

A study of the effects of Victoria University on the Western Melbourne economy

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Centre of Policy Studies, Victoria University





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Report authors:

Professor Janine Dixon
Emeritus Professor John Madden
Dr Trang Tran
Professor Glyn Wittwer

**Centre of Policy Studies
Victoria University**

300 Queens St
Melbourne Victoria 3000

Telephone: +61 3 9919 1830

E-mail: Trang.Tran1@vu.edu.au

www.vu.edu.au/centre-of-policy-studies-cops

EXECUTIVE SUMMARY

Research by the Centre of Policy Studies (CoPS) shows that Victoria University increased gross domestic product (GDP) in Western Melbourne in 2024 by \$818 million and boosted the region's employment by just over 2,360 jobs. This represents a contribution of around 0.8 per cent to total economic activity in Western Melbourne.

Victoria University has its origins in Melbourne's western suburbs and has been present in the West for over a century. The University's commitment to the region is spelt out in its West of Melbourne Charter that encompasses its provision of tertiary education to the region and its mission to strengthen the economic and social fabric of the region.

CoPS' report highlights the University's success in advancing Western Melbourne's economy. The study carefully examined how VU's presence in the West: has increased local economic activity through expenditure in the region both by the University itself and by the students it attracts to the West; and how VU has generated a more productive workforce, and through its regionally-focussed research, has improved technology in local industries.

The table below shows how each of the VU expenditure and productivity effects added to Western Melbourne's GDP in 2024.

IMPACTS OF VICTORIA UNIVERSITY ON WESTERN MELBOURNE GDP 2024	
Source of GDP gain	\$ million
DIRECT IMPACTS ON VALUE ADDED	
VU local spending	266
Extra student spending in West	47
More productive local workforce	175
Improved technology in local industries	36
INDIRECT IMPACTS ON VALUE ADDED	
Induced business activity	217
TOTAL IMPACT ON WESTERN MELBOURNE VALUE ADDED	741
plus Indirect Taxes	77
TOTAL IMPACT ON WESTERN MELBOURNE GDP	818

The table makes evident that both the increase in demand that the University brings to the West and the productivity benefits it engenders have a large direct impact on GDP in Western Melbourne; directly increasing value-added in the region by \$524 million. This in turn has a large stimulatory effect, increasing value added by a further \$217 million. This activity attracts \$77 million in indirect taxes, leading to a GDP contribution by VU in Western Melbourne of \$818 million.

➤ **DIRECT IMPACTS**

SPENDING

VU is a larger spender in Western Melbourne with about 70 per cent (or around \$425 million) of its total budget being spent in the region in 2024. Furthermore, students attracted to Western Melbourne to attend the University are estimated to have spent another \$143 million.

Much of this expenditure directly translates into income for workers and businesses in the region, directly boosting the West's GDP by \$313 million (the sum of the first two rows in the Table).

SKILLS AND RESEARCH KNOWLEDGE

Of course, universities do much more than just spend money; they train people and undertake research. One of the very long-lasting contributions that VU makes to Western Melbourne is to increase the skills of the local workforce, increasing their wages and reducing their risk of unemployment.

Between 1992 and 2023, over seventy-four thousand higher education degrees and almost ninety thousand VET qualifications were awarded to students who studied at the University's Western Melbourne campuses. While many of these students moved away from the region over the years, it is estimated that in 2024 over 27,000 of these VU award holders were still working in Western Melbourne. Of these it is estimated that around 8,700 award holders would have been working elsewhere in Melbourne, if it were not for the extra attachment that they formed with the Western Melbourne region purely as a result of VU providing them with the opportunity to attend a local campus.

The economics literature provides estimates of improvements in labour productivity associated with the major types of university degrees and VET qualifications. Applying these to our estimates of VU graduates retained in the West implies a \$175 million increase in labour productivity in the region's industries.

Accumulated research knowledge from VU research focussed on Western Melbourne's industries was estimated to add a further \$36 million to the overall productivity of industries in the region.

➤ **INDIRECT IMPACTS**

The economic modelling revealed an additional boost to Western Melbourne GDP due to flow-on effects induced by the VU-generated direct expenditure and productivity impacts on GDP. These are often referred to as indirect, or multiplier effects.

VU and student spending cause other businesses to expand their activities in the West induced by an expanding local economy. Also, the productivity improvements make the West more

competitive, leading to an additional expansion of local business activity. These flow-on effects add a further \$217 million to Western Melbourne's GDP.

➤ **KEY RESULTS**

The TERM-WM simulations trace the effects of VU having a 32-year history of locating university campuses in Western Melbourne on the economies of all six regions in the model.

Key results for the Western Melbourne economy in 2024 emanating from VU's presence in the West are:

- Real household consumption \$443 million higher than would otherwise be the case
- Higher government spending in the region of \$182 million
- An extra \$225 million in real investment
- An 0.45 per cent (2,363 jobs) increase in employment
- An 0.6 per cent (\$333 million) in additional real wage payments
- Major industries to make substantial positive contributions to the region's output and employment are: Tertiary Education itself, Construction, and Health Care & Social Assistance.

➤ **VU AND THE CITY**

Since its beginnings as a university in the early 1990s, VU has also had a presence in the Melbourne CBD. Since the opening of the City Tower in 2022, the number of students enrolled at the University's City campus has grown rapidly.

Over the three years from 2022 to 2024, over a fifth of students graduating from the University's City campus have a Western Melbourne home residence. It might be expected that a portion of these students would not have sought to obtain the degree they did, if there were no VU City campus to give them an extra tertiary participation opportunity. It is estimated that on average (weighted by course type) their award would earn the graduate a wage premium of \$385,000 in present value terms over a 40-year uninterrupted post-graduation working life. Allowing for career disruptions and the costs involved in undertaking the degree course, still yields on average a net present value from their VU qualification of \$253,500. If we assume that 10 per cent of Western Melbourne students who graduated from the City campus would not otherwise have obtained their qualification over the 3 years from 2022 to 2024, this would have afforded these students in total about an extra \$40 million (again in net present value terms) over their working life.

1. Introduction

Victoria University (VU) has a long history of engagement with the Western Melbourne region in creating opportunities for students from the area, and in establishing strong links with the region's industry and community. As part of framing its Strategic Plan with its new vision as an 'impact-driven' university, VU has requested the University's Centre of Policy Studies (CoPS) to undertake an economic modelling study of the effects that the University's focus on Western Melbourne is having on that region's economy. This is the first such analyses since CoPS' 2016 report on this issue, which had been undertaken for its Centenary celebrations.

CoPS has developed a rigorous method for analysing the local economic effects of a university (Giesecke and Madden, 2006, Madden, 2016 and 2017, Waschik *et al.*, 2022). The framework for the analysis is a detailed multiregional economic model that captures the behaviour of economic agents in six regions of the Australian economy, including four regions within Greater Melbourne. VU through its presence in Western Melbourne directly affects the economy by stimulating demand for local goods and services, and by adding to the region's productivity with the dissemination of knowledge through its teaching and research. The CoPS method involves a comprehensive estimation of the direct effects the University has on the local Western Melbourne economy, and then via multiregional economic modelling, it traces how these direct effects reverberate around the local economy and into other regions.

In Section 2 we explain the economic modelling framework employed in the study and then detail how each of the direct effects that feed into the model are carefully estimated from VU data and other sources. The estimation of direct effects are divided into two main categories: (i) demand-side effects involving expenditure in Western Melbourne in 2024 that results from VU having campuses in the region; and (ii) supply-side (productivity) effects that arise from the knowledge legacy created by VU's operations in the region over more than three decades since it achieved university status in the early 1990s.

The methodology section concludes with a brief discussion of the simulations in sub-section 2.2.3, and a consideration in 2.2.4 of an approach to an analysis of net economic benefits which may flow from the development of the Victoria University City Tower.

Section 3 discusses the results of the analysis, while Section 4 considers effects of VU's City campus, and Section 5 provides concluding remarks.

2. Study Method

2.1 Economic modelling approach

Universities have a range of effects on the regional economies in which they are located.¹ The first of these effects relates to a university's operations pulling resources into a region as a result of it locating there. This type of local economic impact in many ways differs little from the effect of other types of industries locating in a particular region.² However, universities due to the nature of their output – primarily teaching and research – also have an effect on the community's knowledge base, and thus act to raise productivity, both in the university's own region and in other regions to which the new knowledge spills over.

There have been numerous regional economic impact studies of particular universities, mainly using input-output models which capture the multiplier effects of university and associated expenditure in a region.³ On the other hand, studies of the knowledge effects of universities have normally been assessed in separate exercises, generally using a different method, commonly econometric analysis (e.g. Henderson, 2007).

Giesecke and Madden (2006) brought together these two approaches within a single methodologic framework – a computable general equilibrium (CGE) modelling analysis. By using a CGE modelling framework they were able to examine the impacts of a university on a regional economy that treated both local expenditure impacts (or, as they refer to it, demand-side effects) and knowledge impacts (or supply-side effects). Their approach forms a starting point for the current study.

