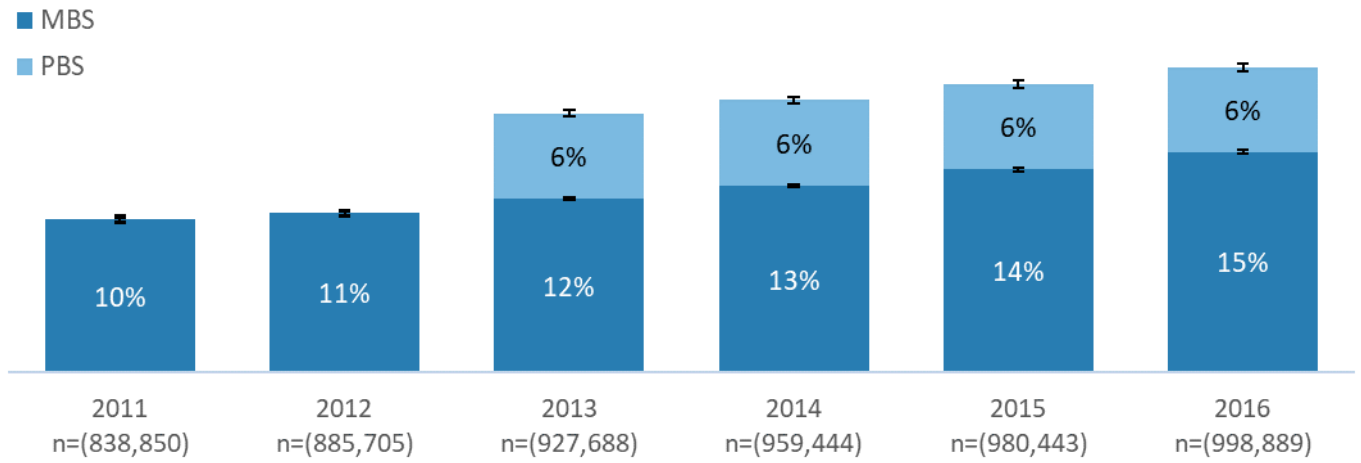
Completing Higher Education

Early usage of mental health services improves higher education students' success

- *We linked national health and higher education student data for the first time to show that mental health service usage is on the rise in the student population. Students aged 25 years and over are more likely to use these services than students under 25 years.*
- *All else being equal, students using mental health services had a nine percent lower likelihood of completing their studies. This impact worsened for students using psychiatric services.*
- *For those students that do access mental health services, it appears that usage during study gives these students a higher change of completing their studies. Linking in university counselling service, community health and hospital data would help confirm this finding.*
- *While the data used here cannot replace clinical data on mental-ill health, the above findings suggest that mental-ill health is a significant risk to studying in higher education in isolation and in combination with other known risk factors. Mental ill-health could therefore be considered an equity group in its own right.*

Mental ill health is a major social cost to Australian society[1] and is a growing, widespread, and important issue within the higher education system[i] (Figure 1) compounding the impacts of mental ill health on school outcomes.[2,ii]

Figure 1.Percentage of enrolled students using Medicare Benefits Schedule (MBS) mental health services and/or Pharmaceutical Benefits Scheme (PBS) for mental health related pharmaceuticals, by year, 2011-16.



Source: Custom Multi-Agency Data Integration Project (MADIP) extract linked to Higher Education Information Management Systems (HEIMS) records.

Notes: Unique Commonwealth supported higher education students enrolled each year (2011-2016) undertaking any course. Population (n's) reported are overall student count each year. Unadjusted data shown. Error margins 95% z-statistic. Accurate and complete PBS data is only available from 2013 onwards. See methodology section for definition of higher education students.

