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La Trobe University's Regional  
Economic Contribution

REPORT FOR LA TROBE UNIVERSITY

JULY 2017

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## Executive Summary

Access to educational opportunities, and improving educational outcomes, has long been recognised as critical elements in economic development at the regional and national levels. This report provides an assessment of the economic contribution that La Trobe University graduates made to the regional Victorian economy based on the latest available data (2015).

### Background

La Trobe University was established in 1964, and the Bundoora campus in the north eastern suburb of Melbourne was opened in 1967. Since commencement, La Trobe University has expanded to include:

- two campuses in Melbourne's central business district, one on Collins Street and one on Franklin Street;
- the Bendigo campus, established in 1991 after amalgamation with the Bendigo College of Advanced Education;
- the Albury-Wodonga campus, established in 1991 and co-located with Wodonga TAFE;
- the Shepparton campus which was established in 1994; and
- the Mildura campus, established in 1996, and co-located with Sunraysia TAFE.

La Trobe also offers courses for students outside Victoria including on a Sydney Campus, as well as having an on-line presence and off-shore teaching.

In 2015, La Trobe University had 33,980 students enrolled across its Victorian campuses, of which 20 per cent were enrolled in their regional campuses. The Bendigo campus is the largest of these regional campuses with around 70 per cent of regional enrolments.

### Graduate employment outcomes in regional Victoria

Graduates from La Trobe University's regional campuses are demonstrated in this report to have better labour market outcomes in that they are more likely to secure employment on a full-time basis and earn higher wages than those who chose not to undertake university studies.

The unemployment rate for the 1,455 La Trobe University graduates in 2015 aged 20-24 is estimated to be 5.7 per cent. Of these, 72.3 per cent are employed on a full-time basis, compared with an Australia-wide average of 65.5 per cent. In addition, La Trobe University regional graduates earned 17 per cent higher wages than those who did not obtain a university degree.

The unemployment rate for La Trobe University graduates of 5.7 per cent for those aged 20-24 compares with a national average of 8.2 per cent. This also compares favourably with the youth unemployment rate in regional Victoria of 9.8 per cent recorded in March 2017 (for those aged 15-24).

## The economic contribution of La Trobe University graduates to regional Victoria

Based on the analysis of employment outcomes in 2015, 946 full time equivalent (FTE) jobs were filled by La Trobe graduates in regional Victoria.

Using best practice economic modelling techniques, this report estimates the impact that La Trobe University graduates have on the regional Victorian economies through both the direct and spillover effects on labour markets in that year.

The analysis shows that La Trobe University graduates entering the workforce make a significant contribution to the regional Victorian economy. In 2015, gross regional product (GRP) in regional Victoria is projected to be around \$100 million higher as a result of La Trobe University graduates entering the workforce. The results of the analysis show that in 2015, each La Trobe University graduate entering the workforce **increased regional Victorian GRP by \$104,705**.

This economic benefit is derived through a number of mechanisms. Directly, La Trobe University graduates increase the productive capacity of the regional Victorian economies in which they are employed, increasing economic activity as measured by GRP. Indirectly, this increased economic activity leads to higher flow on demand for goods and services driven by higher private consumption and improved business performance as a result of a more productive workforce. These indirect effects are incorporated in the estimated increase in GRP.

It also follows that the increase in economic activity generated by graduates entering the workforce improves the employment prospects for other parts of the labour market. This is because, for example, higher levels of economic activity and income increase the demand for retail services and, therefore, demand for employment in this industry including those without degrees. For the 946 La Trobe University graduates entering the regional Victorian workforce, **an additional 140 FTE jobs are created for those without university degrees** in 2015.

The estimated spillover effect in terms of employment for the 946 La Trobe University graduates at 140 FTE is slightly higher than that previously estimated for graduates at the Australian level. In 2016, Cadence Economics estimated that for every thousand graduates, there were 120 FTE jobs created by way of spillover. The higher employment spillover estimated for La Trobe University graduates is a function of better matching of skills, particularly in health and education, with the future needs of the labour market in regional Victoria.

### Other contributions

The report also demonstrates that La Trobe University is producing graduates in sought after areas in regional Victoria such as health, education, business and commerce (the sought after nature of these skills is also reflected in the relatively low unemployment rates for graduate).

Of significance, a relatively large proportion of La Trobe University graduates are female. In 2015, around 70 per cent of graduates were female, which likely reflects the fact that a large number of nursing and teaching graduates are generally women.

Finally, through the provision of teaching, research and administrative operations, La Trobe University makes a contribution to the regional Victorian economy as a business entity in its own right. This was recognised in a 2009 report commissioned by La Trobe University titled '*La Trobe University: Regional Campuses Economic Impact Analysis*', which estimated that in 2008, the University contributed \$282.6 million in direct, indirect and induced regional value added. This contribution is additional to any labour market benefits to regional Victoria La Trobe University graduates made in that year.

## 1. Introduction

Regional development is an important issue for all levels of government. The Victorian government, in its most recent budget, committed significant funding to regional Victoria over a range of initiatives including infrastructure spending and programs aimed at both creating and retaining job opportunities in regional Victoria.

Access to educational opportunities, and improving educational outcomes, has long been recognised as critical elements in economic development.

Against this background, Cadence Economics was commissioned by La Trobe University to undertake a regional economic impact assessment of the University. La Trobe University operates four regional and three metropolitan campuses in Victoria, including:

- The regional campuses of Bendigo, Albury-Wodonga, Mildura and Shepparton: and
- The metropolitan campuses of Bundoora and in the Central Business District (Collins Street and Franklin Street).

This purpose of this report is to estimate the economic contribution that La Trobe University is making to *regional* Victoria through the improved labour market outcomes of its graduates. The analysis considers the direct impacts of better labour market outcomes experienced by La Trobe graduates through higher employment levels and wage rates in regional Victoria. The analysis also considers spillover benefits to those without university degrees as a result of those with university degrees entering the workforce.<sup>1</sup>

The report proceeds as follows. An overview of La Trobe University, its various campuses and the underlying data, assumptions and methodology to assess the direct impacts of La Trobe graduates is presented Chapter 2. The economic modelling undertaken to assess both the direct and indirect contribution of La Trobe graduates is presented in Chapter 3. Other benefits in relation to the University and graduates, particularly concentrating on the skills mix, is presented in Chapter 4.

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<sup>1</sup> The methodology for estimating these spillover effects is similar to that Cadence Economics adopted for Universities Australia in the 2016 report titled 'The Graduate Effect: Higher Education Spillovers to the Australian Workforce'.

## 2. La Trobe University and graduate outcomes

La Trobe University was established in 1964, and the Bundoora campus in the north eastern suburb of Melbourne was opened in 1967. At the time the University opened there were 552 students enrolled. Based on the latest available data, calendar year 2015, enrolments at the Bundoora campus were just under 25,000 students (Table 1).

Since commencement, La Trobe University has expanded to include:

- two campuses in Melbourne's central business district, one on Collins Street and one on Franklin Street;
- the Bendigo campus, established in 1991 after amalgamation with the Bendigo College of Advanced Education;
- the Albury-Wodonga campus, established in 1991 and co-located with Wodonga TAFE;
- the Shepparton campus which was established in 1994; and
- the Mildura campus, established in 1996, and co-located with Sunraysia TAFE.

La Trobe also offers courses for students outside Victoria including on a Sydney Campus, as well as having an on-line presence as well as off-shore teaching.

Overall, La Trobe University had 36,746 students enrolled in 2015. Of these, 33,980 students were enrolled across Victorian campuses (this figure excludes other on-shore and off-shore enrolments), of which around 20 per cent are enrolled in their regional Victorian campuses. The Bendigo campus is the largest of these regional campuses with around 70 per cent of regional enrolments.