Addressing the issue of this study, however, introduces some additional complications. Giesecke and Madden (2006) were concerned with the effects of a university undertaking policies to increase its rate of growth and thus compared a forecast where the policies were introduced against a no-policy baseline (as is standard in CGE policy applications). Here we concern ourselves with the effects of VU's entire operations in Western Melbourne in a particular year (2024) by simulating a counterfactual of VU never having operated as a university with campuses in the West. In the case of examining demand-side effects this is comparatively straightforward, particular under the assumption, which we will make here, that in the absence of VU, no other

¹ There is an extensive literature on the benefits of universities to their local regions (see literature reviews in Drucker and Goldstein, 2007, and Dalziel et al., 2009). Universities have both market and non-market benefits, but in this report, we only deal with the former (see McMahon, 2009, for a discussion of the latter).

² Different industries can have varying regional economic impacts due to the composition and geographical sourcing of their inputs. A characteristic of the education industry is that, like certain other service industries (e.g. tourist attractions, sports and other events), it attracts out-of-region visitors who enhance the local demand effect.

³ Input-output is a long-established method of capturing indirect effects of demand-side shocks, but it suffers the severe limitation of not accounting for supply constraints and price-responsive behaviour. While input-output is still the most common way of analysing demand-side effects, other non-modelling methods are sometimes employed (see Garrido-Yserte and Gallo-Rivera, 2010, and Mohamad, 2021).

university would be operating in the region.⁴ When modelling the supply-side effects, we need to incorporate VU's knowledge legacy built up over more than three decades. To capture these knowledge effects, we need to assume that VU had never produced graduates or research output in the West.

This required a complex modification of Giesecke and Madden's (2006) treatment of knowledge impacts. Whereas they were equipped with forecasts for changes in graduate numbers and research expenditure, which they were able to use to estimate future productivity effects above baseline forecasts, our task involved a very much larger assignment; namely to estimate a set of very detailed time series for graduate and research numbers over 32 years from 1992 to the beginning of 2024. While published information was supplemented by some very detailed data from VU's Data Insights team, it was necessary, as we shall see in Section 2.2.2, to massage this data extensively to disentangle the required graduation and research information. The method for doing so was first developed by Madden (2016) in the previous study of VU's economic contribution to Western Melbourne. The most complex task was to establish the degree each cohort of graduates from Western Melbourne campuses, disaggregated by five award categories and seven places of home residence, maintained attachment to the Western Melbourne workforce, and the extent to which this would have differed if there were no opportunity for a university-based education in the West.

A particular complication of examining economic effects of a tertiary institution on a particular area of a large city is that both students and workers can readily commute from their place of residence to their place of study/work. On the basis of estimates in the literature (see later discussion of Parker, *et al.*, 2015), we assume that in the absence of VU having campuses in the West 10 per cent of students who actually qualified with a higher education or VET award from a Western Melbourne campus, would under the counterfactual not have participated in a tertiary education, while the other 90 per cent would have undertaken their tertiary education elsewhere in Melbourne.⁵ In tracking each cohort of graduates (by category), we need to estimate the proportion who commence work in Western Melbourne and what happens to them over the years. In doing so we are guided by information on graduate destinations, return from further-study rates, intra-city work patterns, annual interregional (and international) migration rates, labour-force participation (and employment) rates. We then need to repeat this exercise under the counterfactual to determine the impact that VU's operation as the sole university in the West over the 1992 to 2023 period has made to the number and type of graduates working in Western Melbourne in 2024; and then to estimate the labour productivity impact of these 'extra' graduates.

⁴ We make this assumption because our concern is to assess the effects of VU's focus on the West. However, while we assume that no other West-focussed university would have set up campuses in Western Melbourne, we do allow for the fact that there are non-university VET providers in the region, and that they would have represented an alternative source of VET study in the absence of VU.

⁵ We assume that these students would have under the counterfactual spread themselves over institutions elsewhere in Greater Melbourne in line with existing regional shares in the tertiary education industry.

In the next sections we discuss in greater detail how we estimate each of VU's direct impacts on demand and productivity in Western Melbourne. In general, our method follows Madden (2016). For the current report, however, we are able to make some improvements to his methodology due to a much richer set of data made available from Data Insights.

Much of the work for this project related to estimating the direct expenditure and particularly the productivity impacts of VU's presence in the West. It is only once these direct impacts had been estimated that we were able to convert them into a set of shocks that could be inputted to the TERM-WM simulation. The TERM-WM simulation then traces through the effects of the shocks as they work their way through the model's six regional economies. The simulation results give us the total (direct and indirect) contribution of VU to the Western Melbourne economy.

Most of the remainder of this section (Section 2) discusses the details of estimating the direct impacts. The TERM model is fully documented elsewhere, so we consign to Appendix B a brief overview of the TERM model and specify the ways in which the TERM-WM version differs from its parent model. References are cited in the appendix, which allow the interested reader to find detailed descriptions of the theoretical structure of TERM. We discuss, in sub-section 2.3, how we set up our TERM-WM simulation to be consistent with our overall analytical approach. Section 2 then concludes with a consideration of the separate approach we adopt to assess the significance of VU's City campus for the people of Western Melbourne.

2.2 Estimating simulation inputs: the direct effects

2.2.1 Estimation of direct demand-side effects

The first channel through which VU impacts the economy of Western Melbourne is through its operations in the region stimulating local demand. This occurs mainly in two ways: through the University's own spending on labour, capital and materials; and through the spending by students on living costs (e.g. accommodation and food; but not including fees and university charges that have already been handled in the treatment of VU operations).

2.2.1.1 VU expenditure in Western Melbourne

The major items of VU's revenue and expenditure in 2024 are provided in VU's 2024 Annual Report and in Department of Education (2024) data on Higher Education Provider (HEP) financial performance. These figures, however, cover all campuses including offshore. It was therefore necessary to disaggregate the published financial data to separate out VU spending that took place in Western Melbourne. This was done on the basis of estimates of the location of VU employee expenses. For academics and VET staff, an estimate of staff numbers by campus was carried out in line with the geographical pattern of student enrolments, while most professional staff and senior management are located in Western Melbourne. Weighting the staff estimates by average salary

costs yielded an estimate of \$425 million spending by VU's Western Melbourne campuses (or just under 70 per cent of the University's total spending).⁶

2.2.1.2 Student living-cost expenditure in Western Melbourne

When students from outside the Western Melbourne region come to study at a Western Melbourne campus they not only pay fees (normally with a HELP loan if they are a domestic student), they generally also make expenditure in the region on other commodities, such as transport, food and drinks, and if they choose to reside in the region, accommodation or housing. Thus, to capture fully the local demand stimulus of VU's Western Melbourne campuses, such living costs must be taken into account.

There are two main tasks in estimating the increased expenditure in Western Melbourne resulting from student living costs. The first is to estimate the amount that each student attending classes at Western Melbourne campuses spent in 2024 in the region that they would not have spent there under the counterfactual of VU not having any campuses in the region. Evidence suggests that the amount devoted to living costs tends to vary with a student's (permanent) home residence. For instance, Universities Australia (2018) show that median student living costs vary considerably between foreign and domestic students.⁷ Here we estimate per-student living costs by TERM-WM commodities according to four places of home residence: overseas, interstate, intrastate, intra-Melbourne. The second task is then to apply the estimated per-student costs to the number of students in each home-residence category.

Madden (2016) reviews the literature on student living costs at that time. On the basis of estimates in that literature, he determined that average living costs associated with full-time study by a foreign student undertaken a higher education degree was \$27,400 in 2013. For a foreign student undertaking a VET course, Madden(2016) used an average living cost of \$25,800. He assumed in line with previous studies, living costs for an interstate student ranging from 76 to 80 per cent of that for a foreign student, while he assumed living costs for those intrastate students whose permanent home address was outside Greater Melbourne, were only 50 per cent that of a foreign student.⁸

We had reason to adjust his per student costs downwards in the light of the Universities Australia (2018) most recent survey of student finances. That survey provides a wide range of estimates for different classes of university student. However, the survey suggested that the median overseas student's expenditure in 2017 was of the order of only \$20,000. We estimated that this would translate into an average expenditure of \$22,506 for a full-time student in 2017, and after

⁶ Average salaries were estimated using VU workforce figures and employee related expenses as shown in the University's 2024 Annual Report.

⁷ Universities Australia (2018) also show large variations between full-time and part-time students, and between level of course (e.g. postgraduate versus undergraduate).

⁸ Madden (2016) reasoning for lower living costs associated with study at a Western Melbourne campus by Victorian country students was that they were more likely to have permanent residences within weekly, or even daily, commuting distance of a Western Melbourne campus.

adjusting for inflation into an average expenditure of \$28,074 in 2024. After reviewing available surveys of student living costs, we assumed, like Madden (2016), that interstate students would spend 80 per cent of what international students would pay on living costs, but that Victorian country students would spend only 65 per cent of the expenditure of their international student counterparts.