[1] The recently released Productivity Commission report on mental health estimated the cost to the Australian economy of mental ill-health and suicide is, conservatively, in the order of $43 to $51 billion per year. Additional to this is an approximately $130 billion cost associated with diminished health and reduced life expectancy for those living with mental ill-health. https://www.pc.gov.au/inquiries/current/mental-health/draft/mental-health-draft-overview.pdf

[2] Mental disorders are common in Australian school students affecting one in seven students in a 12 month period. Students with mental disorders have poorer NAPLAN results.

Figure 1 uses Medicare Benefits Schedule (MBS) mental health service use and Pharmaceutical Benefits Scheme mental health related pharmaceuticals as an imperfect proxy[3] measure for having a *known mental health condition*. Not all students accessing these services have mental *ill-health* (see below). That said, the number and share of all enrolled Australian higher education students accessing these services is growing, reaching 21 per cent of students in 2016 or over 200,000 students a year (Figure 1). This trend is consistent for both full-time and part-time students, however part-time students are more likely to access mental health services (full-time 17 per cent, part-time 26 per cent, in 2016). Our estimates are consistent with earlier analysis suggesting that one in four (25 per cent) young adult university students will experience mental ill-health each year.[iii,iv] Our results support the growing perception that young adults, the largest student demographic, are considered at high risk of developing mental health conditions[v,vi,vii] and that current counselling service staff to student ratios of one counsellor to every 3,000 to 6,000 students are seen as inadequate by the majority of heads of university counselling services.[viii] However, mental health is not just a concern for youth. Our data shows that students that were 25 years and over were more likely to be accessing mental health services compared with students under 25 (27 per cent vs 16 per cent in 2016, respectively). This result is the opposite of student wellbeing survey findings in late 2016.[ix]

The trends in Figure 1 will include a combination of students that accessed these services before study and those that require mental health services only after commencing study. The international evidence on the onset of mental health conditions suggests that this ratio is approximately 50:50.[x] Recent non-representative and potentially biased survey data suggest that academic and financial stress, leaving home and social pressures are high for university students.[xi] However, we did not find any evidence of an increase in mental health service usage in the transition from school to university.[4] While the sample size was low, 2014-15 National Health Survey data also indicated no difference in psychological distress between students and non-students.[5] Other survey data has shown moderate stress increases, particularly in younger university students and students with financial problems.[xii] However, this does not necessarily translate into mental ill-health. An earlier study of Australian tertiary student survey data found that tertiary students were no more likely to have a mental disorder than non-students.

The use of linked MBS and PBS data has both advantages and disadvantages. This approach overcomes the problem of *low survey response rates* where only a few thousand students can be surveyed; and, *significant self-selection bias* where students with mental-ill health may be more likely to respond to a survey on mental health or wellbeing. As the data is linked anonymously with strict controls over re-identification, this approach captures mental health information on students in a sensitive way without burdening them further with additional surveys.

Figure 1 is likely to be an undercount for several reasons. Not all students with a mental health condition will use professional services and not all students are reflected in the available health data, for example, students who are not eligible for a Medicare card. Hospital data, community health and help line data are also missing from this dataset, which are a significant source of support, particularly for the many students that cannot afford medical services. Survey data suggests that less than half of university students with high psychological stress indicative of mental ill health will seek professional help, preferring instead self-reliance or informal support.[xiii] If they do seek professional help they are as likely to use university counselling services as they are to use medical services.

[3] This is based on linked Medicare Benefits Schedule services data for items known to be associated with mental health conditions. It is important to note that over time people have become increasingly likely to use Commonwealth-funded MBS mental health services. However, unpublished research has shown that MBS service use is not a particularly good proxy for mental health morbidity.

[4] We compared the proportion of commencing students accessing mental health services in the sixth months prior to commencing study (7.1 per cent) with the proportions of students in their first year (first semester 5.7 per cent and second semester 6.5 per cent). A pairwise proportion test confirmed that the rate of mental health service usage was lower in the first year of study than prior to commencement ($p < 0.01$).

