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Participation in tertiary education in Australia

Modelling and scenario analysis

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About the authors

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Mitchell Professorial Fellow, Peter Noonan has played a major role in shaping tertiary education policy in Australia through 25 years' experience working as a policy adviser, senior executive and consultant to federal and state governments, universities and public and private VET providers. He was a member of the Expert Panel for the Review of Australian Higher Education (Bradley Review) in 2008, and in 2010 undertook a Review of Post- Secondary Education in Queensland for the State Government. He also served on the government's 2016-17 expert panel on higher education reform.

Peter's work as a Mitchell Institute Fellow is focused on the future of tertiary education in Australia including its interface with secondary education and the labour market. He is a regular speaker at major conferences and a frequent media commentator on issues related to tertiary education.

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Acknowledgements

We would like to thank James Hulonce at ACIL Allen for updating the model for estimating participation in tertiary education in Australia and his colleagues at ACIL Allen for the development and refinement of the model since 2015.

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About the Mitchell Institute

Mitchell Institute at Victoria University is an independent think tank that works to improve the connection between evidence and policy reform. Mitchell Institute promotes the principle that high-quality education, from the early years through to early adulthood, is fundamental to individual wellbeing and to a prosperous and successful society. We believe in an education system that is oriented towards the future, creates pathways for individual success, and meets the needs of a globalised economy. The Mitchell Institute was established in 2013 by Victoria University, Melbourne with foundational investment from the Harold Mitchell Foundation.

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■ Introduction

Since World War 2, successive Commonwealth and state governments have recognised that a well-educated population is essential to Australia's economic and social wellbeing, and have put in place policies, systems and institutions to raise levels of participation in education at all levels.

Eighty-five per cent of young people now complete a full secondary education,¹ and most go on to gain higher education or Vocational Education and Training (VET) qualifications.² Many adults also undertake higher education or VET courses to upgrade their skills and qualifications.

Completion of higher education or VET qualification is increasingly a prerequisite for access to, and successful participation in, the labour market. The Department of Jobs and Small Business forecasts that over 90 per cent of the 948,000 new jobs expected to be created by 2022 will require a post school qualification.³

Australia's population is growing and getting older. Labour force participation rates will need to increase to offset the impact of population ageing. If participation rates in higher education and VET in Australia fall as the population increases, there will be fewer people of prime working age who can effectively participate in the labour market in the future.

The level of participation in VET and higher education, and in tertiary education as a whole, is therefore a major policy issue requiring long-term thinking and analysis.

In 2015, to help build a picture of past and future participation in tertiary education in Australia, Mitchell Institute commissioned ACIL Allen Consulting to develop a model to:

- track actual levels of participation in higher education, VET and tertiary education as a whole since 2008; and
- develop scenarios for future levels of participation in higher education, VET and tertiary education as a whole.

The model was developed to address specific questions such as:

- What were the levels of student enrolments in higher education, VET and tertiary education as a whole between 2008 and the last year in which full year enrolment data is available?
- What were participation levels in each sector, and for tertiary education as a whole between 2008 and the last year in which full year enrolment data is available?
- What effect would different enrolment scenarios have on participation levels in each sector and for tertiary education as a whole?
- What effect would different participation scenarios have on enrolment levels in each sector and for tertiary education as a whole?

¹ Australian Bureau of Statistics *Schools, Australia, 2017* accessed at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4221.0>

² Australian Bureau of Statistics *6227.0 - Education and Work, Australia, May 2017* accessed at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/6227.0>

³ Commonwealth Department of Jobs and Small Business, *2017 Skill Level Projections* accessed at <http://lmip.gov.au/default.aspx?LMIP/GainInsights/EmploymentProjections>

The model

Features

The primary outputs from the model are actual or projected student enrolments and actual or estimated participation rates in publicly funded tertiary education in Australia. The model is limited to publicly funded student enrolments, as its principal purpose is to underpin broader Mitchell analysis on public investment in VET and higher education, and the case for an integrated funding system across the sectors.

Participation rates are a point-in-time measure of the number of students studying divided by the relevant age cohort. These participation rates should not be confused with qualification attainment rates, which refer to the share of the population which has acquired a post-school qualification. Over time, however, participation rates are one of the major determinants of qualification-attainment levels.

Scope

Consistent with previous Mitchell analysis, we define tertiary education for the purposes of the model as encompassing student enrolments in publicly funded Certificate III–IV and Diplomas and Advanced Diplomas offered in VET, and Associate Degrees and Degrees and other undergraduate programs offered in higher education. These qualifications typically provide initial access to employment and further learning. The model can be adjusted to encompass a broader or narrower range of qualifications, however.

Some full fee undergraduate higher education and some VET student enrolments supported through income-contingent loans schemes in each sector are included in the model, as they form part of relevant data collections. Student enrolments in private providers through the former VET FEE HELP scheme are not included, however, as they do not form part of the publicly funded VET student data collection.

We recognise that postgraduate qualifications are increasingly required for entry to many professions. However, as most postgraduate qualifications are provided on a full-fee basis they are not currently included in the model as their inclusion would also require student enrolments in full-fee VET courses to be included, leading to significant problems with data consistency and comparability.

Participation levels in tertiary education will be higher than those reflected in the model if a broader range of qualifications and full fee courses are included.