Finally, we consider the living-cost expenditure of students from Greater Melbourne attending a VU Western Melbourne campus. Firstly, we consider those students who in 2024 travelled from other Greater Melbourne regions to attend a Western Melbourne campus. We assume that 80 per cent of these students continue to live at their permanent home outside the West, commuting to attend classes in Western Melbourne and devoting only a relatively small proportion of their living costs to spending in the West. We assume that during the university year the remaining 20 per cent of students from other Greater Melbourne regions acquired accommodation in Western Melbourne where their living cost expenditure was similar to a Victorian country student.

It will be recalled that under the counterfactual, 90 per cent of higher education students from the West would have continued to undertake university study, but in the absence of a Western Melbourne campus to attend would have undertaken their studies elsewhere in Greater Melbourne. In the case of VET students, we assume only just under two-thirds would have attended a dual-sector university or VET institution elsewhere in Melbourne under the counterfactual. As with higher education students, 10 per cent of VET students who actually attended VU in Western Melbourne are assumed to forgo tertiary education under the counterfactual, but unlike higher education, it is assumed that over a quarter would have attended a VET-only institution in Western Melbourne under the counterfactual. We again estimate living-costs expenditure that would have been diverted from Western Melbourne under the counterfactual. Thus, we account for all student expenditure on living costs that we estimate would not have been spent in Western Melbourne had it not been for the University having campuses there.

Having established per-student living costs for students associated with study at a VU Western Melbourne campus, we then applied these to the number of students in the corresponding category of student by place of home residence. Data Insights provided information on student numbers for both higher education and VET, by campus and by three places of home residence: Western Melbourne, other domestic regions, and overseas. We converted the number enrolled figures to equivalent full-time student load (EFTSL) figures and then decomposed the other-domestic-regions EFTSL numbers into the five (outside Western Melbourne) TERM-WM regions on the basis of chiefly distance and to a lesser extent population numbers.

Table 1 shows the estimated living-costs expenditure by student group by commodity purchased. As can be seen, almost half of total student living costs are estimated to be spent on housing/accommodation and food, and a further 15 per cent on transport.⁹ For intra-Melbourne students food, transport, recreation, health and other services are the main types of expenditure.

⁹ Note, overseas student living costs excludes foreign students' international travel as little of this expenditure is made in Western Melbourne.

While intra-Melbourne students on average spend a relatively small fraction of their living-costs expenditure in Western Melbourne, they contribute around half of total living-costs expenditure in Table 1. This is because they comprise over three-quarters of the Western Melbourne EFTSLs that we estimate would have studied elsewhere if VU did not have campuses in the West.

Table 1: Student living costs spent in Western Melbourne (\$m)

	International	Interstate	Intrastate	Intra-Melb	Total
3 Manufacturing	8.1	2.5	2.2	4.1	16.9
4 Utilities	0.3	0.2	0.1	0.0	0.5
8 Accommodation & food	8.8	3.3	4.8	34.4	51.3
9 Transport	2.9	0.8	2.5	15.3	21.6
10 Media / Telecommunications	2.9	0.9	1.4	0.5	5.7
12 Rental & real estate	4.4	2.6	3.4	1.4	11.8
13 Dwellings	0.2	0.1	0.1	0.0	0.4
20 Health & social assistance	2.7	0.7	0.9	2.3	6.6
21 Arts & recreation	2.7	0.8	1.3	7.0	11.8
22 Other services	5.6	1.9	1.7	7.1	16.3
Total	38.6	13.9	18.4	72.2	143.0

2.2.1.3 Other university-related local expenditure

Giesecke and Madden (2006) and Madden (2014) undertook detailed estimates of expenditure for two additional sorts of demand associated with university operations in the states of Tasmania and Queensland respectively.

The first related to university-organised conferences. One of the functions of university academics is to contribute to the activities of professional societies, which includes participating on local organising committees of conferences held in their universities regions. These conferences generally attract out of-region delegates who – particularly in the case of overseas and interstate delegates – add to the level of tourism/travel expenditure in the region.

The second relates to visits by friends and relatives of students whose permanent residence is outside the region.

The detailed estimates of these expenditure types by Giesecke and Madden (2006) and Madden (2014), however, indicated that they were considerably smaller than those associated with university operations and student living expenses.¹⁰ Their studies involved regions which were states. In this study, the region of focus is only part of an urban area and there is insufficient

¹⁰ These associated activities represented around 1 per cent of the value of the two main types of expenditure.

available data to support an allocation of conference and tourism activity between the Western Melbourne region and other parts of Melbourne.¹¹

Given these considerations, we did not include these associated activities in this study.

2.2.2 *Estimation of direct supply-side effects*

2.2.2.1 Labour productivity effects for 2024

There is an extensive literature recognising that tertiary education leads to an increase in human capital which in turn improves labour productivity. VU has been producing university graduates for more than three decades, each successive group of graduates adding to the skills of the Australian workforce. The question that needs to be answered in this section is to what extent having a campus in a particular geographical area of a Melbourne affects labour productivity in the local area; that is, to what extent do the productivity gains spill out across the city, and beyond, and how much is specific to just Western Melbourne. Account needs to be taken of the fact that the Australian population is quite mobile – in each intercensal period, around 40 per cent of the population change their address. Also, many residents commute to other regions of the city to work; around 40 per cent of Western Melbourne residents are employed outside their region of residence (about two-thirds of these commuters being employed in Inner Melbourne). Furthermore, if VU had not had campuses in Western Melbourne, the bulk of students who actually went to a VU Western Melbourne campus are likely to have obtained their qualifications from an institution elsewhere in Melbourne. In this section we explain how we sorted out these issues to estimate the number of university and VET graduates likely to be employed in Western Melbourne purely because of the historical existence of VU campuses in the area; and the degree to which each of these graduates raised labour productivity in the Western Melbourne economy.

Answering these questions first involved tracking each annual cohort of VU graduates and other (VET) award recipients since 1992 and estimating how they added to the 2024 stock of university and VET graduates working in Western Melbourne. It is then necessary to establish how different the number would have been if VU had no campuses in the area. Once we establish the extra number of graduates that work in the area because of the presence of VU in the West since the beginning of the 1990s, we need to answer the question of the degree to which each graduate raised labour productivity in the region.¹² This required an estimate of the rate of return to tertiary education by each main class of university graduate and VET award holder.

Establishing credible numbers for the different types of VU Western Melbourne award holders adding to the region's labour force in 2024 as a result of the University locating campuses there is

¹¹ Even without the difficulty posed by allocating conference and visitor expenditure within an urban area, there is a very limited data on such expenditure even at a wider regional level such as Greater Melbourne as a whole.

¹² While VU's beginnings can be traced back to 1916 when its forerunner, the Footscray Technical School commenced operations, it was not until 1990 that it gained university status, when VUT was formally established, and not until 1992 when it commenced operations as a university. In 2005 the University's name was changed to Victoria University.

a complex task. We detail our method for doing so in this and following paragraphs. We commence by, for each year from 1992 to 2023, splitting the graduates/award-holders from VU's Western Melbourne campuses into a number of groups. We first separate the Western Melbourne graduates into five groups on the basis of the type of award conferred: undergraduate degree, postgraduate degree, VET certificate I/II, VET certificate III/IV and VET diploma. This step is necessary since, as we will see, the labour productivity effect differs according to the type of course completed.

For each of the last dozen years (2012 to 2023), we were able to obtain the required number of Western Melbourne awards by each of the five course types from VU's Data Insights group. For the years prior to that (1992 to 2011), we used figures for higher education and VET award numbers produced for the 2016 study of VU and Western Melbourne (Madden, 2016). In the 2016 study, total VU higher education completions were obtained from Department of Education (2004 and 2013) for 1996 to 2013, while figures for 1992 and 1993 were obtained from Victoria University of Technology (VUT) annual reports. Figures for the two missing years were interpolated. Graduation numbers were decomposed by campus on the basis of (lagged) student data by site provided in VU annual reports.¹³

Madden (2016) found completion data for VU's VET students less readily available. He thus estimated a time series for 1992 to 2013 completions on the basis of (lagged) student numbers at Western Melbourne campuses by course and national completion rates as reported by NCVER (2014). Madden's (2016) Western Melbourne higher education and VET graduation numbers were then decomposed into course type for the years up to and including 2011 on the basis of (lagged) student load (and student commencement) figures by course type provided in past VU Annual Reports - and, just for higher education courses, in Department of Education Statistics.