[5] This was confirmed using a logistic regression of high/very-high distress Kessler K10 categories on student status, controlling for age group and gender (Odds ratio = 1.05, N=14,466, p = 0.62). Note: Kessler K10 assesses 30-day distress.

Mental health service usage is associated with lower completion rates

Completion of a bachelor's degree is important to both the individual and government, with successful completion providing lifelong benefits and significant return on investment, respectively.[xiv] Previous research has reported conflicting evidence on whether students with mental ill health are less likely to complete a degree,[xv,xvi,xvii,xviii] although the impact of mental health on educational attainment and performance in Australian school students is recognised.[xix]

We investigated a de-identified group of 120,000 students who commenced higher education in 2011 for the first time. Of these students, approximately 36,000 (or 30 per cent) used mental health services over the next six years. By controlling for other risk factors known to affect student completion, we found that these students had a lower six-year completion rate (62 per cent) than those students that did not use these services (71 per cent).[6]

Six-year completion rates further declined for students that used higher volumes of mental health services or where the services included psychiatric services, a rough indicator of severity[7] (Table 1). Over a six year period, for example, only one in two students (or 49 per cent) were able to complete their course if they used psychiatric services at any time during that period.[8] These results are consistent with a similar study of university students in the United Kingdom and with a survey of over 30,000 US college students where stress, anxiety and depression impacted negatively on student performance and drop-out rates.[xx,xxi]

Table 1. Six-year completion rates, by volume of MBS mental health services used, and by severity of mental health condition (psychiatry service use), 2011-16.

Volume of mental health services used between 2011 and 2016 (grouped)	Completion rate (per cent)	Proportion of students that used at least one psychiatry service between 2011 and 2016 (per cent)
0	71	0
1	61	3
2-3	60	6
4-7	58	15
8+	53	51

Source: Custom MADIP extract linked to HEIMS records.

Notes: Unadjusted data shown, N=119,100.

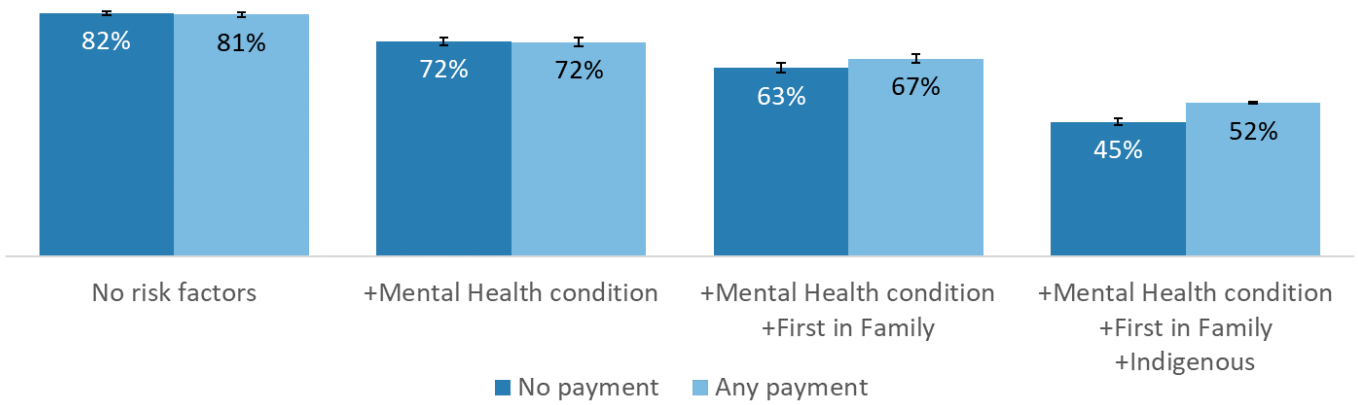
Taken together, the results show a significant and negative association between mental health service use and completion of study. The issue is of a significant scope and scale that may warrant mental ill health being considered as a new student equity group in higher education or as a supplement to existing equity groups. To illustrate, Figure 2 shows that for full-time students, the impact of mental health service use is as significant as other equity groups and that it can compound with them to further risk student completion.