**Table 1: La Trobe University student enrolments by campus, 2015**

	2015*
Victoria - Metro	
Melbourne - Bundoora	26,438
Franklin Street	270
Collins Street	504
Victoria - Regional	
Bendigo	4,771
Albury-Wodonga	766
Shepparton	749
Mildura	482
Other	
Other on-shore	1,430
Off-shore	1,336
<b>Total</b>	<b>36,746</b>

\* Calendar year figures. Source: La Trobe University internal student data provided to Cadence Economics

## Impacts on employment outcomes

To assess the contribution of La Trobe University on labour market outcomes in regional Victoria in 2015, three factors are considered:

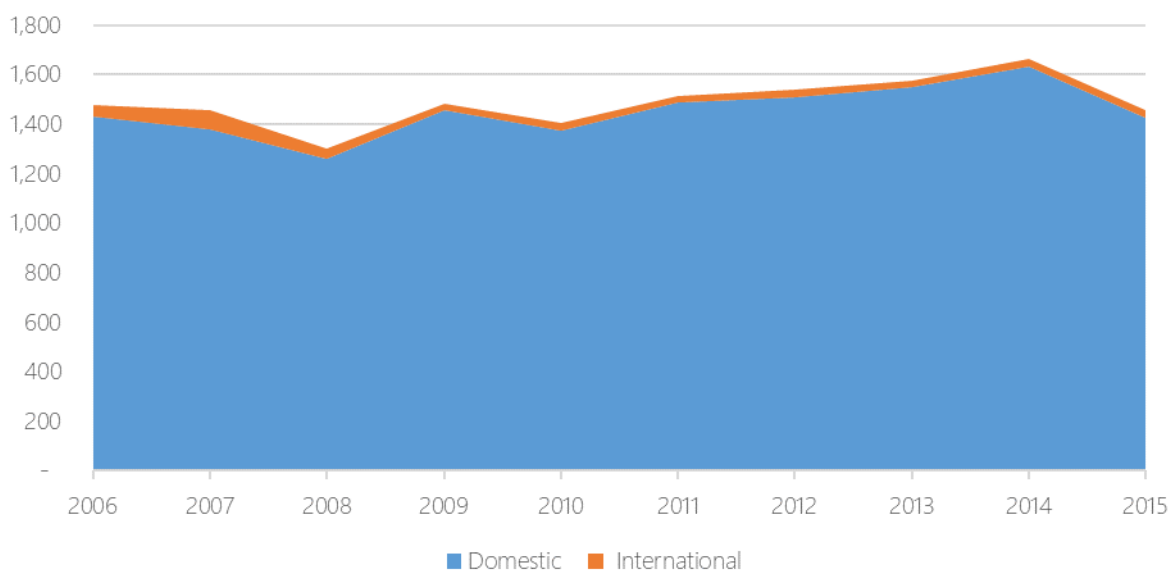
- The number of graduates from the various La Trobe University campuses who graduated in 2015;
- The employment status of La Trobe University graduates;
- The region in which graduates from La Trobe University found employment; and
- Any wage premium that La Trobe University graduates received over average weekly earnings for those entering the workforce without a university degree.

### Number of La Trobe University graduates from regional campuses

On average, La Trobe University's regional campuses produced 1,488 graduates per annum over the period 2006 to 2015 (Figure 1). Of this, only a small proportion of graduates were international students, averaging around 38 graduates per year.

Graduate numbers were highest in 2014 at 1,665. In 2015, the latest year in which data is available, graduate numbers were 1,455.

Figure 1: La Trobe University graduates from regional campuses

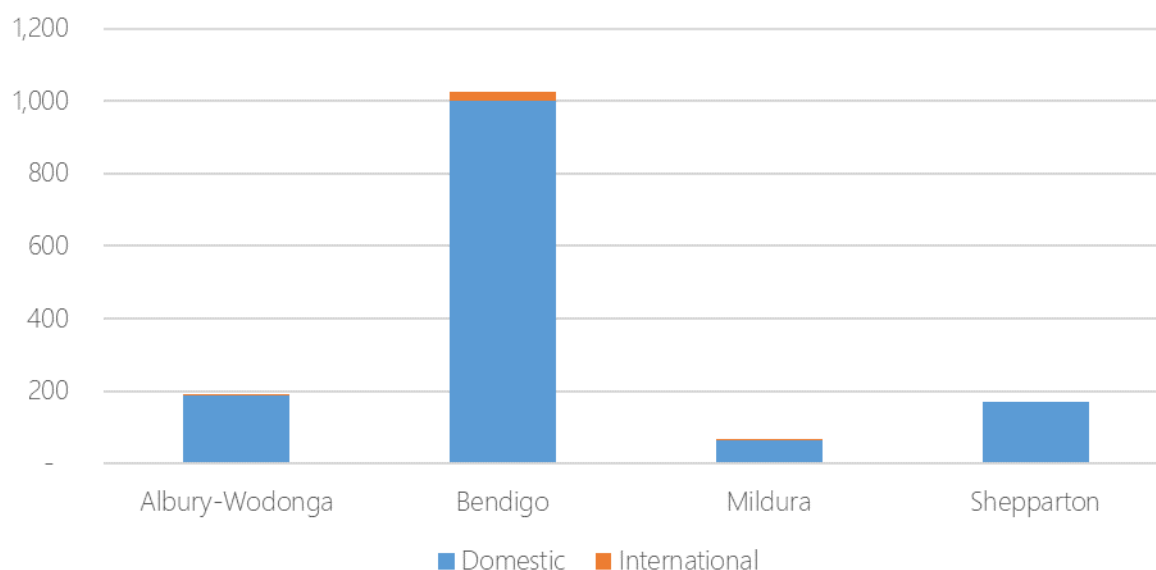


Source: La Trobe University internal student data provided to Cadence Economics

Reflecting a similar pattern to the enrolment data presented in Table 1, the Bendigo campus was responsible for the majority of regional graduates in 2015. The 1,027 graduates from the Bendigo campus represented around 71 per cent of total regional graduates in that year.



Figure 2: La Trobe University graduates by regional campus, 2015



Source: La Trobe University internal student data provided to Cadence Economics

### Employment outcomes for graduates from regional campuses

In relation to employment outcomes, there are three key considerations when considering graduates from La Trobe Universities regional campuses.

First is the rate of unemployment for graduates. As shown in Table 2, the average unemployment rate for regional graduates is 5.7 per cent over the period 2006 to 2015.<sup>2</sup> These figures are estimated to range from 5.8 per cent in Bendigo to 5.2 per cent in Shepparton. The bulk of the graduates in regional areas are aged between 20-24.

Table 2: La Trobe Student graduates, employment outcomes\*

Campus	Unemployment	Full-time employment share	Participation Rate
Albury-Wodonga	5.4	70.5	81.6
Bendigo	5.8	72.8	80.2
Shepparton	5.2	70.1	83.7
Mildura	5.9	72.5	76.1
<b>Regional average</b>	<b>5.7</b>	<b>72.3</b>	<b>80.1</b>
Australia (aged 20-24) <sup>^</sup>	8.2	65.5	80.0

Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015, ABS Cat. No. 6202.0, *Labour Force, Australia, February 2017*  
 Cadence Economics Estimates \* Employment outcomes are estimated as the average over the period 2006 – 2015 ^ Average 2006 to 2015

<sup>2</sup> The figures in Table 2 have been estimated using Graduate Destination Survey data over the period 2006 to 2015 as for some individual years there were not enough survey responses to obtain statistically robust estimates of employment outcomes.

An analysis of general Australian labour market conditions, which includes those with and without university degrees, shows that the unemployment rate over the same period was 8.2 per cent. This implies that the unemployment rate for regional graduates from La Trobe University is 2.5 percentage points lower than the national average.

The second consideration is the nature of work obtained by regional La Trobe University graduates in relation to part-time versus full-time work. As shown in Table 2, on average, 72.3 per cent of regional graduates secure full-time work, with the highest share being in Bendigo and the lowest in Shepparton. Considered in context, only 65.5 per cent of the Australian workforce aged between 20-24, of those with and without university degrees, over the same period obtained full-time work.

