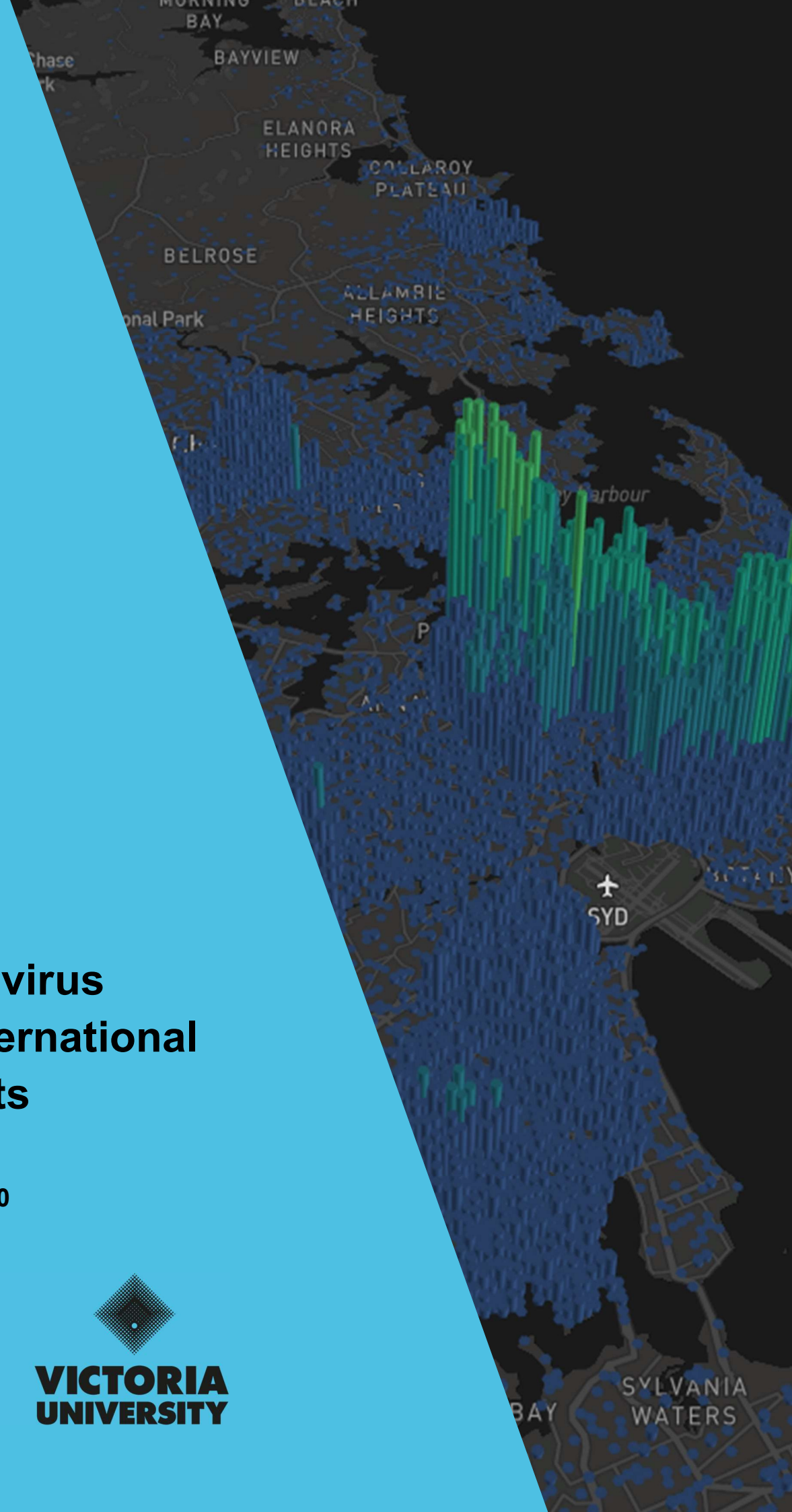


# Coronavirus and international students

October 2020

Peter Hurley



## **About us**

The Mitchell Institute for Education and Health Policy at Victoria University is one of the country's leading education and health policy think tanks and trusted thought leaders. Our focus is on improving our education and health systems so more Australians can engage with and benefit from these services, supporting a healthier, fairer and more productive society.

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## International student update

This report provides an update on issues caused by the Coronavirus disease (COVID-19) pandemic that affect international students and the international education sector.