Having established a time series for graduation numbers by course type, the next task was to track each cohort's connection with employment in Western Melbourne. The first step in this task involved the decomposition of each cohort into those whose home residence was Western Melbourne, other Australian regions and overseas. It will be recalled that we used such home-residence information in Section 2.2.1.2 in estimating the total expenditure in 2024 on living costs by students in Western Melbourne. Here we require this information for the entire 32 years of graduation cohorts. For the years 2011 to 2023, Data Insights provided figures for student enrolments by campus by region of home residence for higher education students, and from 2012 for VET students. These figures were used to estimate completions by campus by home residence for the period 2013 to 2023. For the years prior to 2013, we employed estimates produced by Madden (2016). For the period 2005 to 2013, Madden decomposed the time series of completions

¹³ The degree that the data were lagged depended on the type of course from which the student graduated. For instance, for a bachelor's degree, student numbers were lagged by 2 years, approximately equal to the average time for a student from the beginning of an academic year to the completion of their degree. If there were an equal number in each year of a 3-year degree the lag would be exactly two years. For a 5 per cent annual growth in student numbers, the lag would be little altered at 2.03. VU annual reports for 2015 onwards are available online at: <https://www.vu.edu.au/about-vu/strategy-leadership-governance/strategic-plan-annual-reports>. Annual reports for previous years are available from VU Records and Archives.

by course type by campus on the basis of lagged home residence figures for total higher education enrolments and for total VET students (as detailed in successive VU annual reports). This yielded the required time series disaggregated into three home residence types; i.e. Western Melbourne, other Australian regions and overseas. For the years prior to 2005, VU annual reports gave home residence categorised by Victoria, interstate and overseas. Madden (2001) split Victorian home residence into Western Melbourne and other Victorian regions in a way that conformed with trends in Western Melbourne home residence shares for later years.¹⁴

The next step was, for each annual cohort by course type by home residence, to construct a series related to their attachment to the Western Melbourne labour market. In the case of foreign students, we assumed a very weak attachment. Several studies (Sin, 2006, Guo, 2010, and Coates, *et al.*, 2023) indicate that about two-thirds of overseas students return to their home country in their post-completion year. Of the one-third remaining in Australia under Temporary Graduate visas, only about a third now transition to permanent residency once their visa expires, down from about two-thirds in 2014 (Coates, *et al.*, 2023). For the years through to 2024, a series of Graduation Destination surveys published by the National Association of Graduate Careers Advisory Services were used as a guide to graduate behaviour in the years immediately after graduation. About two-thirds of VU graduates are estimated to be in paid employment in the year after they completed their studies. About 18 per cent of bachelor's degrees are assessed as progressing to further study but are treated as mostly being back in the workforce after a number of years.

Each cohort by course type is tracked through the years following graduation until the commencement of 2024. It is assumed that under the counterfactual (i.e. no VU Western Melbourne campuses), in line with journey to work information, 60 per cent of Western Melbourne residents would after graduation also work in Western Melbourne when they take up their first job. However, it is assumed that under the actual historical case, because of VU's Western Melbourne campuses increasing graduates' attachment to their region of residence, over 80 per cent of VU Western Melbourne graduates take up their initial employment in their home region. Similarly, it is also assumed that 20 per cent of those Western Melbourne graduates who live in neighbouring regions continue to commute to Western Melbourne when they take up their first job offer. We estimate the degree that a local university increases post-graduation attachment to the local labour force by assuming that without a local university the extent of post-qualification attachment to one's home region is likely to move some of the way towards the higher mobility of graduates in the United States.¹⁵

Following Madden (2016) it is assumed that graduates who have no particular attachment to their local region are somewhat more mobile than non-graduates and that on average 5 per cent of

¹⁴ For the years 1992 and 2011, home residence is not shown separately for higher education and VET students. For these years, the required separate estimates were made so as to be consistent with surrounding years.

¹⁵ Indeed, Bound *et al.* (2004) and Groen (2004) find a much higher rate of graduate emigration for the United States than we assume for Western Melbourne under the counterfactual. For instance, Groen (2004) finds that only 10 per cent of those who graduated from a university in a particular state are still living within that state after 10 years.

such Australian graduates change their home address each year. Some of the movers will move to another address within a local region such as Western Melbourne. Other graduates may move out of their home region to a residence in an adjoining region and still commute so as to work in their home region. It is assumed, however, that each year 3 per cent of Western Melbourne VU graduates as a result of an interregional move (either from Western Melbourne or out of bordering regions) ceased working in Western Melbourne. Thus, for instance, of the 1,500 VU students who completed a bachelor's degree at a Western Melbourne campus in 1994, only 230 (or 15 per cent of the original cohort) are estimated to still have been working in Western Melbourne in 2024. Whereas for the 2020 cohort who obtained bachelor's degrees at a VU Western Melbourne campus, around 40 per cent are estimated to still be working in Western Melbourne in 2024.

Having established the number of VU Western Melbourne graduates still working in the region, we need to ask the question as to how many of these graduates would have been working elsewhere under the counterfactual; that is, if VU had not had a presence in Western Melbourne in any of the 32 years, 1992 to 2023. There are two main factors to consider here: Would Western Melbourne residents have a lower tertiary education participation rate if VU had not had any campuses in the region? And of those students who decided to study at another tertiary institution, how would their attachment to the West be affected?

In answering the first question we were guided by Parker *et al.* (2011) who found that the distance from home to a university campus did affect participation rates, particularly for students of a lower socioeconomic status. Parker defined a university in near proximity to being within 20 kilometres commuting distance. While VU is the only university to have a substantial presence in Western Melbourne, for many of the region's residents there are other universities in Inner Melbourne within 20 kilometres, including Victoria University's own City campus and another dual-sector university, RMIT (Moodie and Wheelahan, 2008). That said, commute times, particularly on public transport, can be substantial, and many of the city's university campuses are considerably more than 20 kilometres from where the bulk of Western Melbourne residents live. Parker *et al.* (2015) found that proximity to a university increased the probability of lower SES students attending university by 14 percentage points. Here, we assume that VU's presence in Western Melbourne increases the probability of region's residents graduating from (rather than mere attending) a tertiary education institution by 5 percentage points. This is approximately equivalent to a lower socioeconomic student being 10 per cent more likely to graduate from a tertiary institution than would be the case if VU did not have campuses in Western Melbourne.

In light of the above, we assume that if VU had not had university campuses Western Melbourne, in general 90 per cent of those students who had in fact attended VU Western Melbourne campuses would have studied at campuses in other regions of Melbourne, with assumed similar completion rates. The exception to this assumption relates to VET students, since while there are no dual-sector universities other than VU in Western Melbourne, there are other stand-alone VET institutions, such as The Gordon in Werribee. We assume that had VU not offered VET courses in the West, 40 per cent of VU's Certificate I/II student and 25 per cent of VU's

Certificate III/IV students would have attended these courses furnished by other providers in the region.

We further assume that because of their attachment to the West, VU students are 2 per cent less mobile than under the counterfactual. These assumptions imply that just over 5 per cent of VU higher education and VET graduates from Western Melbourne campuses over the 32-year period since 1992 are working in Western Melbourne as a result of the University having campuses in the West of the city. This amounts to 8,680 graduates, which makes up 1.65 per cent of total Western Melbourne employment. A little over half of the estimated extra graduates comprises bachelor degrees, almost a fifth are VET diploma awardees, while postgraduate degrees and VET Certificate III/IV comprise about a seventh each. These shares reflect graduation numbers and the effects of different assumptions for the various classes of awards relating to tertiary education participation, interregional tertiary institution substitution, regional attachment, initial graduation geographical destinations, commuting and workforce participation.

The next question to answer is how much these “extra” graduate workers add to labour productivity in the region. To do this we consider the extent to which the knowledge they gained from successfully completing their higher education and VET courses might have raised their hourly rate. Madden (2017) discusses the literature on this topic, pointing to the varying results from different Australian studies, and discussing such matters as the importance of removing the signalling effect of a degree. There is evidence that returns to tertiary education in Australia may have dropped for most type of awards in recent years (Birch and Preston, 2025). For this study, we use estimates from a recent study by Leigh (2024). This forms a bridge with the original study of VU and Western Melbourne undertaken by Madden (2016) who used previous estimates by Leigh (2008) as one of his sources for returns to tertiary education. Leigh’s (2024) estimates relates to the period 2001 and 2022, and thus covers the bulk of graduate cohorts we examine. We start with Leigh’s (2024) estimates for the hourly wage premia associated with 5 types of higher education awards and four types of VET awards in Australia.¹⁶ Since his relevant estimates are all relative to those with no-post school qualifications, adjustments needed to be made to strip out from these premia the benefits of prior post-school qualifications so as not to double count benefits. This was particularly so for postgraduate qualifications where a substantial proportion of the estimated wage premium was already part of the undergraduate degree premium.¹⁷ We then merged the wage premia estimates for the nine tertiary award classes examined by Leigh (2024) into four classes of

¹⁶ As part of his estimation procedures, Leigh (2024) removes the effects of an assumed 10 per cent upwards ability bias.

¹⁷ In performing this operation, we used Leigh’s (2024) estimates of per-tertiary-year effects on the log hourly wage as a check.

awards we require, which yielded the following hourly wage increases from completing a VU course^{18 19}:

Undergraduate degree	28%	VET Certificate III/IV	5%
Postgraduate degree	16%	VET Diploma	10%

Applying these percentages to the corresponding extra graduates/awardees by qualification type yielded a weighted average of 20 per cent increase in hourly wage for the extra 8,680 graduates working in Western Melbourne in 2024 due to VU's presence in the region from 1992 to 2023. Since these extra employees comprise 1.65 per cent of 2024 Western Melbourne employment, this represents a 0.32 per cent increase in the average hourly rate for workers in the region. We thus apply a 0.32 per cent increase in the region's labour productivity in our TERM-WM simulation.

