **Field of education (most recent course)** | | | |
| Medicine, Dentistry, Veterinary Science, Law | 108 | 93 | 7 |
| Health (excluding Dentistry, Medicine, Veterinary Science) | 299 | 91 | 9 |
| Engineering and Related Technologies | 165 | 89 | 11 |
| Natural & Physical Sciences | 270 | 87 | 13 |
| Management & Commerce | 503 | 86 | 14 |
| Education | 228 | 84 | 16 |
| Information Technology | 144 | 85 | 15 |
| Society and Culture (excluding Law) | 518 | 83 | 17 |
| Creative Arts | 204 | 83 | 17 |
| Agriculture, Environmental and Related Studies | 40 | 83 | 17 |
| Architecture & Building | 59 | 77 | 23 |
| Other | 54 | 80 | 20 |
| **In paid work** | | | |
| Yes | 1403 | 83 | 17 |
| No | 1187 | 89 | 11 |

Notes: Ns sum differently due to varying student response. Row percentages may not sum to 100 due to rounding.

**Table 16 Influences on attrition – main model**

| | Unstandardised logistic regression coefficient |
|---|---|
| Intercept | -3.10 *** |
| Language background (relative to English-speaking background) | |
| Language background other than English | -1.07 *** |
| Home location (relative to mainland state capital) | |
| Major urban region | -0.20 |
| Large provincial city | 0.23 |
| Small provincial city | -1.30 ** |
| Other provincial area | -0.34 |
| Remote area | -0.34 |
| Parents' education (relative to degree or diploma) | |
| Trade or technical qualification | 0.31 |
| Completed secondary school | -0.01 |
| Did not complete secondary school | 0.42 * |
| Don't know | 0.07 |
| School sector (relative to government sector) | |
| Catholic | -0.30 |
| Independent | -0.00 |
| Educational aspirations (relative to not attend university) | |
| Attend university | -0.20 |
| Self-assessed academic ability (relative to very high) | |
| Above average | 0.09 |
| Average or lower | 0.19 |
| School achievement (ENTER score) (relative to 90-99) | |
| 80-89 | 0.64 ** |
| 70-79 | 1.11 *** |
| < 70 | 1.47 *** |
| Missing | 1.57 *** |
| Timing of entry (relative to deferred entry) | |
| Direct entry (commenced in semester following Year 12) | -0.17 |
| Field of education in most recent course (relative to health) | |
| Medicine, Dentistry, Veterinary Science, Law | 0.22 |
| Education | 0.38 |
| Management & Commerce | 0.52 * |
| Natural & Physical Sciences | 0.62 * |
| Agriculture, Environmental and Related Studies | 0.66 |
| Creative Arts | 0.67 * |
| Engineering and Related Technologies | 0.71 * |
| Society and Culture (excluding Law) | 0.72 ** |
| Information Technology | 0.73 * |
| Architecture & Building | 1.56 *** |
| Other | 0.90 * |
| In paid work (relative to not in paid work) | |
| In paid work | 0.27 * |

Notes: * p<0.05, ** p<0.01, *** p<0.001

As preliminary analyses showed that gender was not associated with attrition among higher education entrants from the 1995 Year 9 cohort at the bivariate or multivariate level, this variable was not included in the final model reported in Table 16.

*Achievement and aspirations while in secondary school*

Higher education entrants who had indicated that they aspired to university studies when in secondary school had lower rates of attrition than entrants who had not aspired to university

studies (13% and 19%, respectively) (Table 15). Similarly, students with very high levels of self-assessed academic ability while at school displayed lower attrition rates than students with above average and average/lower levels of self-assessed ability (11%, 14% and 18%, respectively) (Table 15). However, neither educational aspirations nor self-assessed academic ability exerted a net effect on attrition, after controlling for academic achievement when at school (Table 16).