Previous Mitchell Institute reports have highlighted how problems affecting international students impact Australia's universities, Australia's economy and local communities (Hurley, 2020; Hurley & Van Dyke, 2020). These reports showed that international students have transformed our cities and that issues experienced by international students will affect many Australians.

This report uses the most up-to-date available data to refine previous research. The analysis in this report shows that Australia's international education industry is facing severe disruption characterised by a continuing reduction in both currently enrolled international students and the number of international students inside Australia.

This disruption will have long-term consequences. For universities, this includes continuing uncertainty and losses in revenue. For the broader Australian community, the impact of the international student crisis will affect cities, and communities within cities, differently.

When the worst effects of the coronavirus pandemic are over, Australia will have a radically different international education sector. Re-building the sector is a priority for all levels of government and this report concludes by considering some of the policy implications. While the crisis may not be over, the time is right to start planning how the international education sector should function in a post-coronavirus environment.

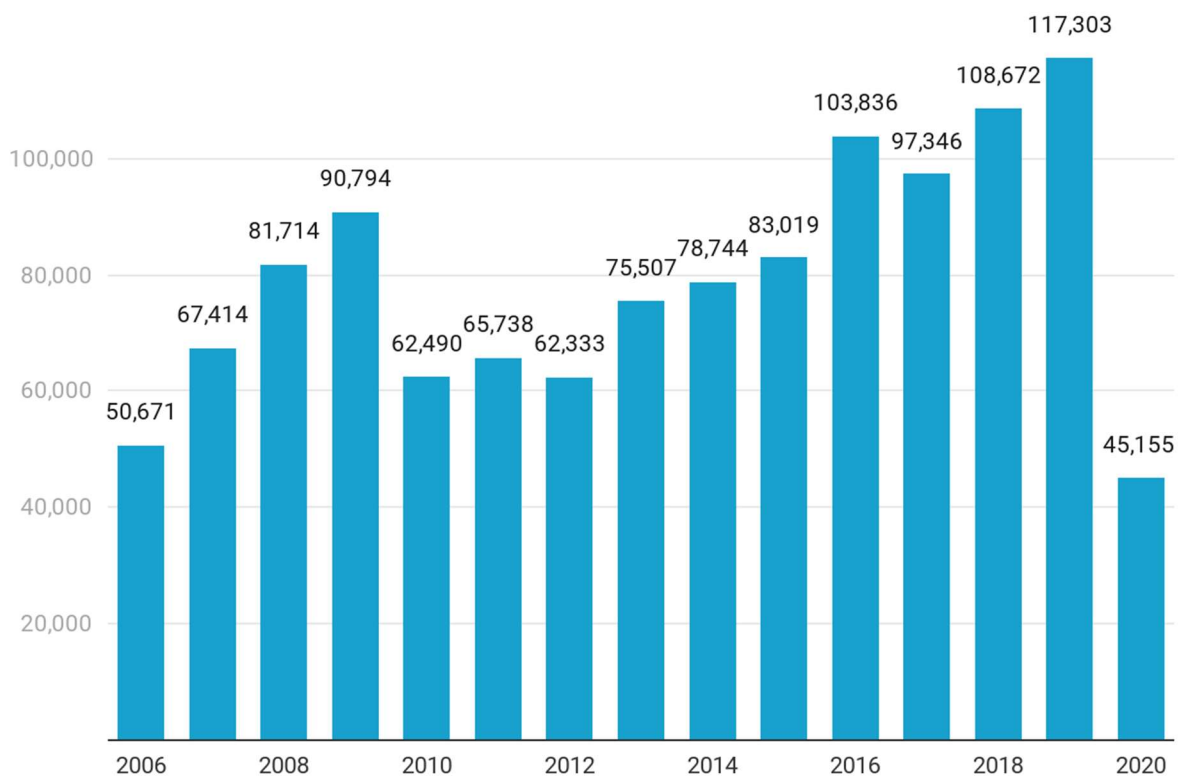
## Key points

- Applications for international student visas have collapsed. Applications for student visas for individuals who are outside Australia are approximately 80–90% below what they were at the same time in 2019.
- There are approximately 210,000 fewer international students in Australia than would otherwise be expected. From the 29<sup>th</sup> of March to October 25<sup>th</sup> 2020, there was a reduction of around 75,000 currently enrolled international students. As of October 25<sup>th</sup> 2020, there were approximately 135,000 international students outside Australia and 400,000 in Australia.