The third issue considered is the participation rate of regional La Trobe University graduates. The participation rate is a measure of the active labour force (i.e. those employed or seeking employment). The higher the participation rate, all things equal, the greater the number of persons employed. The analysis shows that there is no discernible increase in the participation rate of regional graduates when compared with the Australian average of those with and without university degrees over the same period.

### **Place of work for graduates from regional campuses**

When considering the economic contribution of graduates from regional campuses it is important to consider mobility. In other words, to recognise that some students studying at La Trobe's regional campuses may not necessarily end up working in that region.

Based on data from the Graduate Destination Survey, graduate employment by region is summarised in Table 3. The analysis shows that on average, 52.3 per cent of graduates from regional campuses obtain work in the same region in which that campus is located (the 'Home Region').<sup>3</sup>

The highest home region share is for the Mildura campus at just under 82 per cent. The lowest share is for Shepparton at 44.6 per cent, however 34.3 per cent of graduates from this campus obtain employment in other parts of regional Victoria. This is not the case for the Albury-Wodonga campus as just under 33.8 per cent of graduates obtain employment in other regions (outside Victoria), 28.2 per cent, some 54 graduates ending up in NSW. This implies benefits to the NSW economy that are not captured in this analysis.

On average, around 17 per cent of graduates from regional campuses obtain employment in metropolitan Victoria. The highest percentage of these graduates are from the Bendigo campus (20 per cent).

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<sup>3</sup> In this analysis, the regions considered are Local Government Areas as defined by the Australian Bureau of Statistics.

In terms of La Trobe University's metropolitan campuses, around 8.5 per cent of graduates find employment in regional Victoria. This is a combination of those students originally from regional Victoria returning from study and other students finding work opportunities in the regions.

**Table 3: Destination\* of La Trobe graduates by region of employment**

Campus	Home Region	Other Regional Victoria	Total Regional Victoria	Metro Victoria	Other Regions	Total
Albury-Wodonga	46.4	8.5	54.8	11.4	33.8	100.0
Bendigo	50.2	23.2	73.5	20.0	6.5	100.0
Shepparton	44.6	34.3	78.9	15.4	5.6	100.0
Mildura	81.6	4.9	86.6	4.1	9.3	100.0
<b>Total Regional Campuses</b>	<b>52.3</b>	<b>19.7</b>	<b>72.0</b>	<b>16.9</b>	<b>11.1</b>	<b>100.0</b>
<b>Metro</b>			<b>8.5</b>	<b>85.2</b>	<b>6.4</b>	<b>100.0</b>

Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015, Cadence Economics Estimates \* Estimated as the average over the period 2006 - 2015

### Regional employment attributable to La Trobe University

When considering the economic impacts of La Trobe University in relation to regional Victoria, it is important to recognise the role the University plays in strengthening these communities. This aligns with the Victorian government's strategy to develop regional communities as outlined in their *Regional Statement*.<sup>4</sup> In producing that statement, the Victorian government recognised that every region is different, and defined nine regional areas to underpin their regional development partnerships. These regional areas are defined aggregates of Local Government Areas (LGA) as shown in Table 4.

**Table 4: La Trobe University campuses location in relation to regional partnership areas**

Goulburn	Ovens Murray	Loddon Campaspe	Mallee
<b>Local Government Area</b>			
<b>Greater Shepparton</b>	Alpine	<b>Greater Bendigo</b>	Buloke
Mitchell	Benalla	Campaspe	Gannawarra
Moira	Indigo	Central Goldfields	<b>Mildura</b>
Murrindindi	Mansfield	Loddon	Swan Hill
Strathbogie	Towong	Macedon Ranges	
	Wangaratta	Mount Alexander	
	<b>Wodonga</b>		

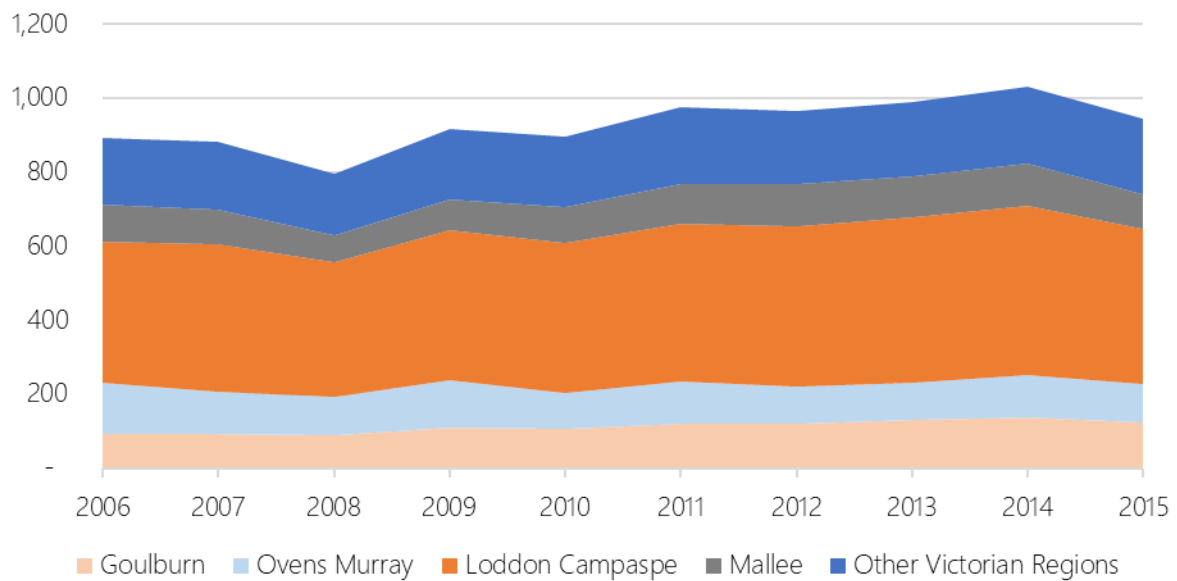
The regional campuses of La Trobe University are located in four Victorian government regional partnership areas. The largest campus is Bendigo, which is in the LGA of Greater Bendigo, and is part of the Loddon-Campaspe regional area which includes six other LGAs. The Shepparton campus

<sup>4</sup> Victorian Government (2015).

resides in the Goulburn region, the Albury-Wodonga campus in Ovens Murray, and the Mildura campus in the Mallee.

Over the period 2006 to 2015 an average of 929 full time equivalent (FTE) employees entered regional Victorian economies per annum (Figure 3). In 2015, that number was 946, with 44 per cent of those entering the workforce in Loddon Campaspe (the home of the Bendigo campus). Around 22 per cent of La Trobe University graduates entered the workforce in other regional areas of Victoria, outside those regions where La Trobe University campuses are domiciled.

**Figure 3: La Trobe Graduate Full-time Equivalent Workers, by region of destination**



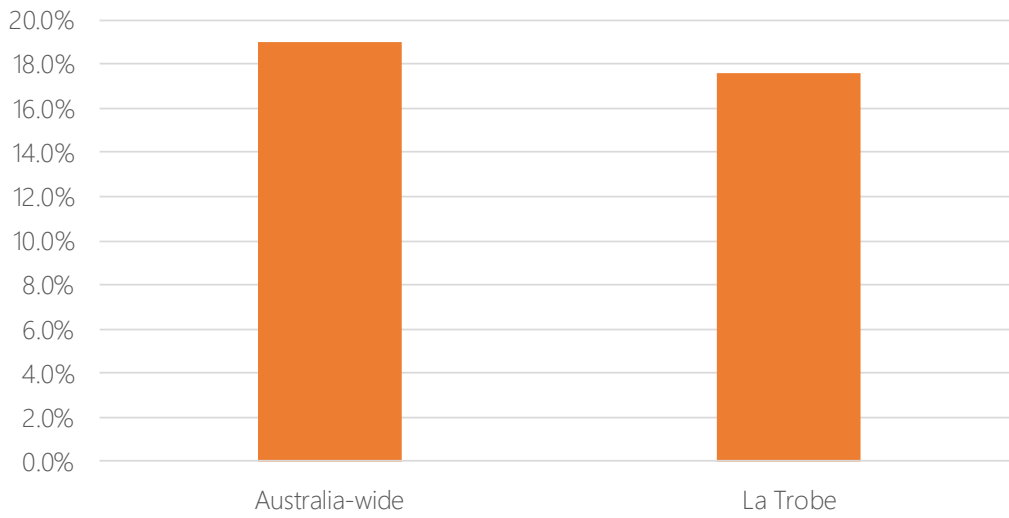
Source: La Trobe University internal student data and Cadence Economics estimates

### Estimated wage premium for La Trobe University graduates in regional areas

One of the key reasons to undertake higher education is to secure employment that provides a higher wage than could be obtained if higher education wasn’t undertaken. This is the ‘wage premium’ associated with higher education. ABS Census data shows that for all employees in the Australian workforce, regardless of age, those with university degrees earn 53 per cent more compared to those without university degrees.