Academic achievement while at school—measured by ENTER scores—was negatively related to attrition; higher achievers were less likely than lower achievers to leave the higher education sector before completing a qualification. For example, only 5 per cent of higher education entrants with ENTER scores of 90 or above were in the attrition sub-group, compared to 23 per cent of higher education entrants with ENTER scores less than 70 (Table 15). This relationship remained statistically significant after controlling for a range of other socio-demographic, educational and labour market variables (Table 16).

*The university experience*

Field of education was associated with attrition. Examples of fields with low attrition rates include medicine/dentistry/veterinary science/law (7%) and health (9%). Fields with high attrition rates include architecture and building (23%), creative arts (17%), and society and culture (17%). Field of education remained statistically significant after controlling for the sociodemographic and academic mix of students in the various fields (Table 16).[17]

Students who commenced higher education immediately after leaving secondary school had a lower attrition rate than students who delayed entry to higher education for one or more semesters (14% and 19%, respectively) (Table 15). However, the effect of delayed entry did not remain statistically significant after controlling for the other socio-demographic, educational and labour market variables included in the multivariate model (Table 16).

Other variables that did not have a statistically significant association with attrition at either the bivariate or multivariate level include whether the course was the student's first preference and whether enrolment was mainly full-time or part-time.

*Paid work and student finances*

Engagement in paid work was associated with attrition. Students who were employed at the commencement of their course had a higher rate of attrition than students who were not in paid work at that time (17% and 11%, respectively) (Table 15). This relationship was also significant in the multivariate model (Table 16).

In order to assess whether higher hours of paid work are associated with an increased likelihood of attrition, it was necessary to conduct a supplementary analysis. Hours of paid work was measured near the end of the year in which the student commenced their most recent course, and the dependent variable was whether or not the student discontinued their course and left the higher education sector *after* this date.[18] Students who left higher education before this date were excluded from analysis. The bivariate results are presented in Table 17. Consistent with the results relating to the full sample, students not in paid work displayed the lowest attrition rate (6%). Longer hours of paid work were associated with increasing levels of attrition, with students working over 20 hours per week demonstrating the highest attrition rate (17%). This relationship remained statistically significant after controlling for the effects of a range of sociodemographic

[17] The field of education results reported in Table 16 relate to the student's most recent course. Similar results are obtained when the field of education of the student's initial course is analysed.

[18] LSAY does not contain information on hours of paid work at the commencement of a course, but does have information on hours of paid work at the time of each annual interview (usually conducted between September and December of each calendar year).

and educational factors. Compared to students not in paid employment, persons working between 11 and 15 hours per week were significantly more likely to discontinue their studies after the end of the calendar year in which they commenced their most recent course. Persons working over 20 hours per week were even more likely to discontinue their studies (Table 18).[19]

**Table 17 Attrition, by hours of paid work – supplementary sample (n=2418)**

| Hours of paid work | N | Row per cent | |
|---|---|---|---|
| | | Persisted in most recent course | Attrition from higher education |
| 0 | 904 | 94 | 6 |
| 1-5 | 185 | 93 | 7 |
| 6-10 | 464 | 91 | 9 |
| 11-15 | 385 | 90 | 10 |
| 16-20 | 232 | 90 | 10 |
| 21+ | 248 | 83 | 17 |

Notes: Analysis restricted to persons who had not left the higher education sector before the end of the calendar year in which they first commenced. Row percentages may not sum to 100 due to rounding.

**Table 18 Influence of hours of paid work on attrition – supplementary sample**

| | Unstandardised logistic regression coefficient |
|---|---|
| Intercept | -3.88 *** |
| Hours of paid work (relative to 0 hours) | |
| 1-5 hours | 0.22 |
| 6-10 hours | 0.33 |
| 11-15 hours | 0.58 * |
| 16-20 hours | 0.44 |
| 21+ hours | 1.04 *** |

Notes: Analysis restricted to persons who had not left the higher education sector before the end of the calendar year in which they first commenced. The analysis controlled for the effects of language background, home location, parents' education, school sector, self-assessed academic ability, educational aspirations, school achievement (ENTER score), timing of entry, field of education and receipt of Youth Allowance.