- The longer the travel restrictions remain in place, the greater the losses associated with the international education sector. Modelling based on the rate of decline experienced in the first six months of the pandemic suggests that, compared to October 2019, there will be an approximate 50% reduction in international students inside Australia by July 2021. If the travel restrictions remain in place until July 2022, the modelling suggests about 165,000 international students will remain inside Australia, a reduction of over 410,000 compared to October 2019.
- The current international education crisis is not just a university problem. Approximately 57%, or \$21.4 billion, of the \$37.5 billion in annual revenue associated with international education comes in the form of goods and services spent in the wider economy. The reduction in international students living in Australia will affect the many Australian jobs and businesses that rely on international education.
- The impact of fewer international students will vary by city. For instance, Sydney and Melbourne have likely experienced a substantial reduction in international students. However, the loss is more concentrated in Melbourne's CBD area whereas in Sydney the reduction is more evenly spread throughout the city.
- It is unclear whether programs that enable currently enrolled international students outside Australia to return will have a substantial impact. This is because many international students inside Australia are choosing to leave the country.
- There is a strong association between migration policy and the international education sector. This current crisis may be an opportunity to implement policy reform that builds a more sustainable international education sector.

## International student applications

International student visa applications have fallen sharply since the beginning of the pandemic. Figure 1 compares the number of student visa applications for the fourth quarter of the financial year (April to June) from 2006 to 2020. Selecting only the fourth quarter in each year enables a better comparison of the impact of the coronavirus on international student applications. This is because the April to June 2020 quarter was the first full quarter to be impacted by the widespread travel restrictions that began in March 2020.

**Figure 1:** International student visa applications for April to June (financial quarter 4) 2006 to 2020.



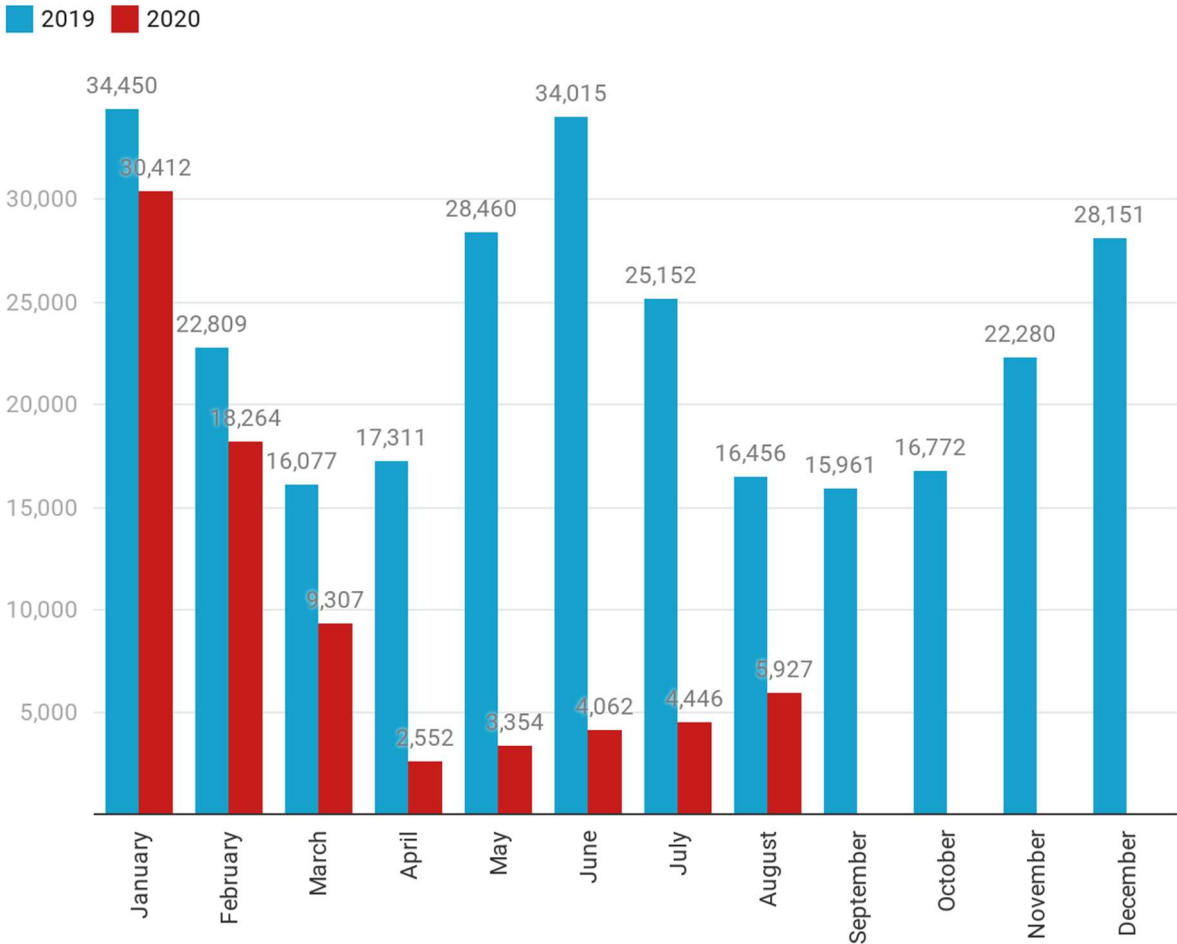
Source: Department of Home Affairs (2020a)