This ‘wage premium’ is smaller, however, for new graduates reflecting lower levels of experience and expertise. For example, across Australia the 20 to 24 age group earns 19 per cent more than those without a degree (noting that census data is for 2011). Based on data available in the Graduate Destination Survey specific to La Trobe graduates in regional areas aged 20 to 24, the wage premium was 17 per cent (on average, over the period 2006 to 2015).

Figure 4: Wage premium for university graduates aged 20-24



Source: ABS Census, Graduate Destinations Survey (La Trobe University) 2006 to 2015 and Cadence Economics estimates

### 3. Modelling the contribution of graduates

The main focus of the analysis is measuring the impact La Trobe graduates have on regional Victorian economies through both the direct and spillover effects on labour markets.

In terms of direct effects, the analysis considers the level of FTE employment of La Trobe University graduates entering the workforce, as well as having higher levels of productivity reflected by higher wage rates.

In terms of spillover effects in regional Victoria, this analysis is consistent with recent work undertaken by Cadence Economics for Universities Australia that considered the benefits that University graduates have on non-graduate incomes and employment.

#### The economic modelling framework

The estimates are based on the Cadence Economics General Equilibrium Model (CEGEM). This model is ideally suited to analysing issues relating to labour productivity as it is a multi-region, multi-sector representation of the global economy. The model has significant flexibility in its sectoral and regional specification, which is important in the context of this analysis. A description of the model is presented in Box 1. The model has been enhanced with additional labour market detail (by level of higher education attainment) for the purposes of this report.

CEGEM is of a genre of economic models that are used extensively by the Australian Government to assess the economy-wide impacts of major policy changes and economic developments. For example, the Commonwealth Treasury undertook a series of assessments of the economic impacts of climate change response policies using CGE models in the early 2000s. The Productivity Commission has also used CGE modelling to consider the impact of economic reforms.

#### Box 1: An overview of the CEGEM model

CEGEM is a multi-commodity, multi-region, dynamic model of the world economy. Like all economic models, CEGEM is based on a range of assumptions, parameters and data that constitute an approximation to the working structure of an economy. Its construction has drawn on the key features of other economic models such as the global economic framework underpinning models such as GTAP and GTEM, with state and regional modelling frameworks such as Monash-MMRF and TERM.

Labour, capital, land and a natural resource comprise the four factors of production. On a year-by-year basis, capital and labour are mobile between sectors, while land is mobile across agriculture. The natural resource is specific to mining and is not mobile. A representative household in each region owns all factors of production. This representative household receives all factor payments, tax revenue and interregional transfers. The household also determines the allocation of income between household consumption, government consumption and savings.

Capital in each region of the model accumulates by investment less depreciation in each period. Capital is mobile internationally in CEGEM where global investment equals global savings. Global savings are made available to invest across regions. Rates of return can differ to reflect region specific differences in risk premiums.

The model assumes labour markets operate in a model where employment and wages adjust in each year so that, for example, in the case of an increase in the demand for labour, the real wage rate increases in proportion to the increase in employment from its base case forecast level.

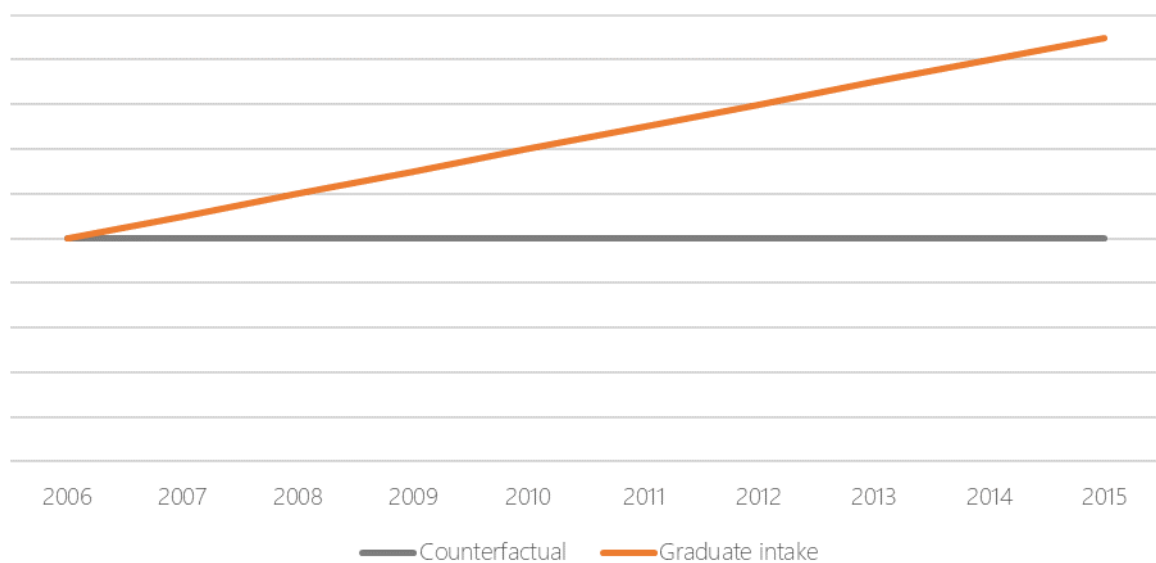
CEGEM determines regional supplies and demands of commodities through optimising behaviour of agents in perfectly competitive markets using constant returns to scale technologies. Under these assumptions, prices are set to cover costs and firms earn zero pure profits, with all returns paid to primary factors. This implies that changes in output prices are determined by changes in input prices of materials and primary factors.

### Scenario specification

To estimate the direct and spillover benefits of graduates, the difference in regional Victorian economic growth is considered under two scenarios. The baseline scenario assumes that no university graduates from La Trobe University enter the regional Victorian workforce.

The alternative scenario assumes that graduates enter the workforce with the additional FTE employment and productivity levels estimated in the previous Chapter. The modelling then estimates the benefits to each regional Victorian economy directly from the additional supply of workers with degrees, and specifically to the part of the workforce without degrees.

Figure 5: Stylised description of scenarios



Source: Cadence Economics

## Key results

La Trobe University graduates entering the workforce are projected to make a significant contribution to the regional Victorian economy (Table 5).

In 2015, gross regional product (GRP) in regional Victoria is projected to be around \$100 million higher as a result of La Trobe University graduates entering the workforce. The results of the analysis show that in 2015, each La Trobe University graduate entering the regional Victorian workforce **increased regional Victorian GRP by \$104,705**.

This economic benefit is derived through a number of mechanisms. Directly, La Trobe University graduates increase the productive capacity of the regional Victorian economies in which they are employed, increasing economic activity as measured by GRP.<sup>5</sup>

**Table 5: Projected economic impacts of La Trobe University graduates**

Region	GRP	Direct employment	Indirect employment	Total employment
	\$million	FTE	FTE	FTE
Shepparton	13	124	18	142
Wodonga	10	102	14	115
Bendigo	41	420	54	473
Mildura	9	95	12	107
Other regional Victoria	26	206	43	249
<b>Regional Victoria</b>	<b>99</b>	<b>946</b>	<b>140</b>	<b>1,086</b>

Source: Cadence Economics Estimates

Indirectly, this increased economic activity leads to higher flow on demand for goods and services driven by higher private consumption and improved business performance as a result of a more productive workforce. These indirect effects are incorporated in the estimated increase in GRP.