The model uses Australia Bureau of Statistics (ABS) population estimates for previous years and population projections up to 2031. The time frame for the scenarios is 13 years from the year in which actual enrolment data and population estimates are available, as most children currently in pre-school will leave school and enter tertiary education in 13 years' time.

Full notes on the data used in the model are under *Data sources and usage*.

Caveats

Some caveats on the inputs to the model should be noted.

Assumption driven: The modelling scenarios are assumption driven; if assumptions change so do the results from the model. Actual demand for tertiary education is driven by many factors apart from population levels – these drivers include labour market conditions, returns on investment in tertiary education and government policies.

Policy settings: Governments will alter policy settings over the timeframe in the model, perhaps significantly. How institutions and individuals respond to policy changes, and changes in demand, cannot always be accurately predicted – especially further into the future. Innovation in delivery and the entry of new types of providers into the system could drive enrolment growth beyond projected levels in the scenarios.

Population levels: Population levels may be lower or higher than those projected in the model, particularly in relation to assumptions about levels of net migration. Population levels and estimates include the effect of net migration, including international students. Participation rates are only based on domestic students eligible for public subsidies, however. To reduce the effect of this potential distortion, the lowest projected levels of net migration are used in the model.

Some participation scenarios were re-assessed excluding net overseas migration from the resident population. This re-assessment showed that while participation levels increase (as the population cohort is smaller) the effect of net overseas migration does not change the broad trends and projections emerging from the model. Many temporary residents also become part of Australia's growing permanent population.

Age cohorts: Participation levels between different age cohorts will be influenced by changes in the number of people in specific age cohorts over time. This is particularly important for the 18-24 age cohort where participation in tertiary education is highest and, arguably, most important. For consistency, we have used the 15-64 age population for all trend and scenario analysis in the model, but note that from 2020, additional funding for higher education undergraduate places will be based on growth in the 18-64 age population. However, the level of projected population growth between the two age cohorts over the period of the model is almost identical.

Types of enrolments: Student enrolments do not necessarily equate to individual students who may be enrolled in more than one course and in different sectors in a single year. Some students are enrolled in both higher education and VET study at the same time. Student enrolments for students undertaking VET in Schools courses, or secondary student undertaking VET units, may have been captured in VET student enrolments. However, the effect of these 'dual student enrolments' is to increase the apparent level of participation in tertiary education.

Many VET student enrolments are in much shorter courses than those in higher education, and most VET students are enrolled part time, so participation in VET has a different character to that in higher education.

Final 2017 enrolment data for both sectors was not available at the time of the preparation of this paper so the enrolment trend from 2014-16 was applied to estimate 2017 student enrolments, resulting in continued slowing of growth in higher education and a continuing decline in VET. Growth in commencing higher education student enrolments was slower than growth in overall student enrolments, and this may result in slower overall enrolment growth over time - unless commencements begin to increase more quickly than overall enrolments.

The model will be updated when actual 2017 enrolment data becomes available, however this is not expected to materially change the modelling outcomes reflected in this paper.

The large spike in VET student enrolments from 2010 -2012 was largely confined to two jurisdictions and was associated with large funding increases but also some inappropriate enrolment practices as contestable VET

Application

In modelling of this type, it is the general trends that are important, not individual year-by-year results. The model should not be seen as a predictive tool, but rather a resource to help inform discussion and decisions about Australia's medium to longer term requirements for higher education, VET and tertiary education as a whole.

2016 and 2017 modelling

The model was used in 2016 and 2017 to track participation levels since 2008, project participation levels based on past trends, and model the effect of capping student enrolments and growth scenarios. The primary focus of the modelling was in relation to the 15-24 age cohorts, but modelling was also undertaken for the 15 plus-age cohort. Results of modelling undertaken in 2016 and 2017 are available on the Mitchell Institute website.⁴

In summary, the historical data showed steady growth in participation in higher education as student enrolments grew between 2009 and 2016, but with growth slowing from 2014. It also highlighted the need for continued growth in higher education student enrolments just to maintain participation levels, and even higher levels of growth to increase higher education participation rates. It showed that participation rates would fall significantly if the demand-driven system was abolished and higher education student enrolments were capped - as some commentators had proposed.

The historical data also showed a significant rise in VET participation levels from 2008–2012 but a significant decline since 2012. Decline in VET participation for 15-24 year olds was even more pronounced than for all ages. It showed that VET student enrolments would need to increase significantly just to maintain 2016 participation levels and even more for VET participation levels to increase.

The decline in VET participation from 2012 was only partially offset by increased higher education participation, and consequently, overall participation in tertiary education fell between 2012 and 2016, and was projected to fall even further - even if VET student enrolments were held constant.

Modelling for this paper

In the Mid-Year Economic and Financial Outlook (MYEFO) statement in December 2017, the Government decided to place financial caps on universities in 2018 and 2019. This cap affected Commonwealth Supported Places funding while allowing universities to enrol students for the student contribution alone. From 2020, the Government will only fund additional Commonwealth-supported places commensurate with growth in the 18-64 year old population.