This data show that applications for April to June 2020 were down by approximately 62% compared to the same period in 2019.

While there is a significant drop in April to June 2020, the above figure may mask the severity of the impact of the coronavirus on new international student applications. This is because overall applications will include individuals who are already in Australia such as currently enrolled students who are applying for another course, or those on tourist visas who are applying for a student visa.

Data showing the location of applicants provides readers with a better understanding of the impact on future international students. Figure 2 shows the number of student visa applications where the applicant is outside Australia. It shows available monthly data for 2019 and 2020.

**Figure 2: Student visa applications where applicant is outside Australia**













Source: Department of Home Affairs (2020a)

This figure shows there has been a much more dramatic drop in international student visa applications where the applicant is outside Australia. This is important because applicants from outside Australia will replace those students who finish their studies and return home. This suggests there will be a substantial impact on overall international student figures for some time, as new students from outside Australia are unable to start their courses.

## Currently enrolled international students

Since the beginning of the pandemic, the Australian Government has released detailed data showing the location of international students inside and outside Australia. Table 1 summarises this information using data from the 29<sup>th</sup> March 2020 compared to data from 25<sup>th</sup> October 2020.

**Table 1: International students inside and outside Australia**

Country of citizenship	29 March 2020			25 October 2020			Total Change
	Outside	Inside	Total	Outside	Inside	Total	
 China	66,928	106,796	<b>173,724</b>	84,688	81,220	<b>165,908</b>	-7,816
 India	5,743	91,994	<b>97,737</b>	8,665	78,659	<b>87,324</b>	-10,413
 Nepal	1,259	44,052	<b>45,311</b>	1,345	39,480	<b>40,825</b>	-4,486
 Vietnam	2,894	19,434	<b>22,328</b>	3,522	17,311	<b>20,833</b>	-1,495
 Malaysia	1,664	17,352	<b>19,016</b>	2,975	13,231	<b>16,206</b>	-2,810
 Brazil	2,627	16,843	<b>19,470</b>	1,599	13,809	<b>15,408</b>	-4,062
 Colombia	1,940	15,914	<b>17,854</b>	1,600	13,379	<b>14,979</b>	-2,875
 Philippines	883	14,667	<b>15,550</b>	1,309	13,225	<b>14,534</b>	-1,016
 South Korea	1,733	14,424	<b>16,157</b>	3,088	10,941	<b>14,029</b>	-2,128
 Indonesia	1,446	14,568	<b>16,014</b>	2,854	11,377	<b>14,231</b>	-1,783
Other	29,657	141,450	<b>171,107</b>	25,005	110,400	<b>135,405</b>	-35,702
<b>Total</b>	<b>116,774</b>	<b>497,494</b>	<b>614,268</b>	<b>136,650</b>	<b>403,032</b>	<b>539,682</b>	<b>-74,586</b>

Source: Department of Home Affairs (2020b)

This table shows that at the end of March, approximately 116,000 international students were outside Australia, of which Chinese international students made up the largest number. This is because the Australian Government first applied travel restrictions for foreign nationals coming from China in February 2020. The Australian Government introduced broader travel restrictions in March, after the start of the first semester in higher education. This meant that many non-Chinese international students were able to return or commence their studies before broader travel restrictions began.