It also follows that the increase in economic activity generated by graduates entering the workforce improves the employment prospects for other parts of the labour market. This is because, for example, higher levels of economic activity and income increase the demand for retail services and, therefore, demand for employment in this industry including those without degrees. As shown in Table 5, for the 946 La Trobe University graduates entering the regional Victorian workforce, **an additional 140 FTE jobs are created for those without university degrees** in 2015.

<sup>5</sup> GRP, and its equivalent national measure gross domestic product (GDP), is a commonly used measure of the net output of an economy (that is, the total output minus business inputs).



## 4. Other contributions to regional Victoria

In addition to the overall impact that La Trobe University graduates have on the regional Victorian economies discussed above, there are a number of other elements to how the University contributes to regional economies across Victoria.

As institutions, universities are key drivers in developing 'human capital', equipping students with the knowledge and skills that allow them to make greater contributions to society well beyond increased levels of employment and higher wages. Universities generate and disseminate knowledge which enhances productivity and provide a raft of broader community benefits.

This chapter considers a subset of these other contributions, including:

1. Contribution to the regional skill profile;
2. Opportunities for female graduates;
3. The regional economic contribution from La Trobe operations; and
4. The regional contribution of international students entering the workforce while studying.

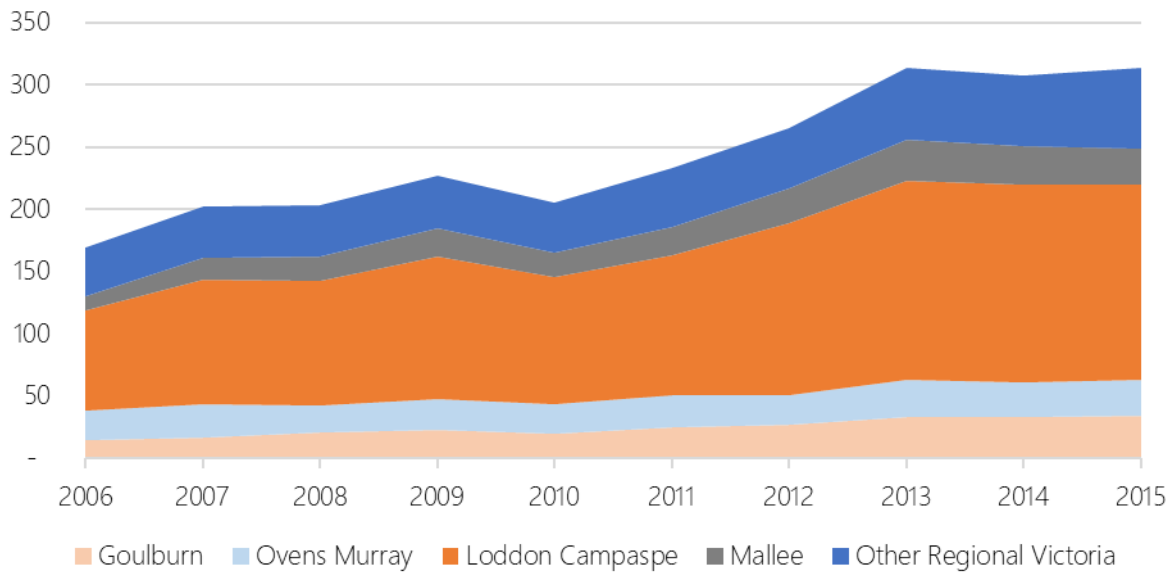
### Contribution to skills

La Trobe University contributes significantly to the skills required in the regions they operate, particularly in health, education and business and commerce courses. In 2015, based on analysis of *'Broad Field of Education Data'*, La Trobe University graduates contribute 70 per cent of the total FTE employees that enter the workforce in these three important categories in regional Victoria.

#### Health

In the health sector, over the period 2006 to 2015, an average of 244 FTE employees have entered the workforce in regional Victoria as La Trobe University graduates (Figure 6). In the period 2013 to 2015 the number of employees has increased to over 300 FTEs. On average, just under half of these graduates (122 FTEs per year) have found employment in the region around the Bendigo Campus, Loddon Campaspe.

Figure 6: Employment of La Trobe University graduates in Health\*, FTE



Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015 and Cadence Economics estimates

\* Broad Field of Education

A high proportion of graduates in health related courses completed degrees in Nursing, Pharmacy and Public health. For example, at the Bendigo campus, La Trobe University's largest regional campus, following Teacher education, Nursing and Public health were the next two most popular courses.

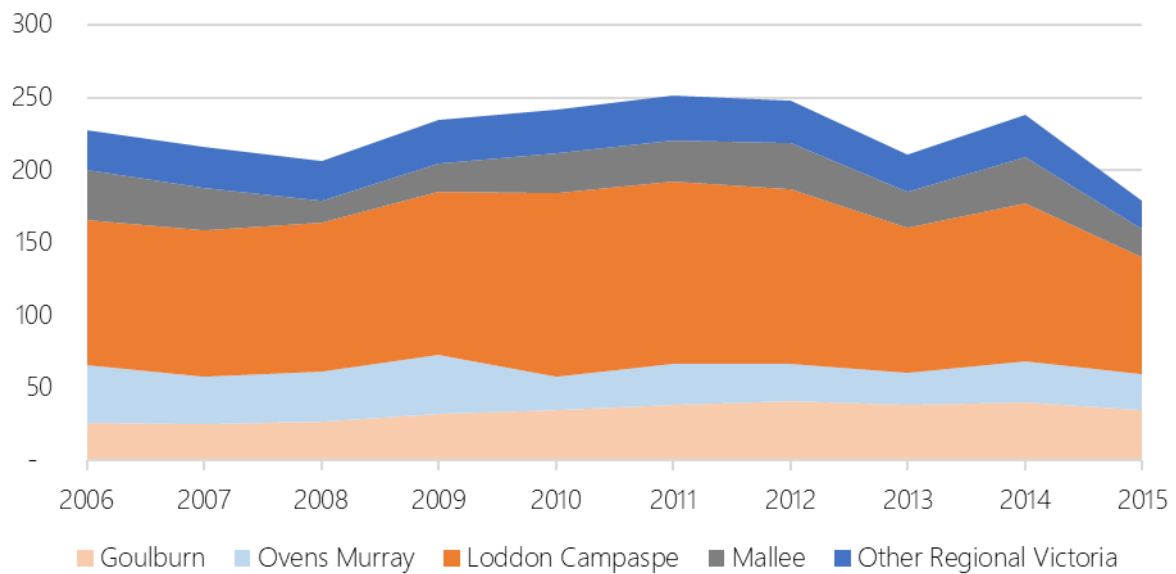
### Education

In relation to Education, an average of 266 FTE employees have entered the workforce in regional Victoria as La Trobe University graduates. As shown in Figure 7, the number graduates entering the workforce peaked at 252 in 2011, with the number subsequently declining to about 180 per annum.

Approximately half of these education-related graduates, 108 FTEs per year, have entered the workforce from the Bendigo Campus in the Loddon Campaspe region of Victoria.

Over the period 2006 to 2015, Teacher education was the most popular education-related course for each of the Campuses in the La Trobe regional network. In addition, Teacher education had the most number of graduates at the Albury-Wodonga, Bendigo, Mildura and Shepparton Campuses.