In the context of this decision and the continuing reductions in VET funding for publicly funded VET delivery by state and territory governments⁵ the growth scenarios used in previous years have not been used in this paper. Rather, new scenarios were developed to focus on the effect of the recent decision on higher education funding, and on the long-term effect of the ongoing decline in VET student enrolments. Participation estimates are for the working age (15-64) age cohort.

In the absence of actual 2017 enrolment data the percentage change in actual student enrolments from 2014-2016 was applied to estimate 2017 student enrolments to develop a trend scenario for higher education, VET and tertiary education as a whole.⁶

⁴ P. Noonan (2017) Modelling increased tertiary participation in Australia, Mitchell Institute http://www.mitchellinstitute.org.au/wp-content/uploads/2017/05/Slides-on-participation_for-web.pdf

⁵ NCVER (2016) *Finance Information 2016 Table One: Operating revenues by category for government training departments, 2012–16* <https://www.ncver.edu.au/publications/publications/all-publications/finance-information-2016>

⁶ The two-year average growth rate in the model was calculated by applying the two-year total growth rate from 2014 to 2016 over two years. Specifically it was calculated by the following $0.5 * (2016_students - 2014_students) / 2014_students$. This results in a 2.6 per cent annual growth in higher education and a 7.9 per cent decline in VET. Alternative approaches would have been to calculate the compound annual growth rate from 2014 to 2016 or calculate two separate year-on-year growth rates and take the average, however these alternatives have little impact on the modelling results.

The trends and scenarios modelled for this paper are:

Higher education

- Actual student enrolments 2008-2016.
- Actual participation rates 2008-2016.
- **Scenario one:** projected higher education student enrolments from 2018-2031 based on the most recent two-year enrolment trend.
- **Scenario two:** the effects of the MYEFO decision to cap funding for undergraduate student enrolments in 2018 and 2019 with enrolment increases limited to growth in the 18-64 age population to 2031.
- **Scenario three:** the effect of capping undergraduate student enrolments on participation levels in higher education to 2031.
- The effect of these scenarios on higher-education participation.

VET

- Actual student enrolments 2008-2016.
- Actual participation rates 2008-2016.
- **Scenario four:** projected VET student enrolments from 2018-2031 based on the most recent two-year enrolment trend.
- **Scenario five:** projected student enrolments required to 2031 to maintain 2016 participation levels
- The effect of the two-year enrolment trend on participation rates in VET to 2031.

Tertiary participation as a whole

- Actual student enrolments 2008-2016.
- Actual participation rates 2008-2016.
- **Scenario six:** projected tertiary student enrolments from 2018-2031 based on the most recent enrolment trend.
- **Scenario seven:** projected student enrolments under higher education financial caps in 2018 and 2019 and 18-64 age population growth increases from 2020, with VET following the two-year trend to 2031.
- **Scenario eight:** student enrolments required to maintain tertiary participation at 2016 levels.
- The effect of these scenarios on tertiary participation to 2031.

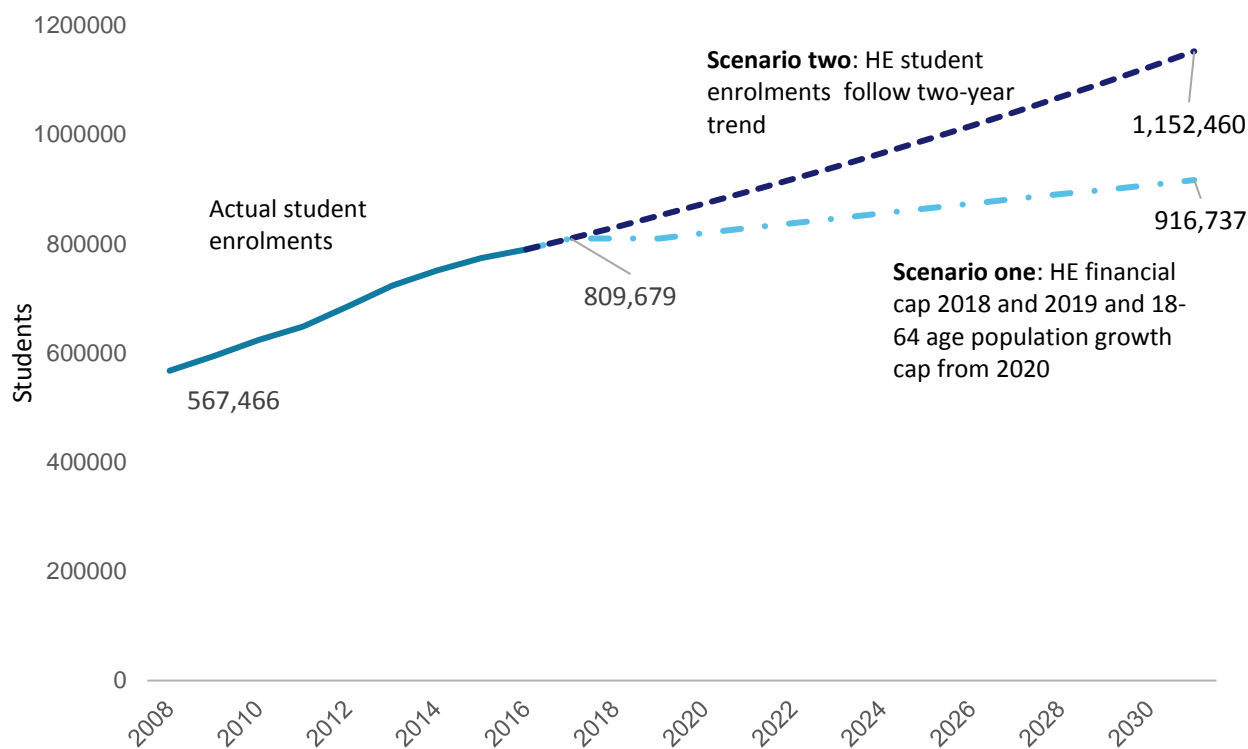
Enrolment and participation trends and scenarios

