Australian Government
Department of Education, Skills and Employment

# Factors affecting higher education completion

## The impact of working while studying

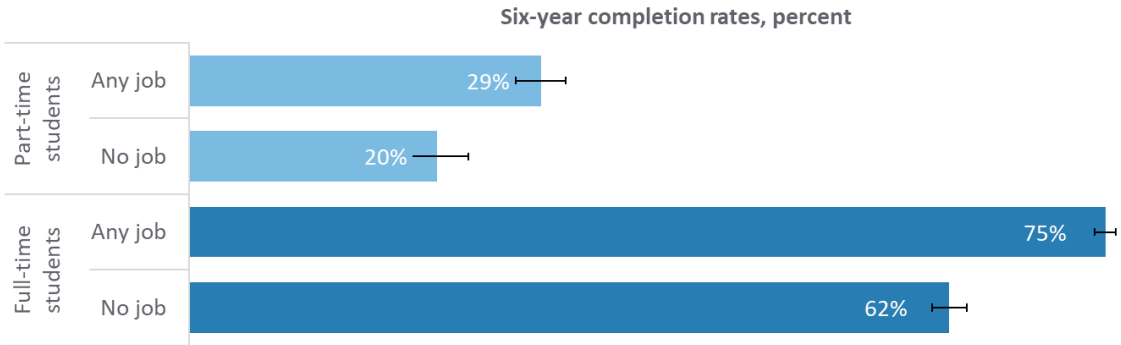
- *Four in every five domestic bachelor's degree students had a job while studying between 2011 and 2016.*
- *Working while studying increased six-year bachelor's degree completion rates by 13 and 9 percentage points in full-time and part-time students respectively. This effect is predominantly income driven.*
- *The median income for full-time students working in 2015–16 financial year was $16,613, but students could earn up to $30,000 per year before their completion rates started to decline.*
- *While most of these students had one job, around 16 per cent of full-time students working had two or more. Full-time students working multiple jobs were found to have around 10 per cent higher income on average, but part-time students working multiple jobs earned less compared to those working one job.*
- *The occupations of multiple job holders (frequently sales jobs) suggest that they were more likely juggling shifts in different jobs day-to-day rather than regularly changing jobs.*

### Work during study is associated with higher student completion rates

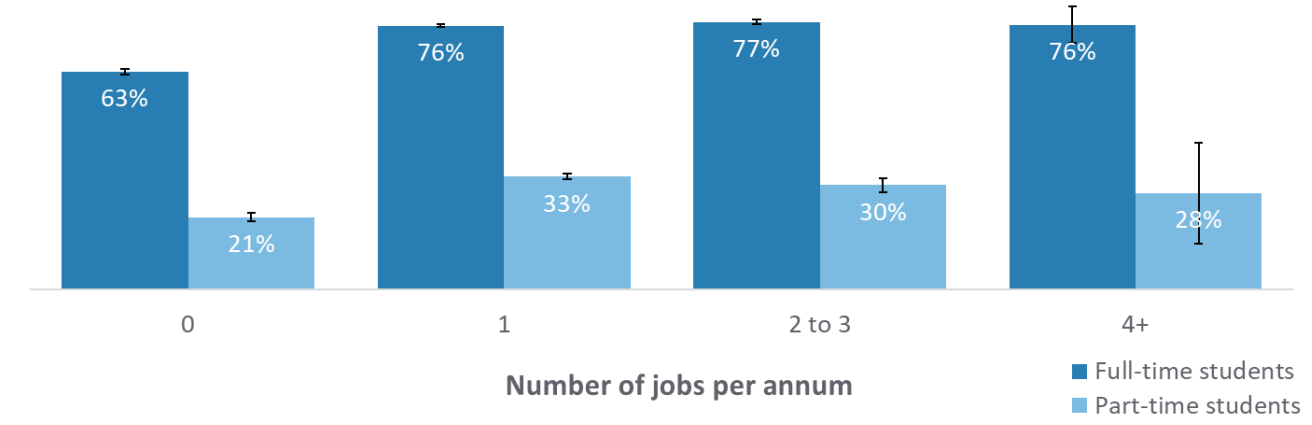
Compared to all workers, most student's incomes are in the bottom quarter of all disposable incomes, with financial hardship being particularly acute for students belonging to multiple equity groups. As such, most students undertake paid employment during their study to supplement their income over the study period. Previous research has argued the amount of paid work needed to study can harm both students' participation and performance at university. Using deidentified integrated data, we examined the impact of work on six-year completion rates of 120,000 students who commenced a bachelor's degree for the first time in 2011 (Figure 1).