It will be recalled that we assume that 90 per cent of VU students who graduated from Western Melbourne campuses would under the counterfactual of VU never having had a presence in the region, have gained their qualification at other tertiary institutions, by and large ones located in the other three regions of Melbourne specified in the model. This implies that while Western Melbourne receives a significant labour productivity improvement from the University's presence in the West, other regions, compared to the counterfactual, lose a small percentage of tertiary qualified workers and thus suffer a small diminution in their labour productivity of 0.06 per cent.

2.2.2.2 Overall productivity effects from VU research for 2024

As well as adding to economic productivity by increasing human capital through their teaching activities, the other main way that universities increase productivity is through their research activity. In this section we estimate the extent to which VU research activity at its Western Melbourne campuses has added over the years since it became a university to the stock of knowledge, and the degree to which this has increased productivity both in Western Melbourne and elsewhere.

We start by estimating the value of VU research at its Western Melbourne campuses for each year over a period of 32 years from the beginning of 1992 to the end of 2023. Each year's research adds to the stock of knowledge, which we measure in terms of the dollar value of accumulated research spending. We then assume a rate of return to university research and apply this to the accumulated stock of knowledge (after allowing for a gradual decay in its value) at the commencement of the 2024 year.

¹⁸ It will be noted that we omit an estimate for Certificate I/II graduates. While this award delivers substantial benefits compared with having completed only up to Year 11 of school, we found in the prior step (as described above) that the presence of VU's Western Melbourne campuses had no material effect on the number of Western Melbourne workers holding this qualification. Consequently VU Certificate I/II awardees were not modelled as having any effect on Western Melbourne labour productivity.

¹⁹ In computing the percentage wage premia for these amalgamated award types, we used weightings from VU student numbers obtained during the prior steps of estimation procedures, as discussed above.

The first task was to determine VU's university-wide annual expenditure on research over the period. The Department of Education through the Higher Education Research Data Collection (HERDC) provides a time series for VU's research and experimental development expenditure over the period 1992 to 2022. Annual figures are provided for the first five years, 1992 to 1996 inclusive, and then on a biennial basis from then on.²⁰ Estimates for every other year (i.e. the non-reporting years) are made using interpolation. As well as providing VU's total R&D expenditure, HERDC supplies a decomposition of this expenditure into the major classes of funding providers. These classes have varied over the year, but in general it can be said that the University sources its research funding from Category 1 to 4 sources, plus general university funds (which covers the value of the time that academics devote to their research), performance-based research block grants, plus some other sources such as donations and bequests.

The HERDC time series is in current dollar terms, but we require the time series to be in terms of constant prices. We thus multiplier the HERDC VU total research expenditure for each year by the appropriate inflator to bring it to 2024 prices. The constant-price VU-wide research expenditure is then split into that undertaken on Western Melbourne campuses and that undertaken at other campuses, by multiplying each year's amount by an estimated Western Melbourne share for that year – the share being based upon the region's share in EFTSL numbers.

We assume the value of the stock of research knowledge generated by VU's Western Melbourne campuses is measured as the accumulated value of VU's R&D expenditure at these campuses. It is assumed that the stock of knowledge decays at the rate of 10 per cent per annum. By the commencement of 2024, the accumulated stock of knowledge is estimated to be \$556.7 million.

The next step is to assume a rate of return on this stock of knowledge. There is a considerable literature on the returns to research. Madden (2017) provides a review of this literature and concludes that a rate of return of 30 per cent is an appropriate figure to apply to VU's research expenditure. He assumes that there are no lags between the increase in the stock of knowledge (in the subsequent year to the research spending) and the earning of the returns. It is unlikely that there is such an absence of lags in actuality. In 2010 pure basic research comprised just under 20 per cent of VU's research expenditure and a further 14 per cent consisted of strategic basic research - though these percentages combined were dropping continually over the 32 years examined and by 2020 made up only 10 per cent each of total research activity. It could be expected that the findings from these two types of research, particularly the former, might not have a significant impact on productivity for some years. However, as we shall see, this is unlikely to materially affect our analysis here.

In modelling the regional impact of VU's research at Western Melbourne campuses, assumptions must be made about the geographic boundaries within which the returns from VU's research activities accrue. A good deal of VU's research produces findings that are not confined

²⁰ The HERDC data is downloadable at: <https://www.education.gov.au/research-block-grants/resources/higher-education-expenditure-rd-higher-education-provider>.

to a particular region, and it is usual in R&D analysis to consider that the productivity benefits are generally available nationwide, and often worldwide.²¹ However, some of University's research activity at Western Melbourne campuses is directed towards local users; either by being directed at a region-specific problem, or by providing the know-how to assist local industries and organisations to make full use of the emerging knowledge. In this respect, VU with its flipped-campus model and its strong collaborative arrangements with local businesses and activities, may well have a larger local impact through its research than other universities.²² We therefore adopt Madden's (2016) assumption that 20 per cent of the productivity benefits from VU's Western Melbourne research are enjoyed exclusively by the local region. The remaining 80 per cent of the R&D productivity benefits are assumed to be equally enjoyed across all geographical areas of Australia and often internationally as well. Thus with respect to these latter benefits whether the research is carried out or in other Melbourne regions is immaterial.

Thus, in our TERM-WM simulations of the effects of R&D at VU's Western Melbourne campuses, we model just the net effect of the localized research productivity benefits. The 2024 total returns from the accumulated VU research knowledge was estimated as \$167 million, of which just over \$33.4 million were assumed to be purely local productivity benefits. This translates into an all-factors productivity improvement in Western Melbourne of 0.039 per cent compared with the counterfactual of no Western Melbourne campuses over the 32-year period. Compared with the counterfactual, other Melbourne regions are modelled as having a productivity deterioration of almost 0.01 per cent.

2.3 Simulations

In order to assess the total (direct plus indirect) contribution of VU's Western Melbourne campuses, we devised a TERM-WM simulation that projects what the economies of Western Melbourne and of the other Australian regions would have looked like if those campuses had not been located in Western Melbourne, but rather elsewhere in other Melbourne regions (i.e. the hypothetical or counterfactual scenario). The simulation conducted is one which provides the long-run effects of such a hypothetical relocation.

The implied assumption underlying this simulation is that it incorporates full adjustment to this hypothetical relocation, thus mimicking the counterfactual of VU having had no campuses in Western Melbourne for many years.²³ Hence, we assume in the simulation that the location of VU campuses in Western Melbourne has no effect on the aggregate level of Australian employment

²¹ That is, much of a university's research-generated new knowledge is a public good – non-excludable and non-rival in consumption (i.e. one individual's/organisation's use of the knowledge doesn't diminish its availability to another user).

²² Benneworth and Fitjar (2019), for instance, note the difficulties of universities in meeting their obligations to regional innovation and economic development. VU has, however, developed and acted on clear strategies aimed at success in this area.

²³ Recall that our computation of the effects on the 2024 stock of research knowledge and human capital involves accumulated knowledge from 1992 onwards.

which may be seen as being dependent in the long run on demographic and industrial relations factors. At the national level the real wage adjusts to accommodate this.

However, the counterfactual is modelled as having some permanent effects on the industrial, occupational and regional pattern of employment. It is assumed that workers will choose the region in which they wish to be employed on the basis of relative regional real wage rates. Where, regions are geographically distant (e.g. Rest of Australia and Western Melbourne) this implies migration, while for proximate geographic regions it can also mean changes in journey to work patterns.

The rate of return on capital for each regional industry is assumed not to be affected by the location of VU campuses in the long run, rather rates of return are seen as being dependent on the world interest rate level. Investment in individual regional industries is assumed to move approximately in line with changes in their long-run capital stocks.

It is assumed that real public consumption always moves by the same percentage as real private consumption. This assumption may be considered to embody the idea that government largely directs its expenditure to where people live more than to where they work.

2.4 VU's CBD campus(es) and the City Tower

VU has always had a very strong focus on the West, but from its earliest days as a university it has also had a presence in the inner city. In recent years, with the opening of the University's City Tower campus in 2022, student numbers in Melbourne's central business district have grown rapidly. In 2013 just over a fifth of VU students at a Greater Melbourne campus were enrolled at a city campus.²⁴ By 2024 that proportion had grown to around a third. For VU's higher education students, almost half the University's Melbourne-based students are now based in the city (or almost 30 per cent of the University's total higher education enrolment); with the City Tower since 2024 being the University's largest campus for higher education students.²⁵

While the main focus of this study as a whole concerns the effects of VU's Western Melbourne campuses on the local economy, when it comes to examining the economic effects of the University's City campus, our concern shifts to the implications for the economic welfare of those Western Melbourne residents who undertake their VU studies in the city. Although the rapid growth in VU's City-campus enrolment has meant that VU's impact on the Western Melbourne economy has not increased as much as it might otherwise have, the advent of the City Tower can be expected to have increased opportunities for tertiary studies by students from the West. Thus, we consider VU's city operations *not* in relation to their regional economic effects (such as on output and employment), *but rather* in terms of the economic benefits afforded to Western

²⁴ Prior to 2022, VU's main CBD campuses were at 300 Flinders Street, Flinders Lane, 225 King Street and Queen Street. The University vacated the first three of these campuses on the opening of the City Tower in 2022. Queen Street buildings adjacent to the City Tower – in particular 295 Queen Street that is the hub for VU's Law School - were retained, thus creating VU's City West Precinct.