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

The supplementary sample was also used to test whether receipt of Youth Allowance was related to attrition. Both the bivariate and multivariate results suggested that Youth Allowance was unrelated to attrition occurring after the end of the calendar year in which a student commenced higher education. It was not possible to test the effects of Youth Allowance on attrition occurring before the end of the first calendar year.

### Reasons given by the attrition sub-group for discontinuing most recent course

Another way of examining factors associated with attrition is to ask past students why they discontinued their most recent course. These subjective explanations have the potential to provide a greater understanding of the influences on student flows. In particular, students' reasons can help in the assessment of whether attrition represents a positive or a negative outcome.

All students in the 1995 Year 9 cohort who left the higher education sector before completing a qualification were presented with a list of 11 reasons why people might defer or withdraw from a course of study. They were asked to indicate whether each reason was a factor in their decision to

[19] Caution should be exercised when interpreting these results. The data do not permit an assessment of whether long hours of paid work led to attrition, or whether students already intending to leave university increased their hours of paid work prior to leaving.

discontinue their study, and were then asked to indicate their main reason. They were permitted to specify a reason other than those listed. A summary of their responses is provided in Table 19. Thirty-seven per cent of the attrition sub-group indicated that the main reason for discontinuing their most recent course related to interests and course preferences, and 34 per cent nominated a main reason that was related to career, work and finances. Five per cent indicated that academic difficulties were the main reason for discontinuing their most recent course.

The reasons given by the attrition sub-group for discontinuing their most recent course can be contrasted with the reasons that course changers gave for discontinuing their first course. The attrition sub-group was more likely than course changers to nominate the following reasons: wanted to get a job or apprenticeship, problems juggling work and study, and financial problems. Course changers, on the other hand, were more likely than the attrition sub-group to indicate that their first course turned out to be not what they wanted, or that they never really intended to complete their first course (Table 14 and Table 19).

**Table 19 Reason deferred/withdrew from most recent higher education course (students who left the higher education sector without completing a qualification) (weighted n=355)**

| | **Column 1** A consideration (per cent agreeing with statement) | **Column 2** Main reason (column per cent) |
|---|---|---|
| **Interests and course preferences** | | |
| The (first) course turned out to be not what you wanted | 55 | 21 |
| You just lost interest, you never really wanted to study | 44 | 16 |
| You never really intended to complete the course | 5 | <1 |
| Sub-total | | 37 |
| **Career, work and finances** | | |
| You wanted to get a job, apprenticeship or traineeship | 41 | 19 |
| You had problems juggling study and work commitments | 28 | 4 |
| Financially you couldn't afford to continue | 26 | 10 |
| It wouldn't have led to a good job or career | 21 | 1 |
| Sub-total | | 34 |
| **Study load and results** | | |
| You had been getting poor results | 22 | 3 |
| The study load was too heavy | 14 | 2 |
| Sub-total | | 5 |
| **Other** | | |
| Because of health or personal reasons | 23 | 14 |
| Because of problems with access or transport | 8 | 2 |
| Other | - | 9 |
| Sub-total | | 25 |

## Summary

This chapter identified a number of characteristics of young people who leave the higher education sector before completing a qualification, and described the reasons given by past students for attrition from the higher education sector.

The findings presented in the first section of this chapter suggest that a number of student background, educational and labour market characteristics are related to attrition among young people. Groups that display relatively low levels of attrition include students from language backgrounds other than English, students from small provincial cities, students whose parents had

a degree or diploma, students with high ENTER scores, students in fields of education such as health and law, and students who spend 10 hours or less per week in paid work.