**Figure 1: The impact of working/income on six-year bachelor's degree completion rates, by study load, 2011–16**

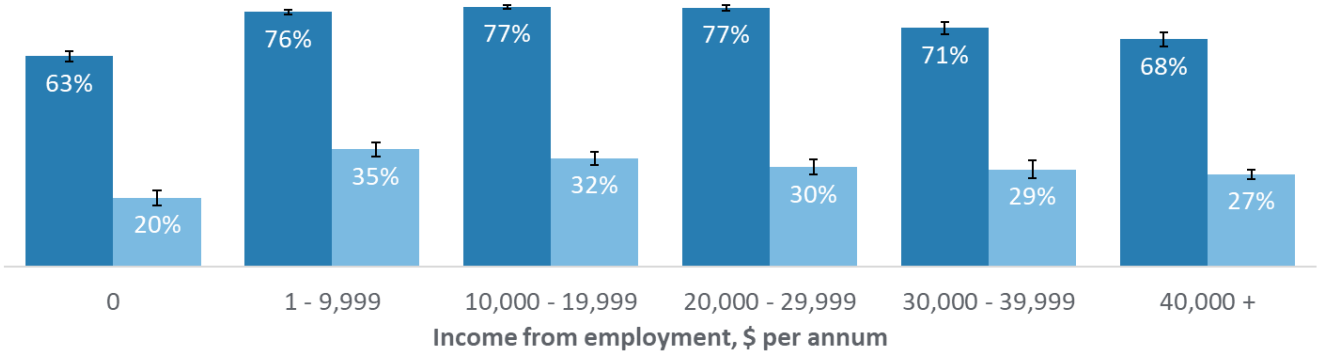
**Panel A. The impact of working any job, after adjusting for other factors**



**Panel B. The impact of working multiple jobs on completion rates (unadjusted)**




**Panel C. The impact of employment income on completions (unadjusted)**




Source: Multi-Agency Data Integration Project, custom analytical extract using Personal Income Tax and PAYG[1] payment summary data linked to student records.
Notes: For part-time students, the nine year completion rate is around 10 percentage points higher than their six-year completion rate. Error bars are 95 per cent confidence intervals. Definitions are contained in the Data and Methodology section.

By linking this student cohort to tax and payment summary data, we found the six-year completion rates of students that worked during study was up to 13 percentage points higher than students that did not work (Figure 1A). These results were calculated using a causal forest, which estimates the average treatment effect of working while studying on six-year completion rates by simulating randomised controlled trials, controlling for a wide range of student and institutional factors that are known to influence student completion rates, including study load and study assistance (see Data and Methodology section).[i]

The results showed that having any job led to a positive impact on completion rates. The largest jump in completion rates occurs between no job and one job (Figure 1B) and between no income and the $1–9,999 employment income per year range (Figure 1C). Full-time students (median income of $12,539 per year) could earn around up to $30,000 per year before completion rates started to decline (Figure 1B). These results appear to contradict the 2017 Universities Australia student finance survey, where around half of domestic students agreed that work commitments adversely affected their performance at university and a third of domestic students reported missing classes to attend paid employment.[ii] While there will be a proportion of students adversely affected by work, on average, having paid employment stimulates bachelor's completion.

[1] PAYG – Pay as you go



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We were interested in whether the motivational, self-esteem and other non-financial benefits of work are driving higher student completions as much as the income. Our analyses found the non-financial benefits of working were positive but less important than income on full-time student completion rates. Using modelling to take into account a variety of factors, the estimated positive effect of a student having a job and income for full-time student completion rates was 11.9 percentage points. However, controlling for income, the estimated effect of having a job (i.e. non financial benefits of working only) was only 2.3 percentage points.[2]

Conversely, while part-time students had a higher median income ($17,756 per year), their completion rates started to deline once students were earning more than $10,000 per year (Figure 1C).

As shown in other factsheets (See *Predicting completions* factsheet) and in Figure 1, the relative contribution of other factors, such as institution and study load, to student completion rates are more significant than the contribution of work.