The data provided by the Australia Government helps highlight several points about the impact of the coronavirus pandemic on international student enrolments. These include:



1. The **number of international students outside Australia has risen to over 135,000** since March 2020. This suggests that many international students are returning to their home country while remaining enrolled.
2. The **number of enrolled international students has declined by approximately 75,500, or 12.3%**, since late March. The largest drop occurred in the first week of September, where there was a reduction of approximately 32,400 international students (in the week between August 30<sup>th</sup> 2020 and September 6<sup>th</sup> 2020). This is likely because the visas for the semester one 2020 higher education cohort expired at the end of August and these students either returned home or transitioned to other visas.
3. **Australia is facing the dual problem of fewer international students and a drop in international students living in Australia.** This is important to consider because the location of international students will affect their overall contribution to the economy. The Australian Bureau of Statistics (2020) estimates that international education contributed about \$21.4 billion in goods and services to the Australian economy in 2018–19. While international students are outside Australia they will not be spending on property or retail, which previous Mitchell Institute research shows accounts for approximately 70% of international student general expenditure in the wider economy (Hurley, 2020).

## What will be the impact of continuing travel restrictions?

There is now six months of available data on the impact of COVID-19 on international student enrolments. Based on this data, the Mitchell Institute has modelled the impact of continuing travel restrictions on international student enrolments in Australia.

For the six months from March 29<sup>th</sup> 2020, the data show that international student enrolments have decreased by approximately 12%. During the same period, the number of international students who are outside Australia has increased by approximately 13%, or 15,440.

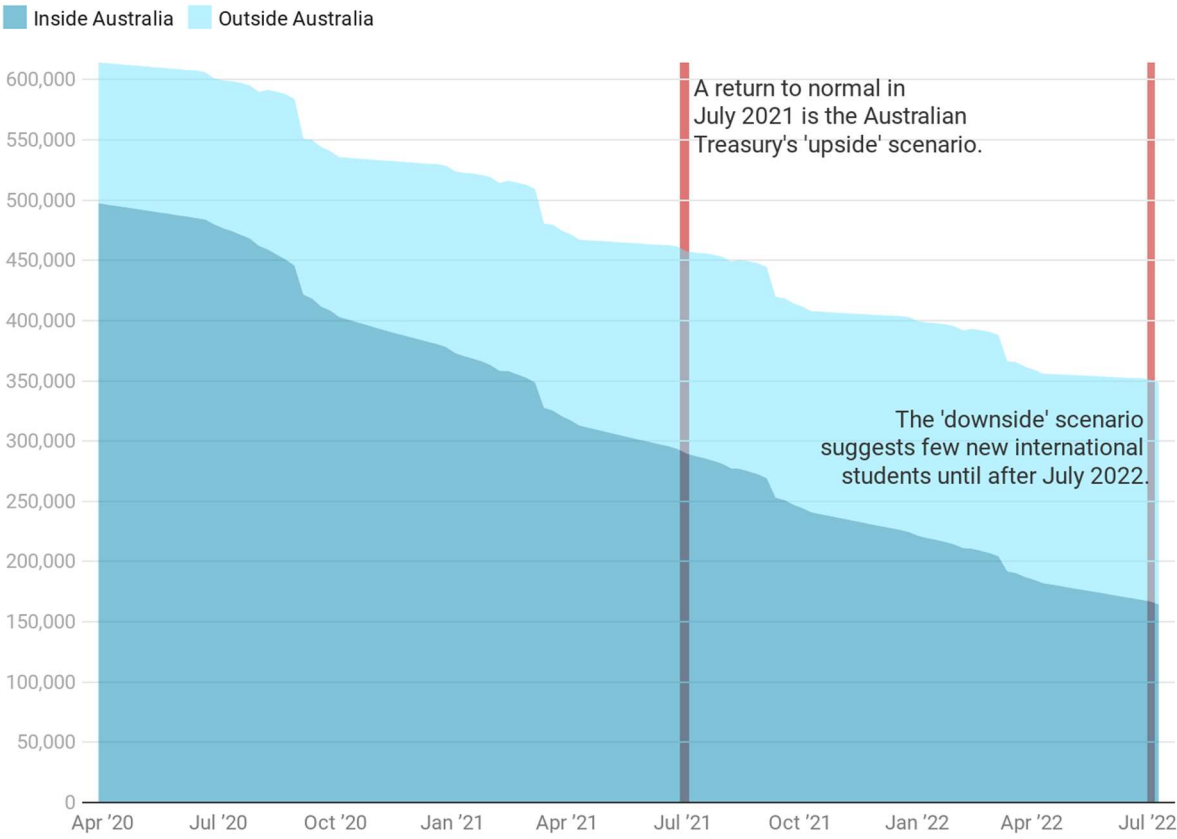
The data also show there is a very strong seasonal aspect to international student enrolments. There has been a steady weekly decline in currently international student enrolments, and a steady increase in international students outside Australia. At the end of the semester, there is a significant drop in enrolments as students who completed in the previous semester transition off student visas.