Figure 7: Employment of La Trobe University graduates in Education\*, FTE



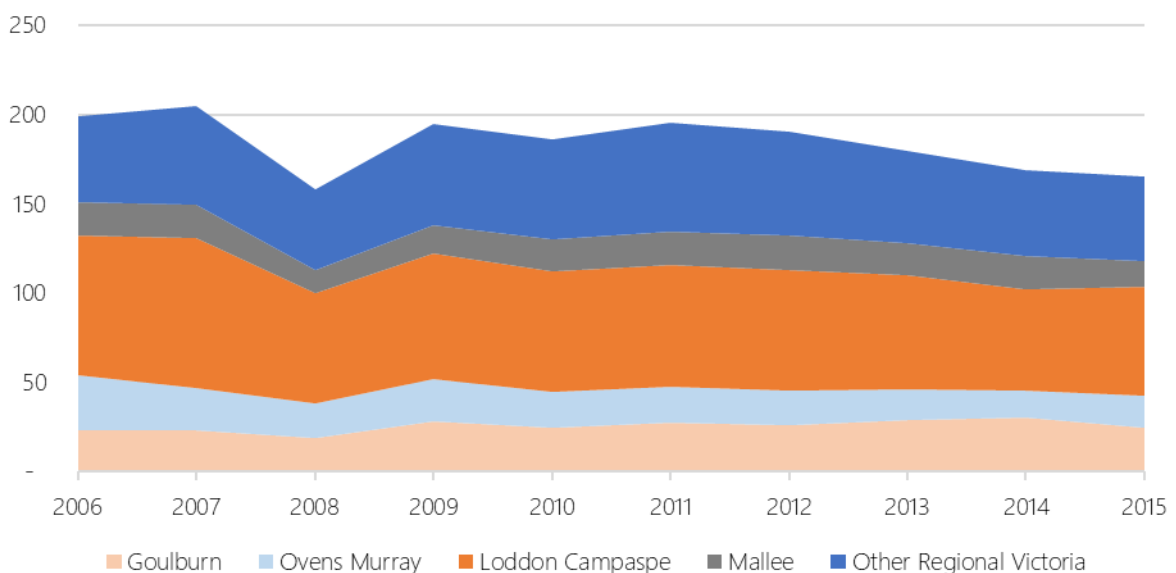
Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015 and Cadence Economics estimates

\* Broad Field of Education

### Management and Commerce

In terms of Management and Commerce, La Trobe University graduates have entered the workforce in regional Victoria an average of 185 FTE per year over the period 2006 to 2015 (Figure 8). For most of the Victorian regions Business and Management graduates and Accounting graduates make up the majority of these employees.

Figure 8: Employment of La Trobe University graduates in Management and Commerce\*, FTE



Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015 and Cadence Economics estimates

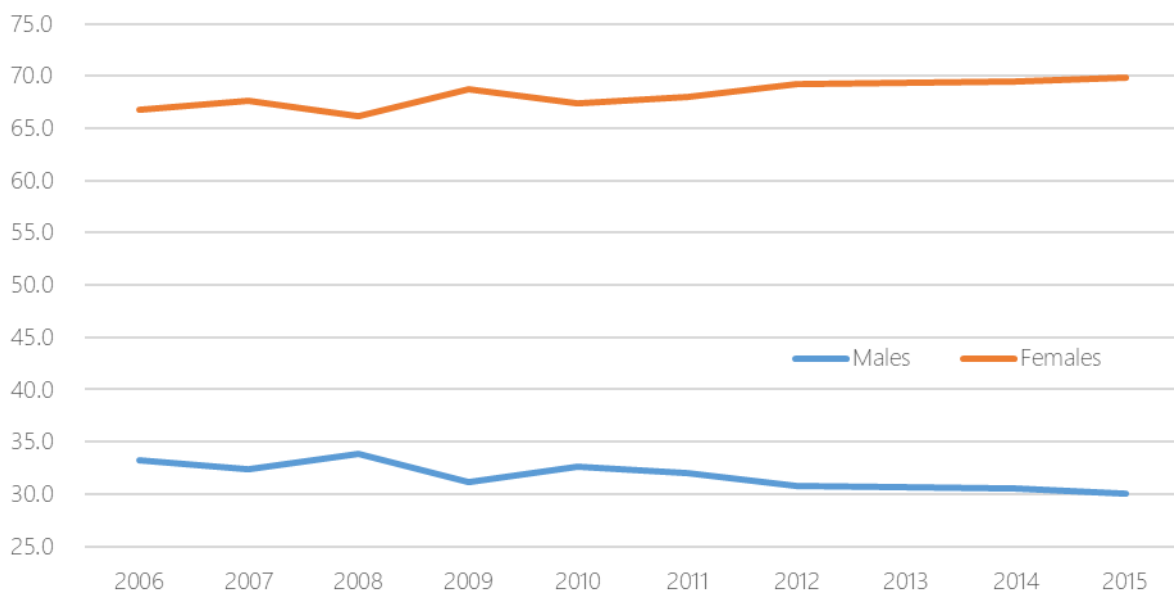
\* Broad Field of Education

## High share of female graduates

It is significant to note that a relatively large proportion of La Trobe University graduates are female. Over the period 2006 to 2015, females comprised an average of 68.2 per cent of all graduates. This trend has been rising slightly over time, with the largest share of female graduates being recorded in 2015 at 70 per cent.

The relatively high proportion of female graduates at La Trobe University's regional campuses are likely to be a reflection of the courses that are offered, with nursing and teaching professions generally attracting higher proportions of women into their ranks than men.

Figure 9: La Trobe graduates by gender, 2006 – 2015 (per cent)



Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015 and Cadence Economics estimates

## Regional economic contribution

The analysis outlined in Chapters 2 and 3 above estimate the contribution that La Trobe University graduates have made through entering the regional Victorian workforce.

Through the provision of teaching, research and administrative operations, La Trobe University makes a contribution to the regional Victorian economy as a business entity in its own right.

This was recognised in a 2009 report commissioned by La Trobe University titled '*La Trobe University: Regional Campuses Economic Impact Analysis*.' This report provides an estimate of the economic contribution made by LGA (including Albury for the Albury-Wodonga campus). The analysis was undertaken by Compelling Economics.

In that report, Compelling Economics used standard national accounting metrics to estimate the direct, indirect and induced economic contribution to regional employment and value added of the University (all numbers are reported in 2008 dollars).

## Output

The analysis was based on estimates of output. In the context of La Trobe University, this was comprised of two elements;

- University revenue; and
- Expenditure by La Trobe University students.

Compelling Economics estimated that in 2008, total output from La Trobe University was \$265.2 million, including \$157.5 million in University revenue and \$107.7 million in Student expenditure (Table 6). Commensurate with campus size, Bendigo contributed the majority of output with \$188.7 million.

**Table 6: La Trobe Regional Output, 2008 (\$ million)**

	University Revenue	Student Expenditure	Total
Albury-Wodonga	28.0	18.0	46.0
Bendigo	112.4	76.3	188.7
Mildura	11.3	6.8	18.1
Shepparton	5.8	6.6	12.4
<b>Total</b>	<b>157.5</b>	<b>107.7</b>	<b>265.2</b>

Source: Compelling Economics, *La Trobe University: Regional Campuses Economic Impact Analysis* (2009)

## Value Added

Value added is the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution and is subsequently the preferred measure of economic contribution (and is consistent with the measurement of gross domestic, or in this case regional, product).

The direct value added is generated by the University itself and by those businesses where students spend their money.

The indirect contribution is generated by those businesses that supply the University with goods and services that are located within regional centres.

The induced contribution is the value added generated by households re-spending the money earned in direct and indirect activity.

It was estimated that in 2008, the University contributed \$282.6 million in direct, indirect and induced regional value added (Table 7). The largest component of value added was made by the Bendigo Campus to the City of Greater Bendigo, with \$201.4 million in total value added.

Table 7: La Trobe Regional Economic Contribution, Value Added, 2008

	Direct	Indirect	Induced	Total
Albury-Wodonga	29.5	8	12.9	50.4
Bendigo	120.4	31.4	49.6	201.4
Mildura	11.7	2.7	4	18.4
Shepparton	7.4	2.2	2.8	12.4
<b>Total</b>	<b>169.0</b>	<b>44.3</b>	<b>69.3</b>	<b>282.6</b>

Source: Compelling Economics, *La Trobe University: Regional Campuses Economic Impact Analysis* (2009)

## Employment

Table 8 outlines the regional employment contribution made by the University and student-related expenditure. In total, the University-related activity contributed 2,939 jobs in 2008, including La Trobe University employment of 1,337 jobs.