Not surprisingly, a part-time student is less likely to complete within six-years compared to nine-years. The nine-year completion rate for part-time students is about 10 percentage points higher than their six-year completion rate as the enrolled students go on to complete their degree.[3,iii] However study load and work are related. Fifty five percent of part-time students surveyed in 2017 would have preferred to be studying full-time if finances had permitted.ii[ii] The need to work has an effect on study choices as much as work helps support students with their existing study load.

## Study, income support, and income

Four in every five students worked while studying between 2010–11 and 2015–16 financial years (80–84 per cent; Figure 2). This holds for both full-time and part-time study. This is consistent with the 2017 Universities Australia Student Finances Survey[ii] and for all higher education and vocational education and training students from the ABS Survey of Education and Work. Work is defined as any student earning income from employment during study, which included wages and salaries, attributable personal services income, lump sum payments, foreign source income, allowances and tip and fees. Based on these consistent proportions, this would mean around 800,000 bachelor's degree students were in the workforce in 2018, or around six per cent of all employed people.[4]

### Income Support

Approximately 36–38 per cent of domestic undergraduate students in any given financial year are receiving study support in the form of Youth Allowance, Austudy or ABSTUDY payments.[iv] An additional seven per cent of students received other forms of income support such as Disability Support Pension or Carer Payment.

Almost three quarters (73 per cent) of students receiving income support undertook work during study in 2015–16, only slightly lower than the proportion of students with no form of income support working (82 per cent).

[2] Causal forest model on six-year completion rates, full-time students only. Total average treatment effect of a job was 11.9±1.0 per cent. Direct average treatment effect of a job was 1.3±1.9 per cent. N = 98,882. Variables randomised over 16–19 other variables (see Data and methodology).

[3] The six-year completion rate for domestic bachelor's degree students from all providers starting in 2011 was 38.1 per cent and those still enrolled was 17.4 percentage points. The nine-year completion rate for domestic bachelor's degree students from all providers starting in 2010 was 48.6 per cent and those still enrolled was 7.6 percentage points.

[4] Based on the stock of employed total persons (seasonally adjusted) as at December 2018 taken from the Australian Bureau of Statistics (2020) Labour Force, Australia, Jun 2020, Cat. No. 6202.0

Students receiving other types of income support such as Disability Support Pension were the least likely to work at 61 per cent (Table 1). The effects of study assistance are discussed further in the *Study Assistance* factsheet.

## Income

Table 1 shows income from employment as well as median annual disposable incomes for all students working in the latest available financial year (2015–16) where tax and payment summary data was available. Income from employment includes payment summary data which provides valuable information on students with low incomes who do not need to submit a tax return. Disposable income includes all income streams (employment, income from capital such as rent, interest or shares and other taxable income) and subtracting expenses, deductions and tax paid).

Median annual disposable incomes for full-time students that worked ranged between $14,000 to $23,000 depending on income support status. Despite their relatively low disposable incomes, most full-time students were earning income from employment in the range (i.e. between $1 and $30,000 per annum) where completion rates remained high (Table 1; Figure 1C).

**Table 1: Higher education undergraduate student counts and corresponding incomes, by work status, by income support status, by study load, 2015–16 financial year**

| Work status | Study load | Income support | Sample | Proportion (percentage of sample) | Median annual income from employment | Median annual disposable income from all sources |
|---|---|---|---|---|---|---|
| Working | Full-time | None | 171,980 | 36 | $16,613 | $18,818 |
| | | Other | 8,578 | 2 | $17,379 | $22,820 |
| | | Student | 114,415 | 24 | $12,539 | $13,936 |
| | Part-time | None | 53,998 | 11 | $39,922 | $34,101 |
| | | Other | 12,119 | 3 | $25,520 | $26,851 |
| | | Student | 12,010 | 2 | $17,756 | $17,589 |
| Not working | Full-time | None | 38,672 | 8 | $0 | $0 |
| | | Other | 6,281 | 1 | $0 | $20,608 |
| | | Student | 43,675 | 9 | $0 | $9,793 |
| | Part-time | None | 9,269 | 2 | $0 | $0 |
| | | Other | 6,874 | 1 | $0 | $19,201 |
| | | Student | 3,819 | 1 | $0 | $9,793 |

Source: Multi-Agency Data Integration Project, custom analytical extracts using Personal Income Tax and PAYG payment summary data linked to student records.