The reasons that past students give for attrition from the higher education sector can add to our understanding of student flows. The results presented in the second section of this chapter suggest that interests play a major role. For example, just over one-fifth of the attrition sub-group indicated that their main reason for discontinuing their most recent course was that it turned out to be not what they wanted, while just under one-fifth of the attrition sub-group indicated that their main reason was that they wanted to get a job, apprenticeship or traineeship.

Very few students in the attrition sub-group cited academic difficulties as the main reason for attrition, although a negative relationship between school achievement and attrition was noted in the first section of the chapter. Similarly, students did not commonly cite difficulty juggling study and work as the main reason for attrition, although the multivariate analysis suggested that longer hours of paid work were associated with attrition. Finally, while the multivariate analysis suggested that receipt of Youth Allowance was not related to attrition, 10 per cent of students in the attrition sub-group indicated that their main reason for attrition was that financially they could not afford to continue.

# 6. CONCLUSION

The purpose of this report was to examine course change and attrition among young people who entered the higher education sector soon after completing senior secondary school. In the past, national-level estimates of the incidence of course change have not been available for the higher education sector and very little research has focused on the identification of factors associated with course change. Research on attrition is more common. However, estimates of the incidence of attrition have typically been based upon attrition from specific institutions rather than from the higher education sector as a whole, past research identifying factors associated with attrition has yielded discrepant findings, and the destinations of young people who leave the higher education sector before completing a qualification have not been examined.

The current report used data from the Longitudinal Surveys of Australian Youth to provide a description of the incidence and nature of higher education course change and attrition, to identify factors associated with course change and attrition, and to examine the destinations of the attrition sub-group. The findings were based upon young people who had been in Year 9 in 1995, and who commenced higher education in 1999 or 2000. Their education, training and labour market activities were tracked until late in 2001, when they were approximately 20 years of age.

**Incidence and nature of course change, attrition and movement between sectors**

Among young people who first commenced higher education in 1999 or 2000, 13 per cent had changed courses within the higher education sector by 2001, and 14 per cent left the higher education sector without completing a qualification and had not returned by late in 2001. While student flows between the higher education and VET sectors were relatively small, one-third of the attrition sub-group had moved to the VET sector by late in 2001.

Among students who did not persist in their initial university course, most discontinued that course within a year of enrolment (just under two-thirds of the cases of course change and just under one-half of the cases of attrition). Most course changers started their second university course within a semester of stopping their first course, and multiple moves within the higher education sector - such as changing courses on more than one occasion, or course change followed by attrition - were uncommon.

There was a large amount of movement between broad fields of education among students moving between courses or sectors: 61 per cent of students moving from VET to higher education, 69 per cent of course changers within the higher education sector, and 77 per cent of students moving from higher education to VET moved to courses in different broad fields of education.

**Factors associated with course change and attrition**

The report's findings show that a number of student background, educational and labour market characteristics are related to student flows, and that students' interests are also important. The results also demonstrate that the factors associated with course change are somewhat different from the factors associated with attrition.

For example, young people from language backgrounds other than English were less likely than young people from English-speaking backgrounds to leave the higher education sector before completing a qualification. Language background was not, however, associated with course change. Students from independent schools displayed a higher rate of course change than students from government and Catholic schools. In contrast, students from government schools had the highest attrition rate, followed by students from independent schools and Catholic schools,

although the effect of school sector on attrition did not remain statistically significant after controlling for other sociodemographic and educational factors.

Past research has suggested that students from rural and remote areas are more likely to leave the higher education sector before completing a qualification. Possible explanations for these findings have included the costs of relocating from a rural/remote area in order to undertake study and the associated isolation from family and friends. The findings presented in this report, however, do not support these assertions. Students from small provincial cities were *less* likely than students from mainland state capitals to leave the higher education sector before completing a qualification, and students from other provincial and remote areas were no more likely than students from mainland state capitals to be in the attrition sub-group. The latter finding should be treated with some caution due to the small number of remote students in the sample. Home location was unrelated to course change.