²⁵ In 2025, there were 12,588 students enrolled in VU's city campuses, the vast majority of whom were higher education students taking classes in the City Tower. This represented almost a quarter of VU's (all campuses) total enrolment. For higher education student numbers, this share is even higher at around 30 per cent. On the other hand, VET students are largely (88 per cent) enrolled in Western Melbourne campuses.

Melbourne residents arising from the opportunity for increased lifetime net income that qualifications gained from VU's City campus bring.

With the advent of it City Tower, the University's city operations consolidated into essentially a single city campus, known as VU City West Precinct due to it being located towards the western edge of the CBD. Our consideration of the impact on net lifetime incomes of today's Western Melbourne residents is based around the premise that the opportunity to study at the University's City West Precinct may increase their higher education participation in much the same way as the presence of VU's Western Melbourne campuses.

In the three years from the opening of the City Tower (i.e. 2022 to 2024), there have been 6,099 graduate and postgraduate degrees awarded from VU's City campus.²⁶ It is estimated on the basis of student enrolment data that well over a quarter of these graduates (1,731) have been students from Western Melbourne. In this section we explain how we estimate the effect graduating from the VU City campus had on the net present value of lifetime income of students coming from Western Melbourne, before considering the extent to which this can be attributed to VU having a city campus.

We start by considering a typical graduate's post-graduation lifetime earnings. We perform this task separately for undergraduate and postgraduate students. Our starting point is data for earnings by highest educational qualification (Australian Bureau of Statistics, 2025). These earning figures are averages for graduates who qualified in different years over many decades. We estimate constant-price time series over forty years of post-graduation employment so that the weighted average of earnings for each type of graduate (undergraduate degree or postgraduate degree) over the years equalled the corresponding ABS figure.²⁷ We start with a preliminary assumption that those holding higher education undergraduate and postgraduate degrees experienced a similar salary growth path to that for the highest VET qualification calculated by Chapman et al. (2023) from the 2016 ABS Census. We then made an adjustment to ensure that estimated starting salaries were consistent with starting salaries for VU students by broad qualification found by QILT (2025) from their recent graduate outcomes surveys. The stream of annual graduate earnings were then estimated by adjusting for periods out of employment.²⁸

We then computed corresponding time series of wage premia, using the same percentage estimates as were used for the corresponding graduate types in our previous estimation of labour productivity impacts in sub-section 2.2.2.1. The net present value in 2024 of each of the two post-graduation wage premia time series were then calculated using a real discount rate of 3 per cent. It might be observed that the underlying constant-price time series for wages, being estimated on the basis of 2024 starting salaries and an estimated career progression, makes no allowance for a growth in real wages over future years. While this might fit with some recent Australian experience, it is not true over the past forty years, with the real wage rate increasing by about a quarter over that time (though rather unevenly). It might reasonably be expected that with the

²⁶ From hereon we shall refer to VU's building at the City West Precinct as a single campus.

²⁷ Weights for each year were generated by assuming an annual growth rate in Australian graduation number of 2 per cent.

²⁸ QILT (2025) show employment rates immediately after graduation. For later years we used employment rates consistent with those used in the estimation of labour productivity effects.

possibility of rapid technological progress in the near future that real wages may again experience a sizable boost, though estimating the size of the increase would be a challenging task. The question here, however, is what might be the outlook for the dollar value of the wage premia from university degrees. Everything else being the same, it might be expected that they grow in line with any growth in the real wage. However, it may be that future technological change might also have a negative effect on the real wage premia, with skills obtained during a degree course losing relevance over time, unless they are continuously updated. It is difficult to make estimates of the effects of these factors on wage premia over the next four decades. Consequently, we have made what would seem a conservative assumption that the constant-price value of the wage premia stays invariant throughout.

In estimating the effects on net lifetime earnings, it is necessary to take into consideration the costs incurred by students in obtaining their degrees. We estimate in turn, income forgone while studying and university fees incurred (mainly paid over post-graduation years in the form of increased taxes via the HELP student loan scheme).

Income forgone is assumed to consist of net wage payments that might have been received if the time devoted to study had been spent working. Starting with full-time students, we assume gross income forgone is the average annual full-time wage paid to workers who lack the qualification which the student will be awarded after successful completion of their course (i.e. the graduate wage payment calculated in the previous step, less the qualification's wage premium). To arrive at net income forgone it might seem appropriate to subtract the average amount of income received for paid work undertaken while still a student. The 2017 survey of Australian university students by Universities Australia (2018) found that around 80 per cent of Australian domestic undergraduate students undertook paid employment during semesters, and typically received \$18,300 income (in 2017 prices). Using detailed information in Universities Australia (2018), and accounting for inflation, we estimate that the average annual income from paid employment of all domestic undergraduate students (i.e. full-time and part-time) was \$19,102 in 2024.²⁹ The corresponding estimate for postgraduate students is \$37,424 p.a..³⁰

There is, however, an opportunity cost of undertaking paid employment. Full-time students are expected to devote 40 hours per week to their studies, and therefore the hours spent in paid employment comes at the expense of leisure (or study hours). It would be conventional to consider an hour extra work comes at a marginal cost of the hourly wage received. In view of this we do not discount the earnings forgone under the counterfactual by paid-employment income for full-time students.³¹ Part-time students (assuming a 50 per cent course load) would be expected to devote 20 hours per week to their study. For part-time students in full-time employment, we assume that these students forgo 20 hours of leisure. For part-time students who are working less than full-time, we might assume that their study comes at the expense of either leisure and/or

²⁹ This was about 72 per cent of estimated average income from all sources (which we gauged could be 7 per cent more than median income).

³⁰ The difference between the two figures is partly explained by the much larger percentage of postgraduate by coursework students being part-time (55%) compared with undergraduate students (17%).

³¹ This is a conservative assumption as we do not consider the possibility of wage income during the long vacation.

reduced work hours (and possibly some study hours). We therefore subtract income of 20 hours work at the part-time student's current wage rate from their wage income forgone.

There are, however, some other amounts to be offset against the income lost during the period of study. We estimate about a third of full-time undergraduate student annual income comes from non-wage sources. For instance, a third of undergraduates receive an Austudy or Abstudy allowance from government, while 15 per cent receive a regular allowance from their family. We reduced wages forgone due to university studies for Austudy/Abstudy, scholarships, Youth Allowance and certain Centrelink payments that were received purely because of the recipient's student status. We did not make any reductions for payments from family members or other sources of income that family were free to give whether the recipient was studying or not.

For undergraduate students, it was estimated that 17 per cent of wage income forgone was offset by other income, either from paid employment or payments from government. The amount of net income forgone by students on average over a three-year degree was estimated as just under \$151,000 (in 2024 prices). Net income forgone for postgraduate students was estimated at \$58,675 – the lower figure being due firstly to a shorter course length – estimated to average just under 1½ years³² – and secondly to a greater preponderance of part-time students, both leading to a smaller degree of net income forgone.³³

Turning to the other cost of undertaking a university degree, these largely consist of tuition fees (e.g. student contributions for Commonwealth Supported Places (CSP)³⁴), with a number of smaller costs such as the Student Services and Amenities Fee (SSAF), incidental fees, study materials and the like.³⁵ VU publishes very detailed schedules of its fees by course, both for full-fee and CSP.³⁶ We used this data for 84 postgraduate courses (graduate certificates, diplomas and Masters), and 99 undergraduate courses (bachelors, diplomas, undergraduate certificates), to estimate the average fee payable by these two major classes, and also made estimates of incidental fees (including SSAF) and expenses.³⁷

Most Australian domestic students pay their tuition fees via the Higher Education Loan Program (HELP). In particular, only eleven per cent of Commonwealth Supported Students pay their student contribution upfront. HELP is an income contingent loan which is repaid after completion of studies through the Australian Tax Office, once one's taxable income has reached a

³² While higher degree by research course takes much longer - a PhD degree usually takes the average student 3¾ years – the vast bulk of VU postgraduate students are enrolled in coursework degrees.

³³ On the other hand, gross income forgone for postgraduate students (since they should already have an undergraduate degree) is estimated to be over 21 per cent higher than that for undergraduate students.

³⁴ The vast bulk of VU's undergraduates are Commonwealth Supported Students. According to Universities Australia (2022) around 49 per cent of domestic postgraduates were enrolled in CSP courses, slightly less than those with full-fee-paying enrolments.

³⁵ The SSAF is for some students, part of their tuition fees, but for others such as Commonwealth Supported students it is a separate fee.