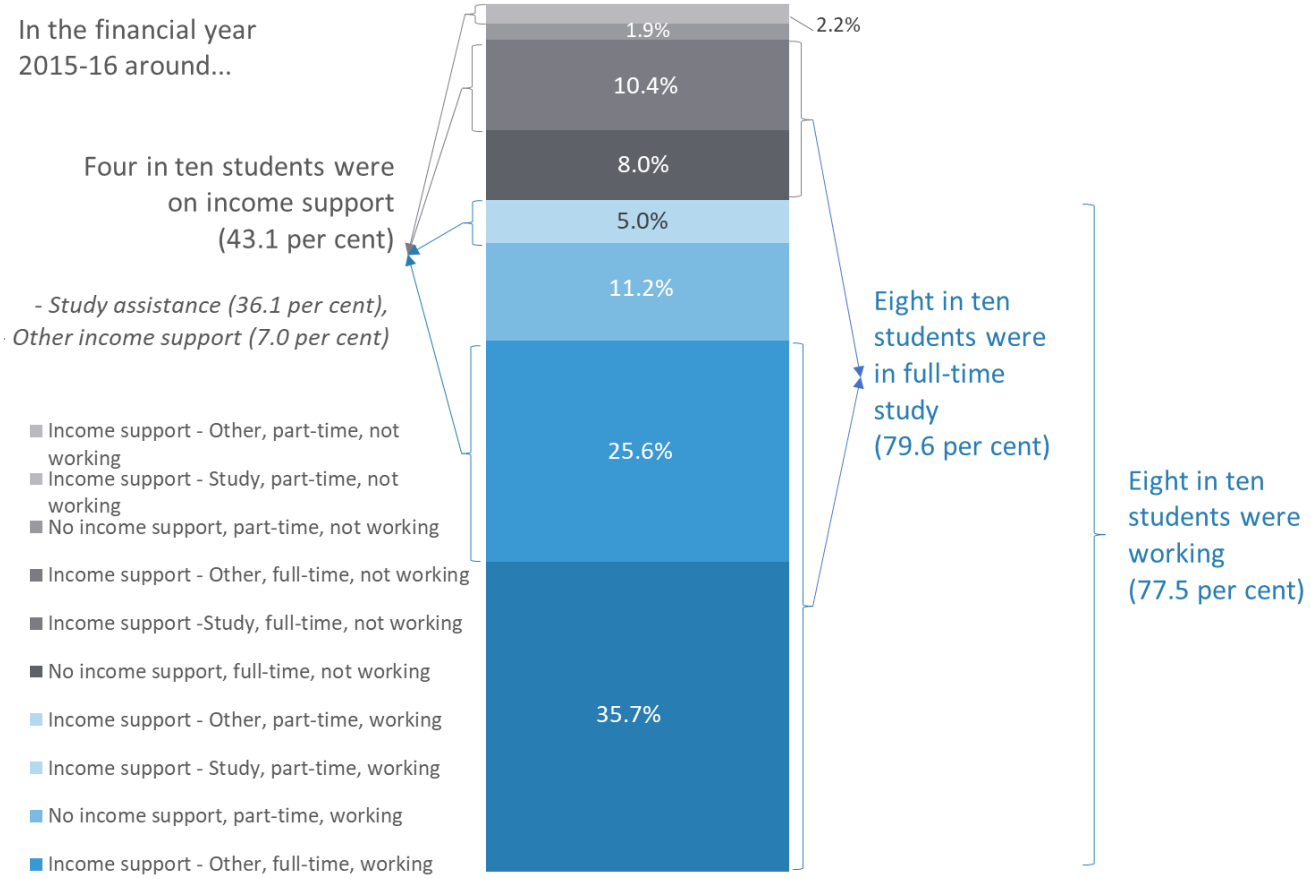
Notes: N = 481,690. Counts are lower than published calendar year figures due to linking student enrolments by financial year. To get accurate student income figures we applied a filtering method: only include those students which studied in both half years of a financial year, which reduced our sample size.