Socioeconomic status (SES) comprises a number of dimensions including education, occupation and wealth. Past research relying on composite SES measures has not been able to isolate the dimensions of SES which influence student flows, although one study has suggested that the influence of wealth has declined in recent years (Carpenter, Hayden & Long, 1998). Two aspects of family SES—parents' education and parents' occupation—were examined in this report. Receipt of Youth Allowance, which is related to family wealth, was also examined. Parental occupation and receipt of Youth Allowance were unrelated to both course change and attrition. Parental education, however, was associated with student flows. The children of university-educated parents were more likely than other young people to change course, but less likely to leave the higher education sector before completing a qualification. It may be the case that parents with some experience of the higher education system are better able to assist their children adapt to and negotiate university life, through gaining entrance first then transferring into preferred courses.

Academic achievement while at school, measured by ENTER scores, was related to higher education student flows. Consistent with past research, school achievement was negatively associated with attrition; that is, students with higher ENTER scores had a lower rate of attrition than students with lower ENTER scores. The relationship between school achievement and course change was non-linear. Students with ENTER scores between 80 and 89 had a higher rate of course change than both higher and lower achieving students. These relationships remained significant after controlling for a range of sociodemographic and educational factors. They could not be explained, for example, by whether students with different ENTER scores were more or less likely to initially enrol in their course of first preference.

The nature of pathways into higher education was related to subsequent student flows, especially course change. Students who entered higher education immediately after completing Year 12 and students who did not initially enrol in their course of first preference were more likely than other students to change courses. Students who entered higher education immediately after completing Year 12 had a lower rate of attrition than students who delayed entry to higher education for one or more semesters, but this association did not remain statistically significant after controlling for a range of sociodemographic and educational factors.

The nature of enrolment in higher education was also related to student flows. Full-time students were more likely than part-time students to change courses. In contrast to past research, however, mode of enrolment was unrelated to attrition from the higher education sector. There was a large amount of variation in rates of course change and attrition between different fields of education. For example, fields such as medicine, dentistry, veterinary science and law were associated with high rates of course change but low rates of attrition; broad fields such as society and culture were associated with high rates of both course change and attrition; and broad fields such as health (excluding dentistry, medicine and veterinary science) were associated with low rates of

both course change and attrition. Past research has also documented variation in attrition rates between different fields. A range of factors are likely to contribute to this variation. For example, it may be the case that high achieving secondary students feel pressured to apply for entry to the 'highest' university courses that their ENTER scores allow, resulting in the high rates of course change (to courses of greater interest) but the low rates of attrition observed in fields such as medicine, dentistry, veterinary science and law. At the other end of the spectrum, students in courses that have relatively low entry requirements, such as in the field of education, may not be able to easily change to courses with higher entry requirements. Different course structures are likely to be another factor contributing to variation in rates of course change and attrition among fields of education.

The competing demands of paid work influenced student flows. Young people in paid work were more likely than those not in paid work to change courses or leave the higher education sector before completing a qualification, other things being equal. The intensity of paid work was also a factor. Students working relatively few hours per week were no more likely to change course or leave the higher education sector than students who were not in paid work. However, students working more than 15 hours per week were more likely than those not in paid work to change course. Students working more than 10 hours per week, especially those working more than 20 hours per week, were more likely than those not in paid work to leave the higher education sector before completing a qualification. This is consistent with past research that suggests involvement in long hours of part-time work limits the amount of available time a student has for study and integration into campus life (Long & Hayden, 2001; McInnis, 2001).