³⁶ For instance, <https://www.vu.edu.au/sites/default/files/documents/2025-02/2025-indicative-postgraduate-undergraduates-course-unit-fees.pdf>

³⁷ For higher degree by research (HDR) students, where full fees are covered by offset scholarships under the Australian Government's Research Training Program, we only estimated incidental fees and expenses.

repayment income threshold.³⁸ We estimate the stream of HELP repayments assuming 11 per cent of VU students pay their tuition fees upfront.³⁹ We then estimated a time series for repayment of HELP debt separately for undergraduate and postgraduate students. A complication is that repayment thresholds and rates change each year, and there was a major change in the repayment scheme in 2025-26, plus 2025 legislation to reduce outstanding HELP debt (as of 1 June 2025) by 20 per cent. For each year we estimated average HELP repayments by each cohort using threshold and rates applicable to that year and also included the 2025 twenty per cent debt reduction. For years beyond 2026, we estimated the remaining stream of payments assuming that the 2025-26 repayment scheduled was maintained (adjusted for inflation) in following years.⁴⁰

Performing the above steps created two time series for gross wage premia (one for undergraduate degrees, the other for postgraduate degrees) over a post-graduation future working life of (an assumed) 40 years.⁴¹ Taking the 2024 present value of these streams yielded gross figure (before allowing for costs of obtaining the degree) for the gain to an average awardee of an undergraduate/postgraduate degree. We then formed two (shorter) time series relating to costs for each of the two broad degree types – one for net income forgone while studying, the other for tuition and study costs (11 per cent of tuition fees paid up front, the remainder by HELP repayments over time)⁴².

Combining the three time series (by subtracting the two cost streams from the wage premia stream) and taking the net present value of the resultant time series, yields the financial gain to the undergraduate/postgraduate Western Melbourne student (in 2024 net present value terms) of undertaking their course at VU's City campus.

³⁸ For a definition of repayment income, see the Australian Taxation Office web page on “Study and training loan repayment threshold and rates” <https://www.ato.gov.au/tax-rates-and-codes/study-and-training-support-loans-rates-and-repayment-thresholds>. Note that income is defined more widely than taxable income and includes, for instance, reportable superannuation contributions and fringe benefits.

³⁹ All incidental fees and costs were assumed to be paid up front. It will be noticed that we do not include normal living costs, such as accommodation, food and transport as costs, as this would be incompatible with our treatment of wages forgone. The implied assumption is that non-discretionary living expenses would have been fundamentally the same under the counterfactual. Including them as study costs in our analysis would amount to double counting.

⁴⁰ Estimating repayment income presented some difficulties. While we have estimated a stream of wage payments, which might reasonably resemble assessable income, we did not have good information on deductions (necessary to estimate taxable income) or other reportable (to estimate repayment income). The Australia Taxation Office does publish deduction statistics, but it is difficult to ascertain, for instance, the degree to which charitable donations might be made by early career employees. However, such factors are unlikely to significantly affect our net present value estimates. Our method yielded an average HELP debt repayment time of 10.6 years, but with undergraduates taking considerably longer than postgraduates to repay, due to a larger average debt (as undergraduate degrees on average take more than twice as long as postgraduate ones) and a lower average wage.

⁴¹ The average future working life after an undergraduate degree for a person in their early years maybe between 40 and 45 years. We've assumed the lower end of this range to allow for mature age students. For postgraduate students one might expect a shorter post-graduation career, since these degrees must by their very nature be taken after completing an undergraduate degree. On the other hand, the age of retirement has been rising over recent decades, and it is difficult to predict what the length of post-graduation careers will be in four decades time. Consequently, we have assumed – as is commonly done – a post-graduation working life of 40 years.

⁴² Full-fee paying students who take out a FEE-HELP loan also pay a 20 per cent loan fee.

There are some important caveats that should be borne in mind when considering the net present value results presented in Section 4. Firstly, these results relate to just the net gain from a degree to the individual graduate. We do not take into account any gains or losses to the rest of society.⁴³ Thus, for example, we do not consider payments made directly to the University by government. As discussed, the vast bulk of domestic undergraduates and about half domestic postgraduate students do not pay full fees with the Commonwealth government funding the difference between full fees and student contributions. Also, as explained by Chapman et al. (2023), HELP loans only attract a nominal interest rate equivalent to the actual rate of inflation (i.e. a real interest rate of zero), which therefore implies a further government subsidy. Not all HELP loans are repaid, due to graduates perhaps not reaching the repayment threshold in enough years, graduates moving permanently overseas or dying. Similarly, the cost of Austudy, youth allowance etc., is ultimately borne by society as a whole.

Secondly, our results pertain only to financial net benefits to graduates from their university education. For a detailed analysis of the non-financial benefits of higher education, both from the individual and society's viewpoint, see Savage and Norton (2012).

How much of the net financial benefits to Western Melbourne graduates from a university education can be attributed to VU's City campus? We surmise that 10 per cent of Western Melbourne graduates from VU's City campus only undertook an undergraduate or postgraduate course there because of VU's overall connection to Western Melbourne – that the University's focus on the West created a pathway to university studies, either practically or cognitively. In our estimation of the net present financial value of a degree to a graduate, we assumed an average wage premium. How should we treat students who do not spend enough time in the paid workforce to achieve these benefits? The Australia Government Actuary estimates that of the new HELP debt incurred in 2020-21, 15.1 per cent is not expected to be repaid (Ferguson, 2021). We have, however, partly allowed for this by accounting for time out of the workforce during a career. Given this, we only reduced the percentage of VU City campus graduates with a Western Melbourne permanent residence who might attribute the net benefits they received from their degree to the opportunities provided by VU's City campus by 0.8 percentage points – that is to 9.2 per cent.⁴⁴

3 Results

The total contribution of VU's campuses in Western Melbourne to the region's macroeconomy in 2024 is shown in Table 3.1.

⁴³ For a discussion of public versus private benefits of higher education, see Norton (2012).

⁴⁴ We were not able to sort out how much of the wage gains from their degree were enjoyed by students who did not repay all or part of their HELP debt, or how much of the costs of study they avoided. Our approach therefore was to confine our analysis just to those graduates who gained the full estimated stream of wage premia and paid all the costs estimated for such a student. Likewise, our analysis has been of the net benefits only for students who successfully graduate. Students who do not complete their course, however, are liable for the fees/HELP-debt for completed semester units, which is a risk faced by students embarking upon a degree.

The contribution effect of VU locating a majority of its activities in Western Melbourne over a very long period is estimated to increase the region's real GDP by almost \$0.82 billion in 2024. Looking at the impact on GDP from the income side, we see that the University's presence in Western Melbourne is estimated to increase the region's wage payments by over 0.6 per cent (amounting to \$333 million).

Table 3.1 Contribution of VU Western Melbourne campuses to the local economy

	% change	\$ million		% change	\$ million
Real Private Consumption	0.75	443	Net margins & change in stocks	n.a.	-18
Real Public Consumption	0.75	182	Labour	0.62	333
Real Investment	0.88	225	Capital	0.60	200
Overseas exports	-0.14	-10	Indirect taxes	0.67	77
Overseas imports	0.68	175	Technical change	0.20	207
Interregional exports	0.17	82			
Interregional imports	-0.23	-88	Real GDP	0.79	818

Looking at the GDP effect from the expenditure side, the estimated impact of VU's presence in the West is estimated to have increased the region's real household consumption by three-quarters of a per cent, or \$443 million, in 2024. The University's impact on real consumption as a whole (private plus public) in Western Melbourne amounted to \$626 million in that year, while the University's operations in the West also gave rise to an additional \$225 million in real investment.⁴⁵

**Table 3.2 Contribution of VU Western Melbourne campuses to the local industries
(change relative to counterfactual)**

	Value added	Employment		Value added	Employment
	\$m	Jobs		\$m	jobs
1 Agriculture, forestry & fishing	..	-1	12 Rental, hiring & real estate services	17	43
2 Mining	..	-1	13 Dwellings	57	0
3 Manufacturing	14	-50	14 Professional, scientific & tech. services	31	11
4 Electricity, gas, water & waste services	9	4	15 Administrative & support services	24	20
5 Construction	48	177	16 Public administration & safety	27	72
6 Wholesale trade	16	-6	17 Preschool & school education	22	105
7 Retail trade	19	99	18 Adult, community and other education	3	26
8 Accommodation & food services	15	154	19 Tertiary education	266	1,171
9 Transport, postal and warehousing	23	-54	20 Health care & social assistance	65	404
10 Information Media & telecommunications	18	22	21 Art & recreation services	9	49
11 Financial & insurance services	36	0	22 Other services	21	119

.. Indicates rounded to zero

Table 3.2 shows VU's 2024 contribution to Western Melbourne industries. As one might expect the largest effect is on Tertiary education: \$266 million in value added and 1,171 jobs. This

⁴⁵ Total real consumption figure does not exactly equal the addition of the two component figures in the table due to rounding.

comprises 36 per cent of the total value-added impact, and about half of the employment impact of 2,363 jobs.⁴⁶

Other industries to make substantial contributions to the total impact of VU on the West's economy are Health care & social assistance, Dwellings, and Construction. Together, these three industries comprise almost a quarter of the value-added contribution. Services industries are particularly benefited by the demand expenditure generated by VU's presence in the West, while the traded-related industries are negatively affected in respect of the demand-induced price rises. However, once productivity effects are taken into account, all industries are positively affected by VU's presence in the West, at least in terms of industry output; the supply-side productivity effects particularly benefiting Manufacturing and Agriculture, forestry and fishing.⁴⁷ However, employment increases are muted due to the labour-saving productivity effects, and consequently for some industries the effects on employment remain slightly negative.