[6] The comparisons between groups was confirmed using a Poisson regression on a statistically matched sub-sample controlling for confounding variables such as age, income, gender *etc*. (No mental health condition – mental health condition: IRR = 0.87, N =64,661, $p < 0.001$). Unadjusted completion rate: No mental health condition: 71%, mental health condition: 58%. The results were confirmed using causal forest modelling, with an average treatment effect for all students at -9 per cent. The results were equally significant for full-time (average treatment effect -10 per cent) and part-time students (average treatment effect -7 per cent).

[7] As advised by the Department of Health. Confirmed with Poisson regression on matched population subset to those with mental health conditions (Non-psychiatric service - psychiatry service: IRR = 0.85, N=20,027, $p < 0.001$).

[8] Custom MADIP extract linked to HEIMS records. For 2011 Commonwealth supported bachelor's degree students. Modelled completion rate for accessing any psychiatry service was 51%.

Figure 2. Six-year completion rates of 2011 commencing full-time bachelor's degree students, by select compounding risk factors.



Source: Custom MADIP extract linked to HEIMS records.

Notes: See Data and methodology for details. Error bars are 95 per cent confidence intervals. *First in Family* is where a student has no parents with bachelor's degree qualifications at the time of enrolment. Any payment is any study assistance payment (Youth Allowance, Austudy and ABSTUDY) or other payment while studying such as Disability Support Pension or carer payments.

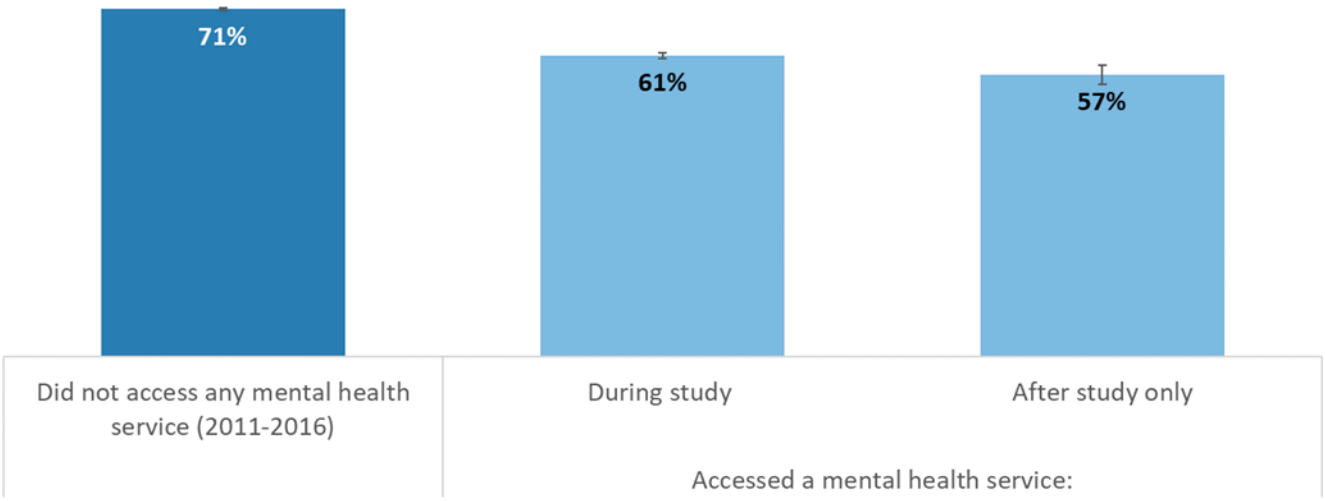
Early use of services may help

While the use of mental health services tends to lower a students chances of completing their study, early use of mental health services appears to help.[9] Completion rates were lower at 57 per cent for the 2,400 students that used mental health services in the six months after their last semester in their main course of study (Figure 3).[10] However, if mental health services were used during study, student completion rates were higher at 61 per cent, all else being equal.[9] This result is consistent with mental ill-health treatment outcomes improving with early intervention in US and UK students.[xxii,xxiii,xxiv] Although this analysis would benefit from a deeper investigation into the timing of service usage, the finding is encouraging that early access can improve student chances of completing their study.