The reasons given by course changers and the attrition sub-group for discontinuing their (first) course suggest that interests also play an important role. When asked, many course changers indicated that initial interests were a consideration in their decision. This is consistent with the finding that students whose initial course is not their first preference are more likely than other students to change course. Time in higher education can result in a clarification of interests, however, with over one-half of the attrition sub-group and just over three-quarters of course changers indicating that their (first) course turned out to be not what they wanted, and over 40 per cent of the attrition sub-group indicating that wanting to get a job, apprenticeship or traineeship was a consideration in their decision to leave their course. Students tended to cite reasons such as these more commonly than reasons relating to academic difficulties, problems juggling paid work and study, and finances.

### Destinations of the attrition sub-group

The findings relating to the educational and labour market destinations of the higher education attrition sub-group suggest that many are faring well. Attrition from the higher education sector did not signify the end of education and training for the third of the attrition sub-group who moved to the VET sector by age 20. The majority of the attrition sub-group were in full-time education, training or employment activities at age 20, and in the short-term, the attrition sub-group did not appear to face disadvantage in gaining access to such activities relative to Year 12 graduates who did not enter higher education, or recent higher education graduates. Nevertheless, a significant proportion of the attrition sub-group were engaged in other main activities such as part-time work/study, unemployment or being outside the labour market and not studying. Just under a quarter of the attrition sub-group were in such activities at age 20.

### Implications

The findings of this report have a number of implications for the estimation of the incidence of course change and attrition. First, it is necessary to track the movement of students both within and between institutions. Nearly one-half of the course changers in the present study moved to another higher education institution when they commenced their second course, suggesting that

data on student flows within institutions should not be used to draw conclusions about course change and attrition from the higher education sector as a whole. Second, it is necessary to track the movement of students over a substantial period of time. In the current study, a number of students in the attrition sub-group indicated that they had deferred their study in 2001; these young people (and others in the attrition sub-group) may return to the higher education sector at a future date to complete their course or commence a new course. Further research is required on the longer-term educational outcomes of students who defer.

The findings suggest that some course change and attrition may be regarded as part of a settling-in period in the transition from school to higher education. For example, persons who commence university immediately after leaving school, rather than taking time out, and persons who do not initially obtain a place in their course of first preference are more likely to change courses. A large proportion of course change and attrition occurs within the first year of enrolment and there is a low incidence of multiple course changes or course change followed by attrition.

Three aspects of the report's findings suggest that course change or attrition can be a positive outcome for some students. First, course changers and young people in the attrition sub-group—including students moving to the VET sector—were more likely to cite interests than academic difficulties as their main reason for discontinuing their (first) course. Second, very few students underwent both course change and attrition, suggesting that course change may be protective against attrition among recent school leavers. Third, the majority of the attrition sub-group entered full-time education, training or employment after leaving higher education, which can be viewed as a positive outcome.

However, not all course change and attrition can be viewed in positive terms. A very small proportion of students experienced a highly uncertain start in the higher education sector, typified by multiple course changes or course change followed by attrition, and just under a quarter of the attrition sub-group were in activities such as part-time work/study, unemployment or outside the labour market at age 20. Further research is required in order to ascertain the longer-term consequences of attrition from higher education.

The findings also have implications for strategies aimed at minimising negative course change and attrition. For example, school achievement is associated with student flows, especially attrition. In order to reduce attrition, institutions need to ensure that students enter with the skills needed for success in a university environment, or are provided with early opportunities to acquire these skills.

The extent to which student flows differ between various sociodemographic groups has important equity implications. Are academically capable young people able to complete university courses? Past research has suggested that young people who are male, with parents in blue-collar occupations, whose parents did not attend higher education, from English-speaking backgrounds, from non-metropolitan areas and who attended government secondary schools are less likely than other young people to enter higher education (Marks, Fleming, Long & McMillan, 2000). The current report suggests that if young people from some but not all of these groups enter higher education, they progress in a manner similar to the general student body. For example, gender and parents' occupation are unrelated to course change and attrition, and home location is unrelated to course change. Any new policy initiatives targeting these equity groups should focus on entry to higher education, or on branching points earlier in young peoples' educational histories. However, parents' education, school sector and language background continue to influence student flows after entry to higher education.