Higher education

Figure 1 illustrates:

1. Actual growth in student enrolments since 2008.
2. **Scenario one:** the assumed effect on student enrolments of the decision to cap funding for undergraduate courses in 2018 and 2019 and from 2020 to limit funding to 18-64 age population growth to 2031
3. **Scenario two:** the effect of the two-year student enrolment trend to 2031.

Figure 1 – Higher education enrolment trends and projections 2008 -2031



Scenario one

Scenario one assumes that higher education student enrolments will be largely static in 2018 and 2019. However, student enrolments may be higher in 2018 due to the 'pipeline' effect of growth in earlier years, and if universities meet their planned 2018 student load targets through marginally funded growth.

Under **Scenario one**, student enrolment growth is limited to the projected level of 18-64 age population growth from 2020 to 2031. This scenario assumes that additional funding linked to population growth directly results in a commensurate increase in student enrolments.

In reality, decisions by universities to increase or decrease student load are driven by several factors, including the extent to which:

1. per-student funding covers costs;
2. universities seek to subsidise research from funding for teaching and learning;
3. universities opt to subsidise domestic undergraduate student enrolments from revenue from international students; and
4. universities opt to enrol additional students for the student contribution.

The effect of the proposed performance funding system is another major consideration.

The balance between undergraduate and postgraduate student enrolments is also relevant, particularly if some major universities opt to limit growth in undergraduate programs and focus growth on postgraduate courses. These factors will play out differently in different universities. Population growth is far more pronounced in some geographic areas than others and student preferences vary between universities.

It is difficult to see sustainable enrolment growth at marginal rates in the medium-to-longer term, and therefore **Scenario one** reflects the Government's apparent policy intent; to ensure that growth in fully funded higher education enrolments is consistent with the level of population growth.

Scenario two

Scenario two assumes for illustrative purposes the continuation of the two-year trend in enrolment growth in higher education Bachelor and sub-Bachelor courses. This is, in effect, a proxy for the continuation of the full demand-driven system.

Again, it is important to emphasise that even had the demand-driven system continued, future decisions on student enrolment levels by universities would have been driven by a range of factors, not just past performance.

There is a gap of 235,723 by 2031 between **Scenario two** and **Scenario one** because in **Scenario two** the system is able to grow in response to ongoing demand driven by a range of factors, not just 18 - 64 age population growth.

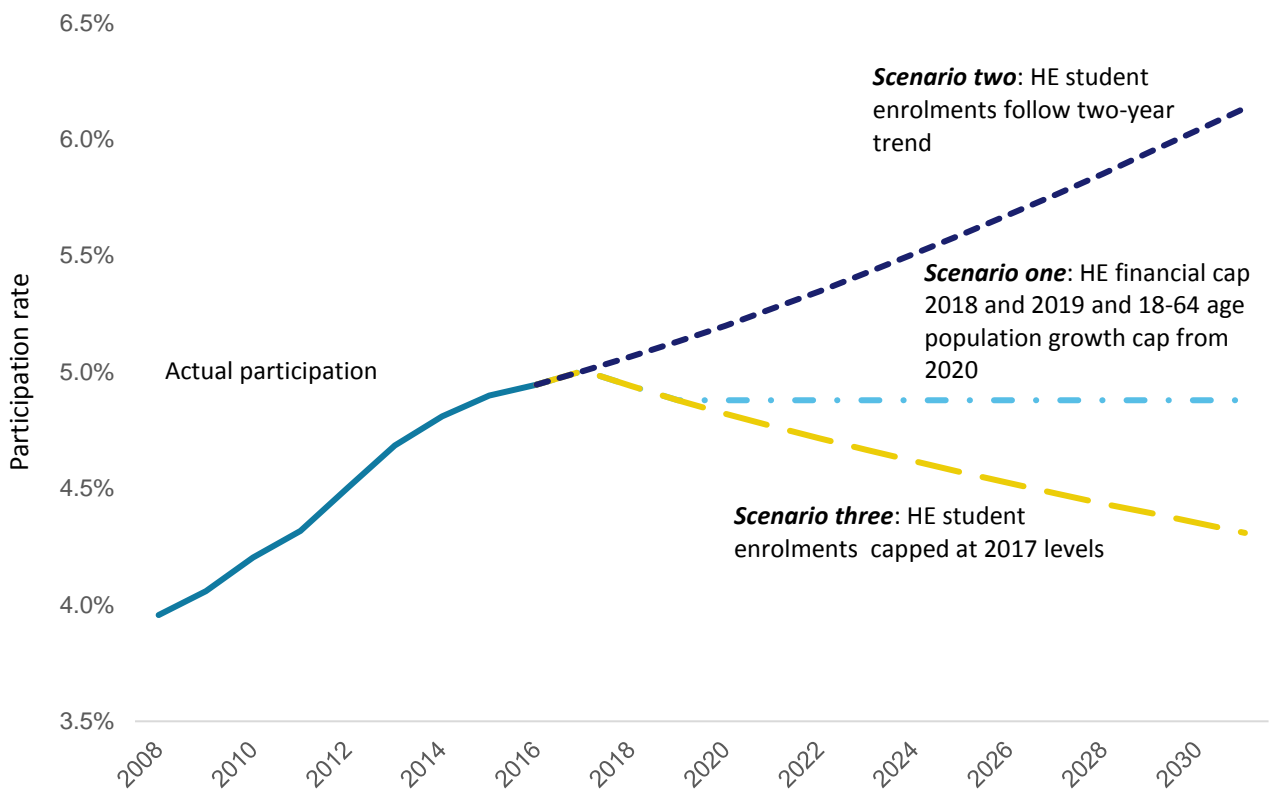
Figure two (below) shows the effect of the enrolment scenarios in figure 1 on participation levels in higher education Bachelor and sub-Bachelor courses. It also adds **Scenario three** to show the effect on participation in higher education if student enrolments had been capped at 2017 levels.