Using the data, the modelling adopts a seasonal naïve approach to forecast future changes in international student enrolments if borders remained closed. That is, what would future weekly international student enrolments look like if total enrolments continued to decline, and currently enrolled international students continued to leave Australia, at the same rate as what occurred in the six months since March 29<sup>th</sup> 2020?

It is important to emphasise that this modelling assumes borders remain closed. If international students outside Australia are able to return to Australia, and new students can commence onshore, this will affect the forecast.

Figure 3 shows the results of this modelling. This figure also highlight two dates identified by the Australian Government in the 2020-21 Federal Budget. The first date is July 2021 which the Australian Government uses to describe an 'upside' scenario. In this scenario, an early vaccine results in a quicker recovery and a return of international student enrolments in the second half of 2021. The second date of July 2022 aligns to the 'downside' scenario where waves of "rolling outbreaks necessitate the reimposition of severe containment measures on around 25 per cent of the national economy from 1 January 2021 to 30 June 2022" (Australian Treasury, 2020, pp. 2-15). This 'downside' scenario suggests a continuation of the travel restrictions that inhibits the flow of new international student enrolments.

**Figure 3: Change in future international student enrolments (actual and forecast)**



Source: Mitchell Institute analysis of Department of Home Affairs (2020b) data.

This figure shows that the longer borders remain shut the more international student enrolments will decline. The estimates in this figure suggest that without some major change, by July 2021 there will be approximately 457,000 enrolled international students, with less than 290,000 of those inside Australia. This is a reduction of approximately 50% compared to October 2019 figures which show there were about 578,000 international students inside Australia (Department of Home Affairs, 2020a).

The 'downside' scenario identified by the Australian Treasury is even more dramatic. In this scenario, total enrolments will continue to decline to 350,000. The number of international students living in Australia is likely to be only 165,000.

## Where has been affected the most?

International students contribute to local communities and economies. Identifying the parts of Australia most affected by the international student crisis is important because it assists with understanding the impact of problems with the international education sector at a local level and responding to these challenges.

Data provided by the Australian Government provides accurate information on the impact of the coronavirus on international students at a state and territory level.

Table 2 below shows the number of international students by state in March 2020 compared to data from October 25 2020. The October 25 2020 data shows both the reduction in international students and those international students who are currently outside Australia. Comparing data in this way helps estimate the reduction in international students living in various parts of Australia because of the coronavirus.

**Table 2: International students by state or territory (2020)**

State or territory of institution	International students (March 2020)	Change in enrolled international students (to October 25 2020)	Change in international students outside Australia (to October 25 2020)	Estimated change in international students living in state/territory due to coronavirus (to October 25 2020)	
NSW	221,795	-27,304	-52,415	<b>-79,719</b>	<b>-35.94%</b>
VIC	185,250	-21,390	-45,465	<b>-66,855</b>	<b>-36.09%</b>
QLD	109,771	-17,267	-20,066	<b>-37,333</b>	<b>-34.01%</b>
WA	33,502	-4,210	-4,775	<b>-8,985</b>	<b>-26.82%</b>
SA	37,627	-232	-7,843	<b>-8,075</b>	<b>-21.46%</b>
TAS	6,584	-739	-1,463	<b>-2,202</b>	<b>-33.44%</b>
ACT	13,037	-1,451	-4,054	<b>-5,505</b>	<b>-42.23%</b>
NT	1,914	-177	-93	<b>-270</b>	<b>-14.11%</b>
Not available	4,788	-1,816	-476	<b>-2,292</b>	<b>-47.87%</b>
<b>Total</b>	<b>614,268</b>	<b>-74,586</b>	<b>-136,650</b>	<b>-211,236</b>	<b>-34.39%</b>

Source: Department of Home Affairs (2020b).