The high proportion of course changers moving to new fields of education and the high proportion of both course changers and young people in the attrition sub-group who indicated that

their first course turned out to be not what they wanted, suggests the need for students to have better access to course and career information prior to entry to tertiary study.

Finally, the variability in levels of course change and attrition between fields of education suggests the need for field-specific initiatives to improve student flows, or the need to examine particular courses when designing interventions at the university level.

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# APPENDIX: MEASURES

**Attrition**: See description of student flows.

**Commenced higher education in semester following Year 12**: Information on the date left school and the date first commenced higher education were used to create a dichotomous variable measuring whether or not a student commenced higher education in the semester immediately following Year 12.

**Course**: For the purposes of this report, a course refers to a program of study which leads to an academic award (for example, Bachelor of Arts). This can be distinguished from individual subjects or units or study (for example, Introduction to Sociology), broad fields of education (for example, Society and Culture), and levels of education (for example, bachelor (pass) degree).

**Course change**: See description of student flows.

**Course was first preference**: In 2001, all students who had commenced TAFE/university study since leaving secondary school were asked whether their first tertiary course was their first preference when they first applied to study. This information was used to create a dichotomous variable: yes (first higher education course was first preference); no (first higher education course was not first preference/not first tertiary course).

**Educational aspirations (parent)**: In 1995, parents' educational aspirations were measured indirectly by asking students: 'In the year after leaving school, what do your parents want you to do?' Students who reported that their parents aspired for them to engage in post-secondary study were distinguished from other students.

**Educational aspirations (student)**: In 1995, students were asked whether they planned to do any further study at any time after leaving school, and to indicate the type of course they planned to do. This information was used to distinguish students who planned to do a university course from other students. Where data on educational aspirations in 1995 were missing, similar data collected in 1997 or 1998 were used.

**Field of education**: Information provided in the 2001 telephone interview on all VET and higher education courses commenced since leaving school was classified according to the Australian Standard Classification of Education's broad fields of education (ABS, 2001). The classification comprises 12 broad fields: natural and physical sciences; information technology; engineering and related technologies; architecture and building; agriculture, environmental and related studies; health; education; management and commerce; society and culture; creative arts; food, hospitality and personal services; mixed field programs. These broad fields, and an 'other' category comprising uncodeable and missing data, were used to determine whether students moved to different fields when they changed courses within the higher education sector or moved between the higher education and VET sectors (Chapter 3).

Information on the fields of education of the first and most recent higher education courses was also analysed in Chapter 4 and Chapter 5. In these chapters, medicine, dentistry, veterinary science and law were removed from their respective broad fields of education and treated as a separate category. The following broad fields were combined with the 'other' category due to small student numbers: food, hospitality and personal services; and mixed field programs.

**Gender**: In 1995, students were asked to indicate whether they were male or female. In cases where this information was not provided, the students' names were used to infer their gender. This information was confirmed in subsequent telephone interviews.

**Home location**: The Jones classification (Jones, 2002) was used to classify the postcode of a student's home address in 1995 into one of six categories: mainland state capital; major urban region; large provincial city; small provincial city, other provincial (inner/outer); remote.

**Hours of paid work**: Data on current hours of paid work are collected from persons in paid work at the time of each annual interview. This information was used to create two variables: hours of paid work near the end of the calendar year of initial enrolment in the first course; and hours of paid work near the end of the calendar year of initial enrolment in the most recent course. No data are available for students who left their first/most recent course before the time of interview in the year of course commencement.

**In paid work while at university**: Data on the months in which respondents were in paid work in the previous year are collected at the time of each annual interview. This information was used to create a dichotomous variable measuring whether or not a student was in paid work in the month they commenced their initial course. A second measure relating to paid work at the beginning of the most recent course was also created. For students commencing in the first semester, information on employment in March was used. For students commencing in the second semester, information on employment in August was used.