Figure two shows that under the enrolment assumptions in **Scenario one**, participation levels in higher education will essentially be maintained from 2020 at 4.9 per cent to 2031, whereas under **Scenario two** participation in higher education would increase to 6.1 per cent by 2031.

Under **Scenario three**, however, higher education participation would have fallen to 4.3 per cent by 2031 eliminating the gains in participation made over the past decade.

While it is unlikely student enrolments would have been capped at 2017 levels in the long term, figure 2 shows that had a hard enrolment cap been applied, participation rates in higher education would have declined sharply and quickly even in the short term.

Figure 2 - Higher education participation trends and projections 2008 -2031



Vocational Education and Training

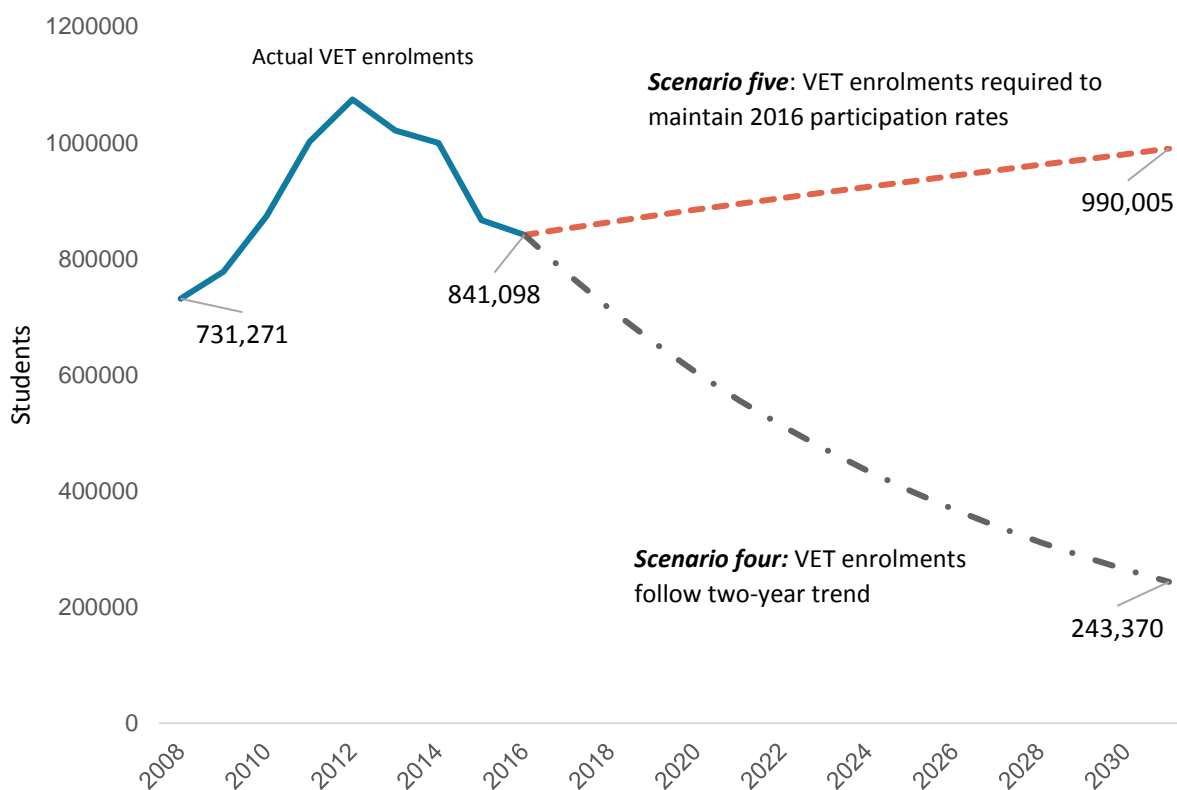
Figure three shows:

1. The significant growth in VET student enrolments from 2008–2012 and the subsequent decline since 2012.
2. **Scenario four:** the level of VET student enrolments required by 2031 just to maintain current participation rates.
3. **Scenario five:** the effect of the two-year enrolment trend continuing to 2031.