This table shows that the biggest reduction has occurred in New South Wales and the biggest proportional fall has occurred in the Australian Capital Territory. This is likely because these regions have a higher number and proportion of Chinese international students.

The reduction in international students will be experienced differently at a local level as the density of international students varies across Australian cities. Indeed, previous Mitchell Institute research showed that international students have had a transformative impact on Australian cities (Hurley, 2020). The large growth in international students since 2006 meant that in 2019, before the coronavirus pandemic, international students made up over 30% of the resident population in some suburbs.

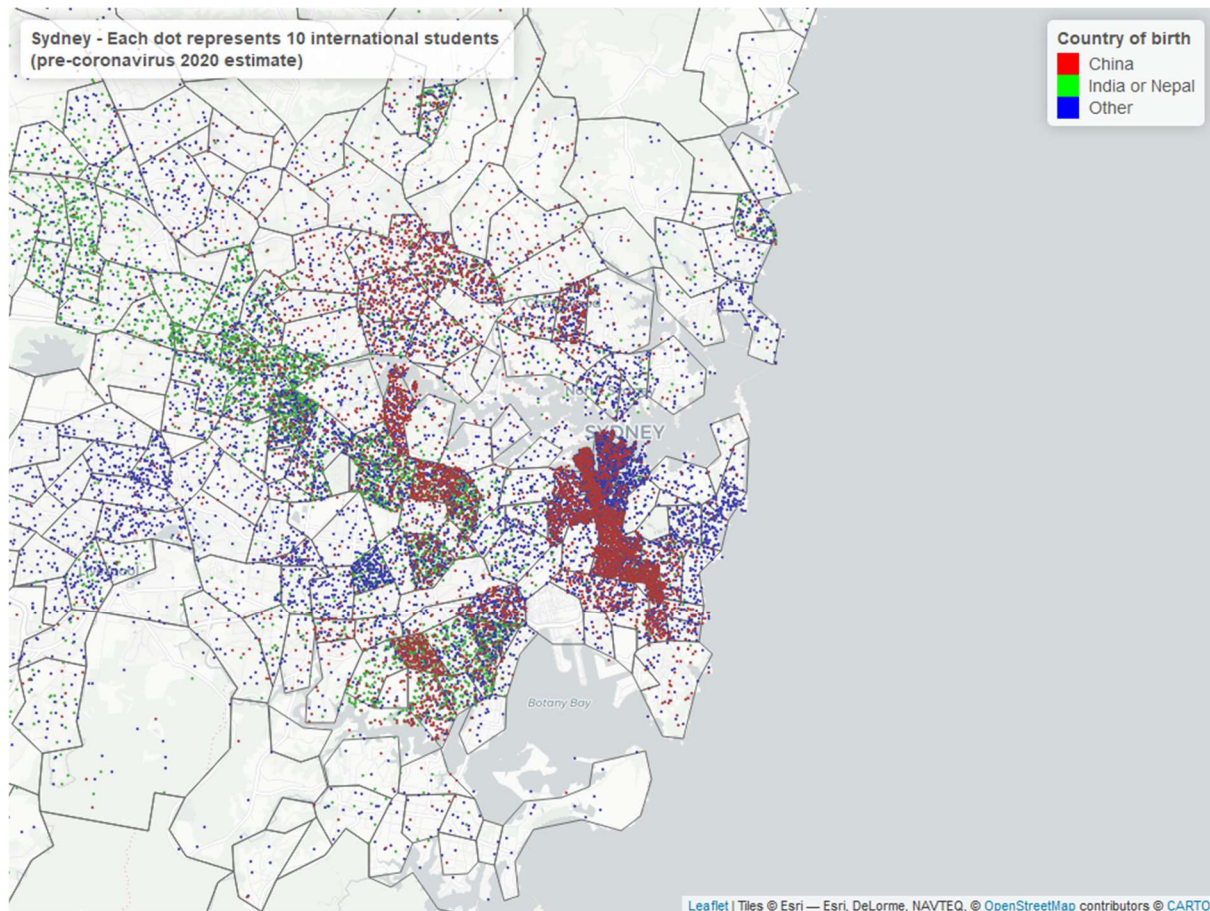
Generally, it is inner-city areas and suburbs near university campuses that have the largest populations of international students. However, the Mitchell Institute research also showed that many outer suburbs had significant populations of international students, especially those areas with more affordable housing and good public transport links.