Part-time students are slightly more likely to be working while studying than full-time students (80 per cent *vs*. 77 per cent) and had higher incomes at $18,000 to $34,000 per year (Table 1), consistent with a 2006 survey.[v] However, these incomes were in the ranges where completion rates started to decline marginally (Figure 1C).

The disposable incomes shown are consistent with the median hours working for full-time (12 hours) and part-time students (30 hours).[vi]

Full-time students that are working with no government income support were the largest proportion of all domestic bachelor's degree students at around 35.7 per cent in 2015–16 financial year (Figure 2), down from 38 per cent in 2011–12 financial year.

**Figure 2: Bachelor's degree students, by study load, working and income support status, 2015-16 financial year**




Source: Multi-Agency Data Integration Project, custom analytical extracts.
Notes: The population includes all Commonwealth supported students who commenced a bachelor's degree (course types 9 and 10, excluding Open University Australia courses) that studied in both six-month periods of the financial year. A full-time student was defined as having an Equivalent Full Time Study Load (EFTSL) greater than or equal to 0.75. A part-time student was defined as having an EFTSL between 0.049–0.75. Only students who studied (EFTSL > 0.049) in both semesters in each financial year were counted.

Comparisons of disposable incomes to all workers as well as similar aged and educated workers are important to identify levels of financial hardship. Table 2 shows median disposable incomes for 18–25 years old and working age population by income percentiles. Compared to those workers aged 15–64, full-time students that work and have no income support have a median disposable income of $18,818 per year. This puts them in the lowest half of all 18–25 years with year 12 who are working distribution and the bottom quarter of all those working, aged 15–64.

Most students that did not work were in the bottom ten percent of all annual disposable incomes in the country or had similar incomes to other young Australians that were not working.

Most part-time students were at the higher end of that income range placing them below the median disposable income of all workers aged 15–64 (Table 2). Comparisons with the younger cohort in Table 2 are not valid as part-time students are older and more likely to have dependent children.[vii]

**Table 2: Annual disposable income distributions, by age class, and employment status, 2015–16 financial year**

| Percentile | Working, aged 18-25, Year 12 attainment | Not working, aged 18-25, Year 12 attainment | Working, aged 15-64 | Not working, aged 15-64 |
|---|---|---|---|---|
| **10th** | $5,400 | $0 | $11,653 | $0 |
| **25th** | $11,770 | $278 | $25,325 | $3,959 |
| **50th** | $20,841 | $7,247 | $41,451 | $17,093 |
| **75th** | $31,643 | $13,782 | $61,420 | $24,785 |
| **90th** | $40,913 | $23,013 | $85,491 | $38,143 |
| **Counts** | 619,514 | 176,794 | 9,871,723 | 4,531,415 |

Source: Multi-Agency Data Integration Project, custom analytical extracts using Personal Income Tax and PAYG payment summary data linked to student records.

Notes: Disposable income is gross income after deductions, income tax and levies.

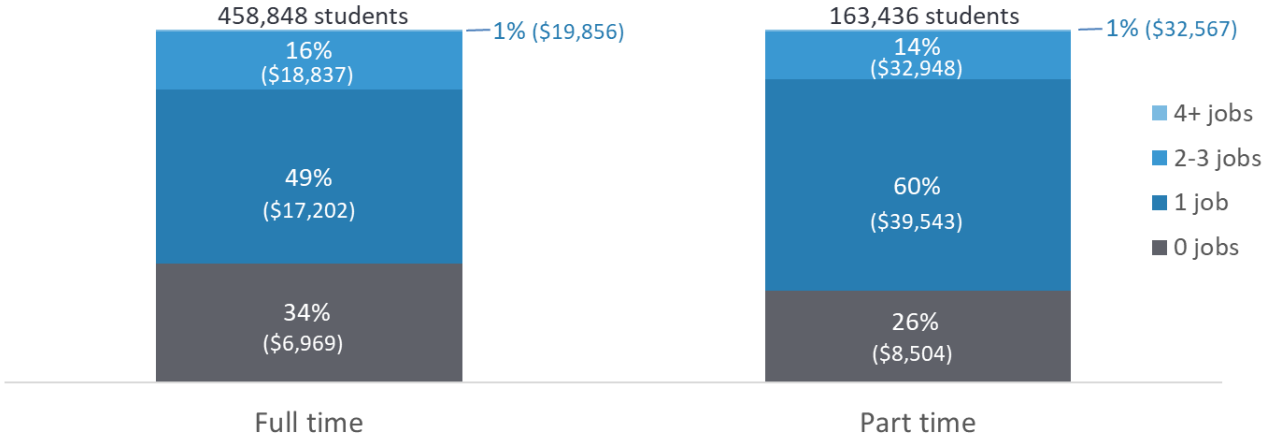
## Multiple jobs

Figure 3 and Table 3 below indicate while most students had one job per financial year, around 15–17 per cent of all students were working two or more jobs.