Under **Scenario four**, VET student enrolments would fall to 243,370 by 2031, assuming the ongoing decline in student enrolments is not reversed. In effect, VET would become a residual sector.

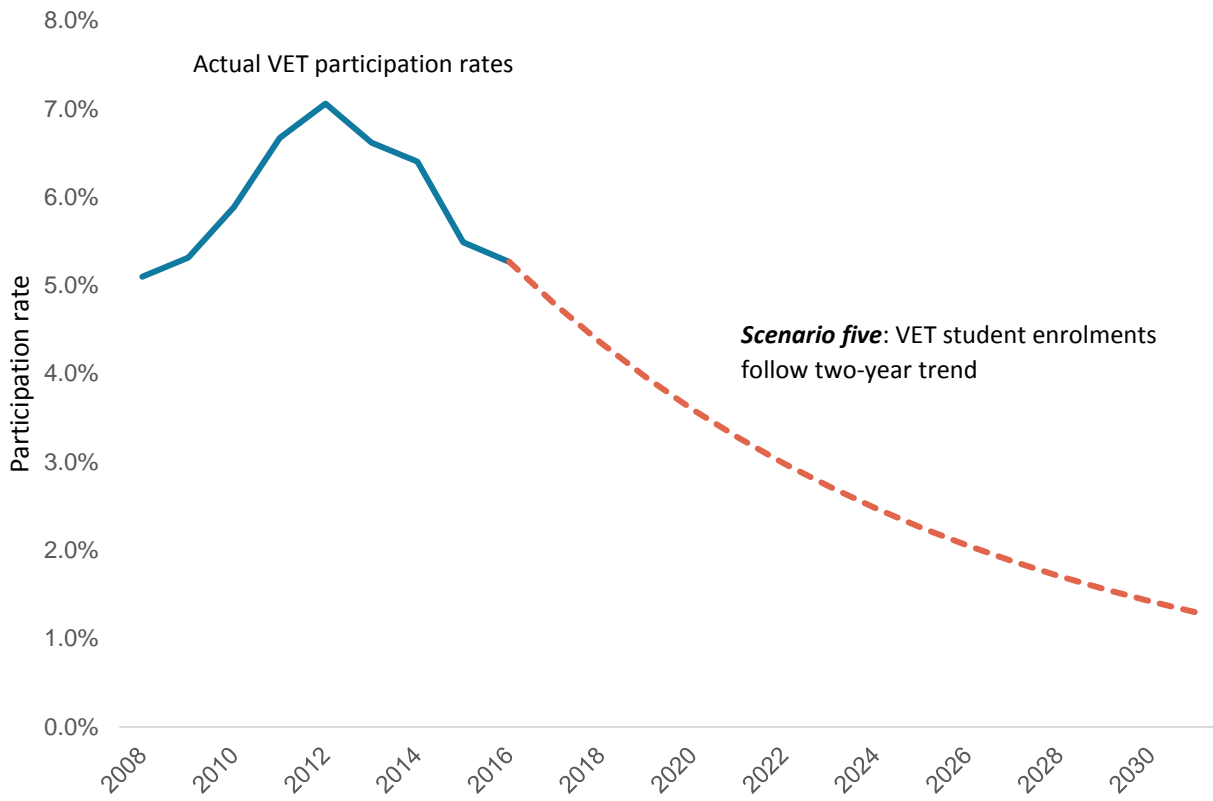
Under **Scenario five**, VET student enrolments would need to increase from 841,098 in 2016 to 990,005 by 2031, a significant reversal from the current trend. Student enrolments in VET have fallen each year since 2012, almost to 2008 levels and, therefore, participation levels in VET are lower now than they were a decade ago.

Figure 3: VET enrolment trends and projections 2008-2031



If VET student enrolments continue to fall in line with the two-year trend, participation in publicly funded tertiary education through VET would fall from 5.3 per cent to 1.3 per cent of the 15-64 age population by 2031. While this scenario may seem implausible, governments will need to act quickly and decisively to arrest the continuing decline in public investment in VET and the ongoing decline in publicly funded student enrolments.

Figure 4: VET participation trends and projections 2008-2031



Tertiary education as a whole

Figure five reflects combined student enrolments from 2008–2016 and the following scenarios:

1. **Scenario six:** projected student enrolments if higher education and VET both follow the two-year trend from 2016–17 to 2031.
2. **Scenario seven:** projected student enrolments under higher education financial caps 2018-19 and 18-64 age population growth from 2020 and VET follows the two-year trend to 2031.
3. **Scenario eight:** student enrolments required to maintain tertiary participation at 2016 levels.

Under **Scenario six** and **Scenario seven**, student enrolments in tertiary education as a whole decline because of the projected decline in VET student enrolments with student enrolments in **Scenario six** higher than **Scenario seven** because higher education is able to grow by more than the level of population growth. Under **Scenario eight**, an extra 760,000 student enrolments in tertiary education will be required by 2031 just to maintain 2016 participation rates, compared to **Scenario seven**.