Table 8: La Trobe Regional Employment Contribution, 2008

	University	Other Sectors	Indirect	Induced	Total
Albury-Wodonga	235	94	58	128	515
Bendigo	957	407	229	506	2,099
Mildura	96	36	20	43	195
Shepparton	49	35	16	30	130
<b>Total</b>	<b>1,337</b>	<b>572</b>	<b>323</b>	<b>707</b>	<b>2,939</b>

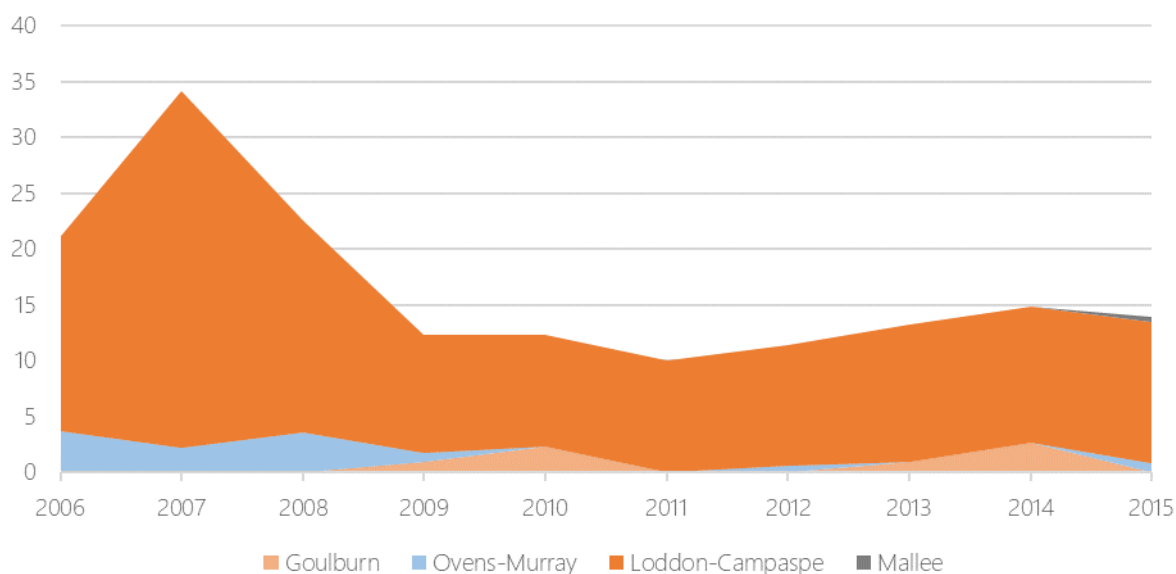
Source: Compelling Economics, *La Trobe University: Regional Campuses Economic Impact Analysis* (2009)

## International students

As outlined in Chapter 2, international students make up a small share of graduates at La Trobe University's regional campuses. International students contribute to the workforce while they study, with the Department of Education and Training's *International Student Survey 2014* suggesting that 36 per cent of higher education international students are in paid work while they study.

Figure 10 outlines the level of employment by international students while they were studying. Over the period 2006 to 2015 international students contributed 16.6 FTEs to regional Victoria, most of these in the Loddon Campaspe region, home of the Bendigo campus.

Figure 10: International students employed, FTE



Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015, Department of Education, *International Student Survey 2014*, Department of Education and Training - Higher Education Statistics Data Cube (uCube), Cadence Economics Estimates

Given current visa requirements international students can work up to 20 hours a week, to estimate the number of FTEs we assume that international students work 15 hours per week, or 43 per cent of an FTE. International students contribute to the workforce while they study, with the Department of Education and Training's survey data suggesting that 36 per cent of higher education international students are in paid work while they study.

Based on this data, and the international student population of La Trobe University's regional campuses, it is estimated that just under 17 FTE jobs are held by these student on average over the period 2006 to 2015 (Table 9).

Table 9: International students in regional Victoria's labour supply (average 2006-2015)

International Students	
Graduates	37
Enrolments per graduate	2.9
International Student Enrolments	108
Share of International Higher Education Students Working	36%
Average Hours Per week	15
FTE Hours per week	35
FTE Share	43%
FTE	16.6

Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015, Department of Education, *International Student Survey 2014*, Department of Education and Training - Higher Education Statistics Data Cube (uCube), Cadence Economics Estimates

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## Appendix A – Data underpinning the analysis

This Appendix provides more detail on the steps taken to estimate the pathways that both domestic and international La Trobe University students take from education to work. These calculations underpin the economic analysis presented in this report.

### Domestic graduates

On average, over the period 2006 to 2015, La Trobe University graduates contributed 929 FTE employees to regional Victorian economies. Table 10 shows the number of domestic graduates by campus.

**Table 10: Domestic student graduates by campus, 2006 – 2015**

Regional Campus	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Albury-Wodonga	332	257	226	292	189	228	193	175	226	189
Bendigo	930	976	904	984	982	1,020	1,056	1,091	1,108	1,002
Mildura	88	70	36	51	78	85	101	87	97	64
Shepparton	81	76	92	130	126	156	161	194	202	172
<b>Regional Completions</b>	<b>1,431</b>	<b>1,380</b>	<b>1,259</b>	<b>1,458</b>	<b>1,374</b>	<b>1,489</b>	<b>1,510</b>	<b>1,547</b>	<b>1,633</b>	<b>1,427</b>
Non-Regional Campus	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bundoora	3,926	4,138	3,691	4,469	4,624	4,867	4,344	4,741	4,930	5,152
Collins Street	-	-	-	-	-	-	-	15	20	71
Franklin Street	100	121	117	137	114	84	64	71	60	69
<b>Non-regional Completions</b>	<b>4,026</b>	<b>4,259</b>	<b>3,808</b>	<b>4,605</b>	<b>4,738</b>	<b>4,950</b>	<b>4,409</b>	<b>4,827</b>	<b>5,010</b>	<b>5,293</b>
<b>Total Completions</b>	<b>5,457</b>	<b>5,639</b>	<b>5,066</b>	<b>6,063</b>	<b>6,112</b>	<b>6,439</b>	<b>5,919</b>	<b>6,374</b>	<b>6,643</b>	<b>6,720</b>

Source: Graduate Destinations Survey (La Trobe University) 2006 to 2015

Table 11 shows the destination region for La Trobe University graduates as they enter the workforce as informed by the Graduate Destinations Survey's responses by La Trobe University campus and postcode of employment. For example, 73.5 per cent of graduates from the Bendigo campus find employment in regional Victoria and, of those, 50.2 per cent stay within the local region of Lodden Campaspe. Conversely 85 per cent of graduates from metro campuses (including Bundoora) stay in Melbourne and 8.5 per cent migrate to regional Victoria for employment.

A proportion of students migrate interstate. For example, the data in Table 11 shows that 33.8 per cent of students at the Albury-Wodonga campus migrate interstate, the highest of all La Trobe campuses, and a reflection of its location close to the NSW border.

Table 11: Domestic graduates by region of employment

Destination Region	Campus Location						Total
	Albury-Wodonga	Bendigo	Shepparton	Mildura	Metro	Other on-shore	
Regional Victoria	54.8	73.5	78.9	86.6	8.5	13.5	24.6
<i>Goulburn</i>	3.6	5.4	44.6	0.3	1.0	1.2	2.9
<i>Ovens Murray</i>	46.4	2.4	7.3	0.3	0.6	1.4	3.1
<i>Loddon Campaspe</i>	1.8	50.2	17.6	2.2	2.1	3.7	10.8
<i>Mallee</i>	0.6	6.4	3.5	81.6	0.5	0.7	2.7
<i>Other regional Victoria</i>	2.5	9.0	6.0	2.2	4.3	6.5	5.2
Metro	11.4	20.0	15.4	4.1	85.2	45.0	65.4
Interstate	33.8	6.5	5.6	9.3	6.4	41.4	10.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Graduate Destinations Survey (La Trobe University) 2015, Cadence Economics Estimates

Table 12 provides an estimate of the level of FTE employment per La Trobe University graduate as they enter the workforce, calculated as an average over the period 2006 to 2015. This was based on Graduate Destinations Survey data that includes the share of full-time and part-time work and unemployment levels. For example, each La Trobe University graduate employed in Albury-Wodonga contributed 0.66 of a FTE position in the workforce over that period.