4 The economic significance of VU's City campus

It is estimated that the present value of gross returns (discounted stream of wage premia over a 40-year career) in 2024 from an undergraduate degree completed in the 2022-2024 period is around \$0.45 million on average.⁴⁸ After allowing for the cost of undertaking the degree (mainly net income forgone and HELP debt repayments), the net present value in 2024 on average to a graduate from a degree obtained in the 2022-2024 period was estimated to be just over \$302,000. For postgraduate degrees, the present value of gross returns is estimated as \$293,000, while the net present value is \$224,000.⁴⁹

These estimates should be read as the net financial benefit to a graduate who has a 40-year career with a typical pattern of employment participation, and is exclusive of net costs and benefits to other Australians; it also contains no non-financial net benefits (see discussion of caveats in Section 2.4).

We estimate that up to 59 Western Melbourne residents awarded undergraduate degrees and up to 100 awarded postgraduate degrees from VU's City campus over the three years 2022-2024 may not have undertaken courses leading to these degrees if it were not for VU's focus on the West. Aggregating the net present value of the net benefits of these degrees to the graduates yields a

⁴⁶ The total employment (jobs) impact of 2,363 represents 0.45 per cent of total Western Melbourne (full and part-time) employment. This is smaller than the 0.62 per cent increase in local wage payments due to the University's Western Melbourne campuses increasing the average real wage in the region by around 30 per cent. Other factors to affect the wage-payment impact on the region involve the industrial pattern of average wage rates by industry.

⁴⁷ The total effects on the primary industries are very small, but positive: \$0.08 million in the case of Agriculture, forestry & fishing and \$0.38 million in the case of Mining.

⁴⁸ For a graduate with no career disruptions, or at least one who works 40 completed years, the present value of wage premia from an undergraduate degree rises to around \$0.5 million, or \$0.315 million from a postgraduate degree. That is \$384,500 averaged over degree types.

⁴⁹ A (weighted) average over both degree types is a present value of \$352,317 from gross wage premia, and a net present value of \$253,470.

figure of just over \$39.8 million over the three years: \$6.2 million in 2022; \$12.2 million in 2023 and \$21.4 million in 2024.

5 Concluding remarks

This study undertakes an economic-modelling analysis of the current significance of VU to the Western Melbourne economy. VU is the only one of Melbourne's seven universities to have a substantial presence in the Western Melbourne region. The study's main findings are that, compared with the situation of there being no university campuses in the region, VU's presence added \$0.82 billion to Western Melbourne's 2024 GDP and boosted the region's employment by just over 2,360 jobs in that year.

The study assesses both VU's demand-side impacts (through its own expenditure and that of the students it attracts to the region) and its supply-side impacts (or knowledge effects) on Western Melbourne. Knowledge effects examined include increased labour productivity by the Western Melbourne workforce and increased industry productivity arising from VU R&D. The counterfactual assumption is that if VU had not located in Western Melbourne that there would have been no substantial university presence in the region in the 33-year period from 1992 to 2024, and that higher education students who in actuality had studied at a VU Western Melbourne campus in that time would have either attended a university in another Melbourne region or forgone a university education altogether. In the case of VU's VET students, it is assumed under the counterfactual that a substantial number also took the option of studying at a VET-only institution in the West.

Care should be taken with comparing the percentage results from this report with those from the 2016 study. The definitions of Western Melbourne are not compatible between the reports. The 2016 report used the ABS definition of the West, plus Moonee Valley. In this report, we use the definition as found in VU's Western Melbourne Charter. This adds the area of Hume to the areas previously incorporated in Western Melbourne, which in turn increases the size of the Western Melbourne economy by around 20 per cent (over the current size of the region as previously defined). This change acts to decrease percentage results in this report compared with previous reports.

Other factors to bear in mind are: (i) the very rapid growth in the Western Melbourne economy, (ii) the use of superior data in the current study, and (iii) a marked change in the inter-campus profile of the University over the past decade.

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APPENDICES

Appendix A: TERM-WM regions

TERM-WM region	Component areas*
1 Western Melbourne	Brimbank (Keilor, Sunshine) Hobsons Bay (Altona, Williamstown) Maribyrnong Melton Moonee Valley (Essendon, West Moonee Valley) Wyndham Hume (Broadmeadows, Craigieburn, Sunbury)
2 Inner Melbourne	Melbourne (CBD, S'bank-D'lands, Melbourne City remainder) Port Phillip (St Kilda, West Port Phillip) Yarra (North Yarra, Richmond)
3 Outer South East	Frankston Greater Dandenong City Cardinia (North, Pakenham, South) Casey (Berwick, Cranbourne, Hallam, South Casey)
4 Rest of Melbourne	Moreland (Brunswick, Coburg, North Moreland) North Middle (Heidelberg, North, Northcote, Preston) Northern Outer (Nillumbik, Whittlesea) Boroondara (Camberwell, Hawthorn, Kew) Eastern Middle (Manningham, Monash, Whitehorse) Eastern Outer (Croydon, Knox, Ringwood) Yarra Ranges Southern Melbourne (Brighton, Caulfield, Kingston, South Bayside, South Glen Eira, Stonnington) Mornington Peninsular Shire
5 Rest of Victoria	All Victorian statistical divisions outside the Melbourne SD
6 Rest of Australia	NSW, Queensland, South Australia, WA, Tasmania, ACT, NT

* Areas within the first three TERM-WM regions are generally composed of SA3 regions (as defined by the Australian Bureau of Statistics' Australian Statistical Geography Standard classification); an exception is Moonee Valley, which is an LGA. For Rest of Melbourne regions are largely Local Government Areas (LGAs), though some are SA3s, such as Yarra Ranges.

Appendix B: TERM-WM

TERM's theoretical and data structures are well documented in Horridge et al. (2005), Wittwer and Horridge (2010) and Horridge (2012). TERM explicitly captures the behaviour of industries, households, investors, government and exporters at the regional level. As is standard in computable general equilibrium models, most economic agents maximise an objective function subject to a constraint, markets are in general assumed to be competitive and to clear (i.e. price adjustment equalises demand and supply), and there is assumed to be imperfect substitutability between primary factors and between regional sources. Thus producers in each region are assumed to minimize production costs subject to a production technology that allows substitution between primary factors (labour, capital and land) and between geographical sources of supply for specific intermediate inputs, and for transport and other margins. Demand for effective inputs of labour to each regional industry is defined over labour distinguished by occupation. A representative household in each region purchases goods and services in order to maximize utility subject to a budget constraint. Investors allocate investment across regional industries in order to maximize their expected rate of return, while demand by foreigners is modelled via export demand functions that capture the responsiveness of foreigners to changes in Australian export supply prices. Each region is linked via trade and interregional labour flows, and regional labour supplies are a function of interregional wage differences.

For the purposes of this study a customized version of TERM was developed. Entitled TERM-WM it separately identifies 22 industries in each of the six regions: (1) Western Melbourne; (2) Inner Melbourne; (3) Outer South-East Melbourne; (4) Rest of Melbourne; (5) Rest of Victoria; and (6) Rest of Australia (see Appendix A). The industries are the standard 19 ANZSIC industry divisions with the exception of: the disaggregation of ANZSIC Division P, Education and Training, which is split into three individual education industries (Tertiary Education, Adult, community and other education, and Preschool and school education); and the addition of an Ownership of Dwellings industry (as is standard for inter-industry analysis).

In the standard versions of the TERM model, large cities tend to comprise a single region. For such regional specifications, there is likely to be only a limited degree of commuting between regions, and that workers spend their income largely in the region in which they work. However, since in TERM-WM there are four regions located within the Greater Melbourne and ABS journey-to-work data confirms what is clear from observation, that there is a considerable degree of commuting between these TERM-WM regions. Consequently in developing the TERM-WM version, we make changes to the model's theoretical structure (and consequent changes to the interregional data base) to take into account the effect of interregional commuting on geographical purchase patterns.

In order to implement this concept into TERM-WM, we replace the model's standard equation for the percentage change in regional residents wage income with the following equation denoting household wage income devoted to expenditure in region r :

$$regwage^r = \sum_i \sum_t \left\{ \left(\frac{HRS_{i,t}^r}{\sum_j \sum_s HRS_{j,s}^r} \right) \times wlab_i^t \right\}$$

where $regwage^r$ is the percentage change in wage income that is spent in region, $HRS_{i,t}^r$ is the amount households spend in region r from wage income earned working in industry i located in region t, and $wlab_i^t$ is the percentage change in wage earnings from industry i in region t.⁵⁰

For an overview of multiregional CGE models in general see Giesecke and Madden (2013a), and for a detailed exposition see Giesecke and Madden (2013b).

⁵⁰ See Table A2 of Appendix A for journey to work matrices for region of employment by region of residence for both the aggregated industries case and the Higher Education industry case.