**Language background**: In 1995, students were asked to identify the main language spoken at home. For the purposes of this report, a distinction was drawn between households where the main language spoken was English, and households where English was not the main language spoken.

**Mode of enrolment**: Dichotomous mode of enrolment measures (full-time/part-time) were developed for the first and most recent courses commenced in the higher education sector. These measures were based upon information provided in the 2001 telephone interview from past students on whether they had mainly studied for each of their courses on a full-time or part-time basis, and information from current students on their current mode of enrolment.

**Parents' education**: In 1995, respondents were asked to report the highest level of education completed by each of their parents. Information on the parent with the highest qualification forms the basis of a parental education measure comprising five categories: degree/diploma; trade/technical qualification; completed secondary school; some/no secondary school; and don't know/missing.

**Parents' occupation**: The parental occupational measure comprises six categories: manager; professional; paraprofessional; clerical/sales/personal service workers; skilled manual; and semi/unskilled manual. The most recent parental occupational data were collected in 1997, when the majority of students were in Year 11; similar data were collected in 1995. The measure was based upon the male parent's occupation in 1997. If this information was missing, the female parent's occupation in 1997 was used. If information on both parents' occupations in 1997 was missing, the information supplied in 1995 was used.

**School achievement (ENTER score)**: A student's Equivalent National Tertiary Entrance Rank (or ENTER score), calculated from information reported in their 1999 telephone interview, was used as an indicator of achievement in senior secondary school. Valid scores could range from 0 (low) to 99.95 (high), although a substantial number of sample members could not remember or refused to provide a score. A detailed discussion of the measurement, reliability and validity of ENTER scores in LSAY is provided by Marks, McMillan and Hillman (2001, pp. 64-77). For the purposes of this report, ENTER scores have been collapsed into 5 categories: < 70; 70-79; 80-89; 90-99; and don't know/missing.

**School sector**: This measure refers to the school attended in Year 12 (1998), and comprises three categories—government schools, Catholic non-government schools, and non-Catholic non-government schools—identified respectively as government, Catholic and independent. The measure is based upon information from the sampling frame (school sector in Year 9), updated where applicable from responses to annual interview questions on whether the student had changed schools and the sector of their new school.

**Self-assessed academic ability (Year 9)**: Self-assessed academic ability was measured in 1995 by responses to the question; 'Compared to most of the students in your year level at school, how well are you doing in your school subjects overall?' Five response options were provided: very well; better than average; about average; not very well; and very poorly. For the purposes of this report, the last three categories were collapsed to form the category 'average or lower'.

**Student flows**: Retrospective data on all tertiary study undertaken, collected in late 2001, were used to identify the higher education pathways of students who first commenced higher education in 1999 or 2000.

*Course change*: Course changers were defined as persons who commenced a second university course before completing their first. Course change could occur through direct transfers, or could be the result of discontinuing a particular course of study and commencing a second course at a later point in time. It could occur between courses at the same institution, or in conjunction with an institution change. Note that students who changed institutions while remaining enrolled in their initial higher education course were not classified as course changers (2% of higher education entrants from the 1995 Year 9 cohort). Students in combined degrees who withdrew from one of these degrees but continued in the other degree were only identified as course changers if they indicated during their 2001 interview that they had withdrawn, deferred or changed from their original course and they were enrolled subsequently in another course.

*Attrition*: Attrition was defined as leaving the higher education sector by withdrawing or deferring from a course, and not returning to higher education by the time of the 2001 data collection.

**Youth Allowance recipient**: At the time of each annual interview, currently enrolled higher education students were asked whether they were presently receiving Youth Allowance or Abstudy payments. This information was used to create a dichotomous variable measuring receipt of benefits near the end of the first calendar year in which the initial course was first commenced. A similar variable was constructed for benefits received during the most recent course. No data are available for students who discontinued their first/most recent course before the time of interview in the year of course commencement.