Figure 5: Whole of tertiary education student enrolments: trends and projected 2008-2031

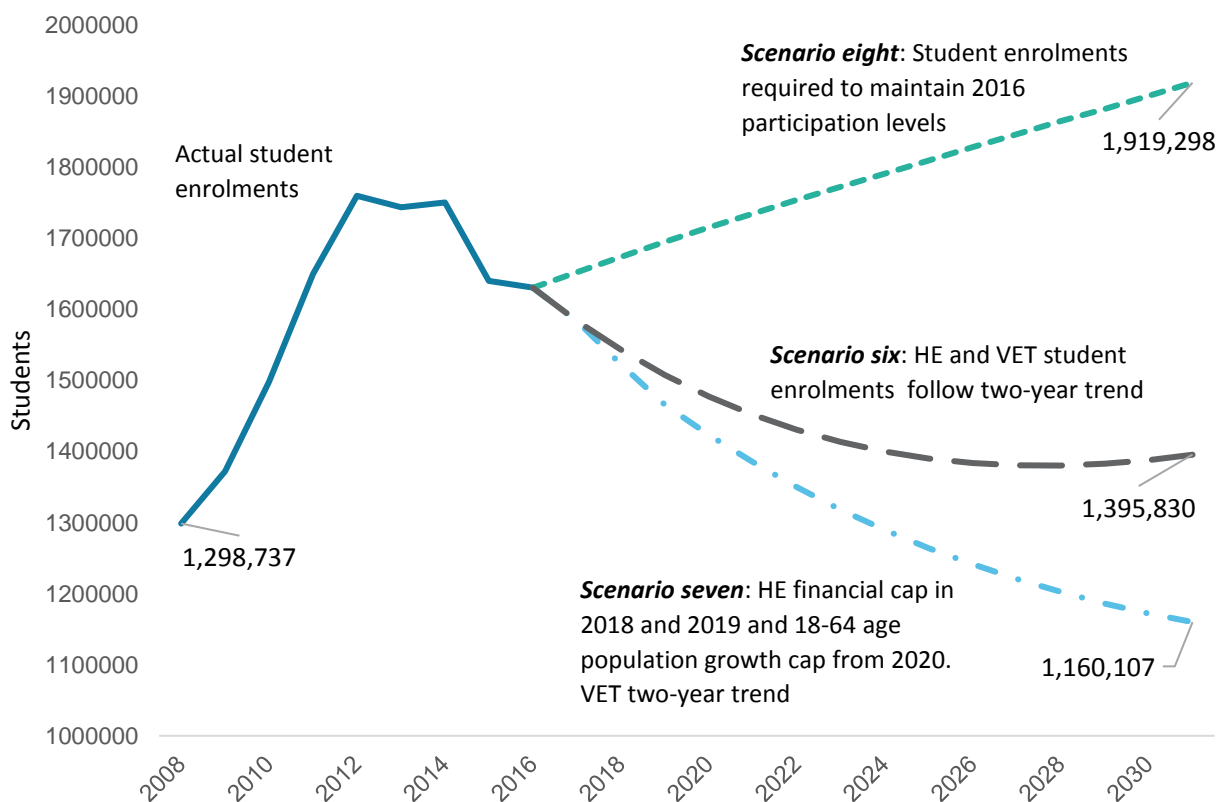
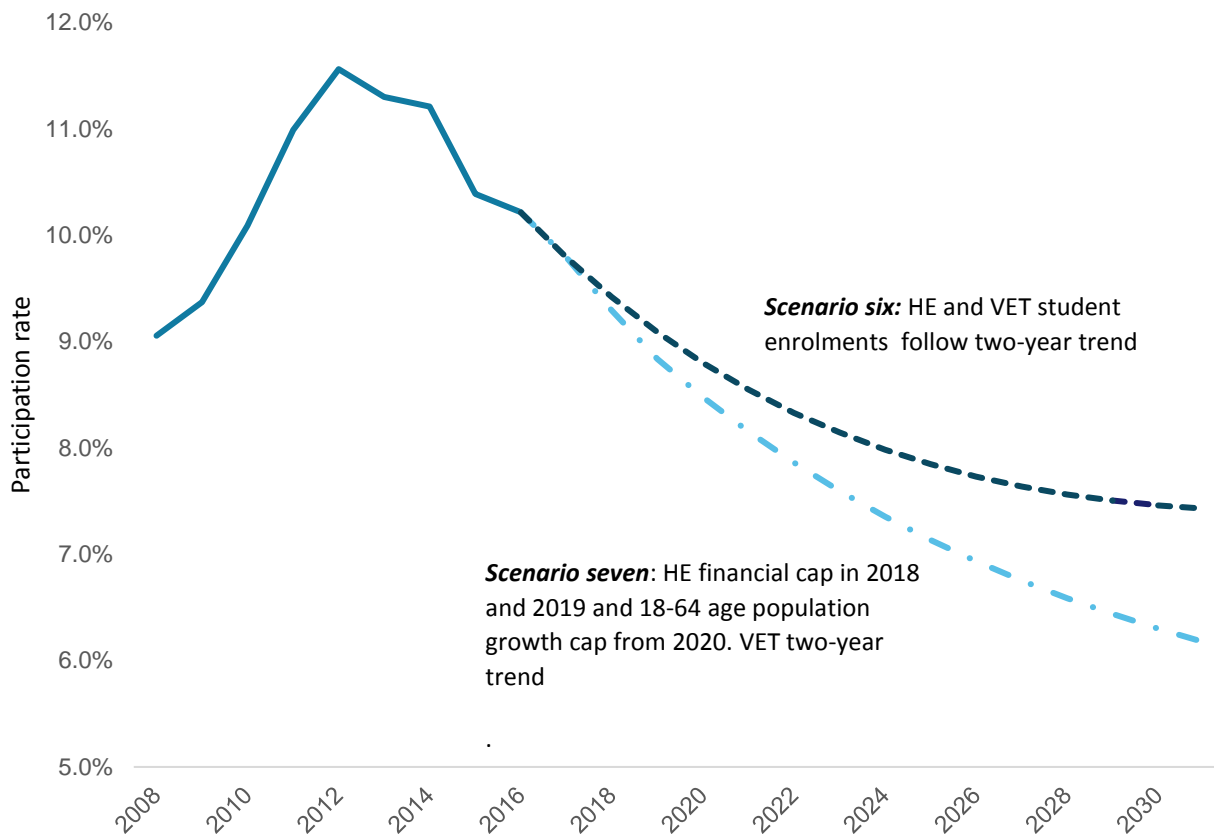