[9] A causal forest analysis was performed to estimate treatment effect all else being equal. (No access – During; Average Treatment Effect (ATE) = -0.06, No-access – After; ATE = -0.10, During - After; ATE = -0.04.

[10] The 'during study' period was defined as all time periods between a student's initial commencing semester in 2011, and the last semester of course of completion or last semester of modal course of study. The 'after study' period was defined as within 6 months after the last semester of study (see *Data and methodology*).

Figure 3. Six-year completion rates of 2011 commencing bachelor's degree students by MBS mental health service use.



Source: Custom MADIP extract linked to HEIMS records.

Notes: Unadjusted data shown, N = 109,206. Note: Accessing services after study is defined as access within six months of last semester. Error margins 95% z-statistic.

Data and methodology

The analysis in this paper used approximately 120,000 HEIMS records linked to MADIP (Microdata: Multi-Agency Data Integration Project, Australia). The analysis included all Commonwealth supported students who commenced a bachelor's degree (course types: 9, 10) (excluding Open University Australia courses) for the first time in 2011, undertook study between 2011 and 2016 (reference period) and determines their completion status at the end of 2016. The 'during study' time period is defined as between a student's initial commencing 2011 semester and the last semester of a student's course of completion or modal course of study inclusive; the 'after study' time period is defined as within six months after the last semester of a student's course of completion or modal course of study.

A random forest tree was constructed to determine the most important indicators for outcome of interest which were then used for matching and statistical analysis. Variables used were; tertiary entrance rank, parents' education status, gender, receiving Australian Government student payments (Youth Allowance, ABSTUDY, AUSTUDY), age group, attendance type, institution size, Index of Relative Socio-economic Advantage and Disadvantage, Field of education (Science, Technology, Engineering and Maths vs. Other), and income per semester. Summary statistics and a binomial logit was used on the matched sample to confirm significance. A causal forest based average treatment effect statistic controlling for a range of covariates was used to test the impact of service access during and after a student's study period.

According to published literature, students may hide mental health conditions from fear of discrimination at university and future employment meaning the reported rate is potentially lower than the actual rate.[xxv] [xxvi] For this reason linked MBS data were used as a proxy indicator of students with a known mental health condition. The MBS is transactional, and records services, but does not include diagnostic information. For example, the data may show that someone has visited a general practitioner (GP), but the reason why may be unclear. However, there are a number of MBS items used exclusively for mental health conditions, including mental health management items and 'other allied health services' items, which can only be claimed for mental health services. These MBS items were used to indicate that a person has a known mental health condition, but with no clinical information on specific condition, severity or type. PBS data items were not fully captured until part-way through 2012 and consequently were excluded from our completion analysis due to data censoring concerns.

A limitation of the data used in this study is that there are no records for undiagnosed or untreated mental health conditions. Nor were data available for services funded outside of the MBS, or those delivered during public hospital admissions. Additionally, mental health conditions can be managed under standard non-referred (i.e. GP or practice nurse) items, and these instances of care cannot be included in the analyses because it is not possible to separate them from medical attendances that did not manage these conditions. Importantly, not everyone with a mental health condition will use mental health services. Students with mental health conditions may not be captured because they were using

standard MBS items, mental health services not covered by Medicare, or not receiving any treatment. As such, the results of this study inferred by using MBS data will likely be under-representative. For example, a survey of student wellbeing in late 2016 showed that young students were as likely or more likely to access on-campus counselling services as they were on-campus medical services.[i]

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