In 2015–16, median disposable incomes increased by around 10 per cent for full-time students with 2-3 jobs ($18,837) compared to only one job ($17,202). However, for part-time students, median incomes were highest for those with only one job (39,543), with those working 2–3 jobs earning 17 per cent lower on average.

These findings can be partly explained by the types of occupations held by working students. Using Census of Population and Housing data anonymously linked to tax data, the top three occupations held by full-time students were Sales Assistants and Salespersons, Hospitality workers and Carers and Aides regardless of the number of jobs worked per annum. For part-time students with one job, the top three most frequently reported occupations were more professional; Education Professionals, Health professionals, Business, Human Resource and Marketing Professionals. For part-time students with more than one job, the top three most reported occupations included Sales Assistants and Salespersons and generally lower paid occupations were in the top ten.

**Figure 3: Number of jobs held by bachelor's degree students and corresponding median annual disposable incomes, by study load, 2015-16 financial year**




Source: Multi-Agency Data Integration Project, custom analytical extracts using Personal Income Tax and PAYG payment summary data linked to student records.

Using dates on payment summary data to calculate the total number of days worked for each job, we found students working 2–3 jobs were overlapping to the point they were probably working two or more jobs on the same day at least every other workday. Students working four or more jobs every year worked all these jobs four out of every five days. These results did not vary by study load. When we put these results together with the

occupations of multiple job holders, our findings suggest many students are juggling different jobs day-to-day rather than regularly changing jobs throughout a year.

**Table 3: Count of higher education undergraduate students and corresponding median annual disposable incomes, by the number of jobs worked per annum, by study load, 2011–12 to 2015–16 financial years**

| Full-time | Number of jobs held | | | | Median disposable annual income | | | |
|---|---|---|---|---|---|---|---|---|
| **Financial Year** | **0** | **1** | **2–3** | **4 +** | **0** | **1** | **2–3** | **4 +** |
| 2011-12 | 128,266 | 198,037 | 65,830 | 2,538 | $7,376 | $15,904 | $17,594 | $18,916 |
| 2012-13 | 138,840 | 207,300 | 69,366 | 2,680 | $8,047 | $16,398 | $18,001 | $19,020 |
| 2013-14 | 146,647 | 213,611 | 71,810 | 2,935 | $7,537 | $15,943 | $17,441 | $18,870 |
| 2014-15 | 152,958 | 221,719 | 73,140 | 2,881 | $7,196 | $16,333 | $17,973 | $19,163 |
| 2015-16 | 154,079 | 226,541 | 75,225 | 3,003 | $6,969 | $17,202 | $18,837 | $19,856 |
| Part-time | Number of jobs held | | | | Median disposable annual income | | | |
| **Financial Year** | **0** | **1** | **2-3** | **4+** | **0** | **1** | **2-3** | **4+** |
| 2011-12 | 34,891 | 84,265 | 18,408 | 741 | $10,419 | $41,977 | $35,163 | $32,674 |
| 2012-13 | 37,580 | 88,459 | 19,506 | 784 | $10,090 | $42,262 | $35,076 | $33,890 |
| 2013-14 | 39,090 | 92,212 | 20,641 | 832 | $9,331 | $40,684 | $32,961 | $31,293 |
| 2014-15 | 41,117 | 97,150 | 20,958 | 889 | $8,728 | $39,322 | $31,890 | $30,504 |
| 2015-16 | 42,518 | 97,815 | 22,185 | 918 | $8,504 | $39,543 | $32,948 | $32,567 |

Source: Multi-Agency Data Integration Project, custom analytical extracts using Personal Income Tax and PAYG payment summary data linked to student records.