Figure six illustrates the effect of these scenarios on participation rates in tertiary education. Under both scenarios, participation in tertiary education as a whole declines significantly but more so under **Scenario seven** as higher education no longer has the capacity to at least partially redress declining participation in VET.

Figure six highlights the risk that Australia will be about to enter a decade of declining participation in tertiary education, largely as a consequence of an ongoing decline in participation in VET, in a period when successful mass participation in tertiary education is essential to the country's economic and social wellbeing. This decline would, over time, also result in a decline in qualification attainment levels in the Australian workforce.

Figure 6: Participation trends and projections 2008 -2031: whole of tertiary education



Conclusion

The analysis outlined in this paper supports the case for a comprehensive, sustainable and long-term funding framework for VET and higher education in Australia - to meet the needs of the country’s growing population and to support increased participation in its workforce. A primary objective of that framework must be to ensure that participation in tertiary education in Australia grows rather than declines, and with better balance in participation between the higher education and VET sectors.

Mitchell Institute has proposed a funding framework for tertiary education in Australia which considers the sectors together, while recognising their different roles and the different levels of government responsible for directly funding each sector.⁷

The most urgent priority is to address declining levels of public investment in VET and associated cost shifting to students, and other factors that appear to be contributing to the ongoing fall in VET student enrolments. This issue should be considered as a matter of priority by the heads of Australian governments if the real risk of declining participation in tertiary education in Australia, and declining levels of qualification attainment in the workforce, is to be averted.

⁷ P. Noonan (2016) *A new system for financing Australian Tertiary Education*, Mitchell Institute <http://www.mitchellinstitute.org.au/papers/a-new-system-for-financing-australian-tertiary-education/>

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Commonwealth Department of Jobs and Small Business *2017 Skill Level Projections* accessed at <http://lmip.gov.au/default.aspx?LMIP/GainInsights/EmploymentProjections>

NCVER (2016) *Finance Information 2016 Table One: Operating revenues by category for government training departments, 2012–16*

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<http://www.mitchellinstitute.org.au/papers/a-new-system-for-financing-australian-tertiary-education/>

Data sources and usage

Higher education data

Australian Government Department of Education and Training, 'Selected Higher Education Statistics – 2016 Student data' and within this collection,

'2016 Section 2 - All students'. See:

For which the 2016 version (as at 20/11/2017) may be found at:

<https://docs.education.gov.au/node/45161>

VET data

VET data is extracted from VOCSTATS:

<https://www.ncver.edu.au/data/data/vocstats/vocstats>

Data is specifically the number of government funded VET students by qualification level and age.

More specifically the particular fields and filters used in VOCSTATS are as follows:

- *Data base:* Government-funded students and courses, Time-series databases, VET Students 2003-2016
- *Counting:* students
- *Fields included:* — Highest current qualification level, Age, By Year

Historical population (Estimated Resident Population)

This data is attained from the ABS, specifically from ABS.Stat:

<http://stat.data.abs.gov.au/>

The extracted data are Australian population over time by age. More specifically, the particular fields and filters used in ABS.Stat are as follows:

- *Data base:* Population, Estimated Resident Population, ERP by SA2 (ASGS 2016), Age and Sex, 2001 Onwards
- *Counting:* People
- *Fields included:* Year - annual, Age

Population projections

This data is attained from the ABS, specifically from ABS.Stat:

<http://stat.data.abs.gov.au/>

The extracted data are Australian population projections over time by age. More specifically the particular fields and filters used in ABS.Stat are as follows:

- *Data base:* Population, Population Projections, Population Projections Australia 2012-2101
- *Counting:* People
- *Fields included:*
 - Region:* Australia
 - Fertility Assumption:* Medium fertility
 - Mortality Assumption:* Medium life expectancy
 - Net Overseas Migration:* Low NOM
 - Frequency:* Annual
 - Sex:* Persons