Table 12: FTE employment per graduate

	FTE
Regional Victoria	
<i>Albury-Wodonga</i>	0.66
<i>Bendigo</i>	0.65
<i>Mildura</i>	0.62
<i>Shepparton</i>	0.67
Metro	0.55
Other on-shore	0.71

Source: Graduate Destinations Survey (La Trobe University) 2015, Cadence Economics Estimates

Using the ratios presented in Table 12 along with graduate numbers allows for an estimate of FTE employment as shown in Table 13. This domestic student employment is used as a key input to model the economic impact of La Trobe graduates.

Table 13: Domestic student FTE employment, by modelling region and year, 2006 to 2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Goulburn	91	91	89	108	105	117	116	129	135	122
Ovens Murray	137	115	103	128	96	110	98	97	114	100
Loddon Campaspe	376	391	361	399	397	415	420	441	450	415
Mallee	100	92	71	84	97	104	112	108	115	94
Other regional Victoria	178	182	163	184	183	190	178	192	200	198
<b>Regional Victoria</b>	<b>883</b>	<b>871</b>	<b>786</b>	<b>903</b>	<b>877</b>	<b>936</b>	<b>923</b>	<b>967</b>	<b>1,013</b>	<b>929</b>

Source: Cadence Economics Estimates

## International graduates

The approach taken to estimating the number of international students is similar to that used for domestic students, drawing on information supplied by the Department of Immigration and Border Protection.

Table 14 outlines the number of international students in the La Trobe University system. The Bundoora campus is the home to the large majority of international students. Of the 1,066 international student completions in 2015 Bundoora was responsible for 1,011, while in the same year only 28 international students graduated from regional campuses.

Table 14: International student completions by campus

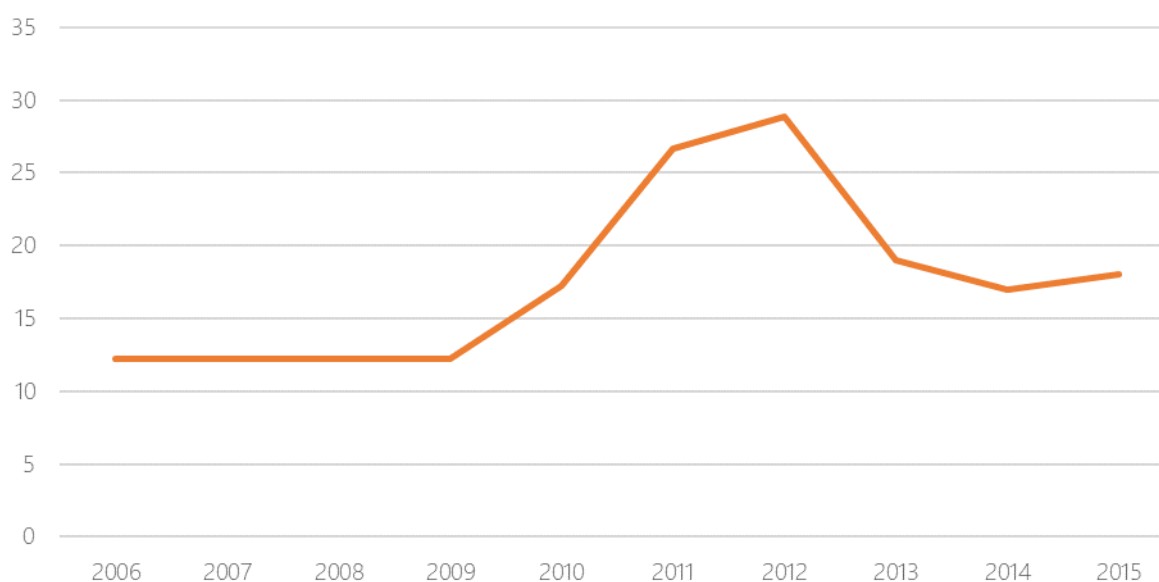
Regional Campus	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Albury-Wodonga	8	5	7	2	-	-	1	-	-	2
Bendigo	40	73	37	23	23	25	27	29	26	25
Mildura	-	-	-	-	-	-	-	-	-	1
Shepparton	-	-	-	2	5	-	-	2	6	-
Regional Completions	48	77	43	26	29	25	29	31	32	28
Non-Regional Campus	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bundoora	754	775	712	1,021	1,354	1,715	1,671	1,389	1,164	1,011
Collins Street	-	-	-	-	-	-	-	5	5	14
Franklin Street	19	23	22	31	34	29	25	21	14	14
Non-regional Completions	773	798	734	1,053	1,388	1,745	1,695	1,415	1,183	1,038
<b>Total Completions</b>	<b>821</b>	<b>875</b>	<b>778</b>	<b>1,079</b>	<b>1,417</b>	<b>1,770</b>	<b>1,724</b>	<b>1,446</b>	<b>1,215</b>	<b>1,066</b>

Source: La Trobe University

Figure 11 shows the share of international students that stay in Australia, informed by Department of Immigration and Border Protection (2017) data. The proportion of international students that stayed

in Australia after graduation peaked in 2012 at 29 per cent, while in 2015 the share had dropped to 18 per cent. Due to data availability for the years 2006 to 2008 we assume the number of international students who stayed in Australia was 12 percent as per the reported share in 2009.

**Figure 11: Proportion of international students who stay in Australia (%)**



Source: Department of Immigration and Border Protection (2017) *Student visa and temporary graduate visa programme trends 2009-10 to 2015-16*, Cadence Economics estimates.

When calculating the FTE employment outcomes for international students who remain in Australia after graduating we apply both the same pathway from graduation to destination of employment and the ratio of FTE to graduates observed for domestic students. Table 15 outlines the number of FTEs that international students contribute to regional Victoria after graduation.

**Table 15: International student FTE, by modelling region and year, 2006 to 2015**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Goulburn	1	1	1	1	2	4	4	2	2	2
Ovens Murray	1	1	1	1	2	3	3	2	1	1
Loddon Campaspe	4	5	3	4	6	11	12	7	5	5
Mallee	1	1	1	1	1	2	2	1	1	1
Other regional Victoria	4	5	4	6	9	18	19	10	8	7
<b>Regional Victoria</b>	<b>11</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>20</b>	<b>38</b>	<b>41</b>	<b>23</b>	<b>18</b>	<b>17</b>

Source: Cadence Economics estimates

### Total La Trobe University graduates employed

Table 16 shows the total number of FTEs employed from La Trobe graduates, by year and by region. A large majority of La Trobe graduates (an average of 413 per year) enter the workforce in the Loddon Campaspe region, home of the largest regional campus in Bendigo. These are the numbers

of student FTEs that were used to model the economic impact of La Trobe graduates entering the workforce.

**Table 16: La Trobe Student graduate FTE, by region of employment and year, 2006 to 2015**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Goulburn	92	92	90	110	107	121	120	132	137	124
Ovens Murray	138	116	104	129	97	113	101	98	115	102
Loddon Campaspe	380	396	364	403	403	426	432	448	456	420
Mallee	100	93	71	85	99	106	114	109	116	95
Other regional Victoria	183	187	167	190	192	208	197	203	207	206
<b>Regional Victoria</b>	<b>894</b>	<b>884</b>	<b>796</b>	<b>917</b>	<b>898</b>	<b>974</b>	<b>964</b>	<b>990</b>	<b>1,031</b>	<b>946</b>

Source: Cadence Economics estimates