Notes: Personal Income tax data was not used in this table. Dollar figures are not adjusted for inflation. Overlapping PAYG payment summaries were used to determine the number of jobs held per annum. Disposable income is gross income after deductions, income tax and levies and was split 50–50 when a student worked across both semesters. We only considered students that were studying in each semester of the financial year.

# Data and Methodology

The analysis in this factsheet used higher education student records linked to MADIP (Microdata: Multi-Agency Data Integration Project, Australia). The MADIP data contains records from: Census 2016, Social Security, Medicare Benefits Schedule, Personal Income Tax and the Pharmaceutical Benefits Scheme. The records have been de-identified and are accessed via that ABS DataLab, a secure server, run by the ABS who maintain the integrity of the data held on the DataLab.

A full-time student was defined as having an Equivalent Full Time Study Load (EFTSL) greater than or equal to 0.75. A part-time student was defined as having an EFTSL 0.049>0.75. Only students who studied (EFTSL>0.049) in both semesters in each financial year were counted. Overlapping PAYG payment summaries and employment income data items were used to determine the number of jobs held per annum.

We examined all students who commenced a Bachelor Graduate Entry and Bachelor Honours award courses for the first time on a Commonwealth Supported Place in 2011 (course types: 9, 10; excluding Open University Australia courses). There were 119,175 students in this cohort, of which 67 per cent completed their bachelor's studies within the 6-year time period. For this factsheet we focused on full-time students of which there were 98,882 students in this cohort, with a 74 per cent completion rate within the 6-year time period. The analysis included all students who commenced in 2011, undertook study between 2011 and 2016 (reference period) and determines their completion status at the end of 2016 (completed, still actively studying (i.e. enrolled) or inactive (i.e. no instance of enrolment). We simulated a randomised control trial by creating a covariate matched sub-population of 66,393 students.

We considered a wide range of covariates to match on, primarily driven by a priori knowledge of confounders. We chose extra covariates to match on by applying a random forest model on the treatment and outcome (a proxy for confoundedness), we selected on the seven highest contributing features which still preserved a sample size greater than 50 per cent of the original. The covariates controlled for were institution size, mode of attendance (Full-time or Part-time study based on EFTSL semester average), STEM Field of Education flag (Science, Technology, Mathematics and Engineering), total income (semester average), Socio-economic background (Low, Medium, or High IRSAD[5]), age at commencement (grouped), and gender. Relative risk estimation was used on the matched sub-samples to estimate the causal effect of the treatments. Variables controlled for in the regression were tertiary entrance rank, parents' educational status, gender, receiving student payments, English-speaking country of birth, age group, attendance type, institution, SEIFA, STEM field of education, and income per semester.

## Income support

Income support flags indicate whether a student was in receipt of government study assistance or another form of income support payment while studying. Study assistance is Youth Allowance, Austudy and ABSTUDY. While student income support payments are designed for people who are studying, a student may be eligible for other non-study related income support payments. These included students who received Carer Payment, Disability Support Pension or Parenting Payment (Single or Partnered). As people may have received more than one type of income support payment during their studies, there may be some double counting of students across income support categories.

While tax free higher education income support from scholarships, bursaries and bursary data was not directly identifiable it could be reported through personal income tax declarations.

More detail can be found in the *Methodology* factsheet.

[i] Wager S, and Athey S (2018) 'Estimation and inference of heterogeneous treatment effects using random forests', *Journal of the American Statistical Association*, *113*(523), 1228-1242.
[ii] Universities Australia (2018) *Universities Australia student finances survey 2017*, Universities Australia, Accessed 29 July 2020.
[iii] DESE (Department of Education, Skills and Employment (2020) *Selected Higher Education Statistics – 2018 Student data*, DESE, Accessed 29 July 2020.
[iv] Ryan C (2013) *Student income support and education and training participation in Australia*, NCVER, Adelaide
[v] Hayden M and Long M (2006) A profile of part-time undergraduates in Australian universities, *Higher Education Research & Development* **25**: 37-52, DOI: 10.1080/07294360500453137
[vi] Universities Australia (2018) *Universities Australia student finances survey 2017*
[vii] Consistent with: Hayden M and Long M (2006) A profile of part-time undergraduates in Australian universities, *Higher Education Research & Development* **25**: 37-52, DOI: 10.1080/07294360500453137

[5] A measure of SES