It is possible to extend previous analysis and estimate where international students live according to their country of birth. This is useful because, as Table 1 shows, the impact of coronavirus on international students varies by country of citizenship. Identifying where international students from different countries live can help understand where the impact has been the greatest.

In order to estimate pre-coronavirus levels of international students, this analysis uses the most recent data from March 2020 and assumes that all enrolled students would be living in the state where their institution is located. The analysis takes this approach because the March 2020 figures are the most recent and comprehensive available data outlining international students by country of citizenship and state of institution. Some limitations to this approach are outlined in Appendix 2.

Figure 4 estimates where international students lived in Greater Sydney by country of birth before the coronavirus pandemic. This figure uses recent data outlining the total number of international students in New South Wales and combines it with census data to map where international students are most likely to be living based on their country of birth. This figure shows international students from China in red, India and Nepal in green, and other countries in blue.

**Figure 4:** Dot density map of Sydney estimating the place of usual residence of international students by country of birth where each dot represents ten international students (pre-coronavirus 2020 estimate)



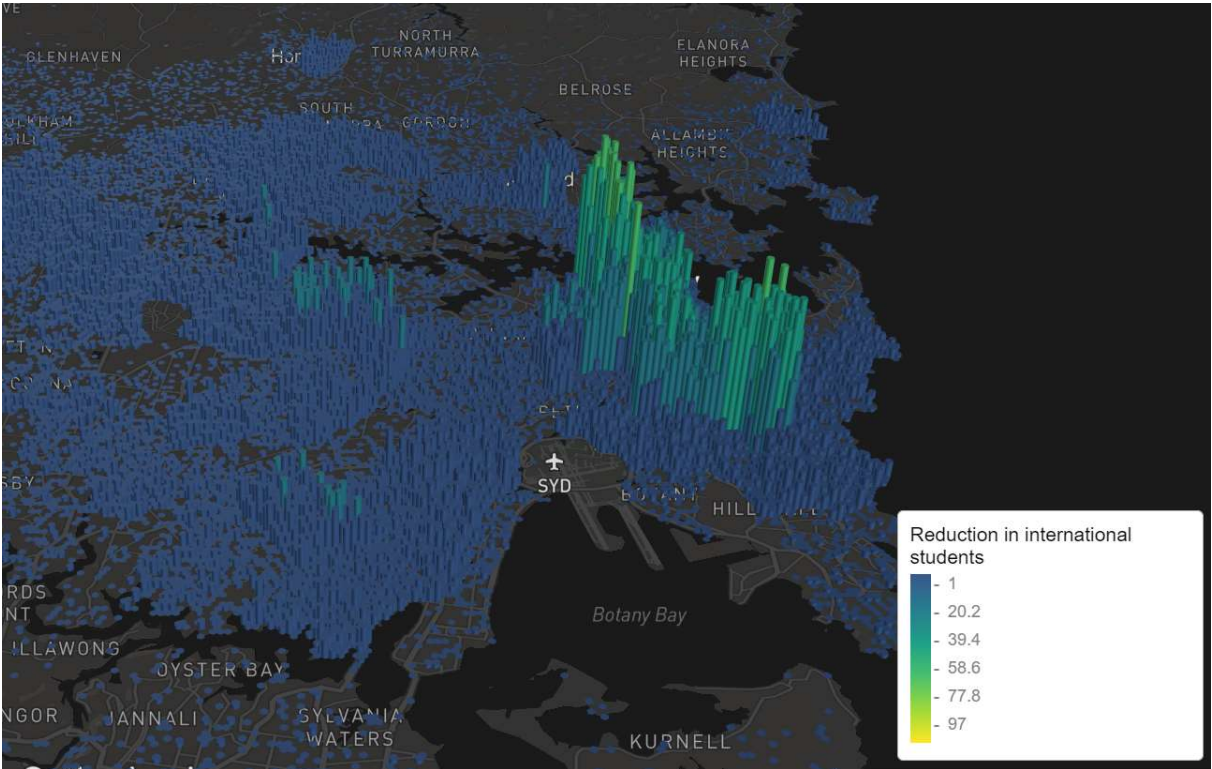
Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and Australian Bureau of Statistics (2016) data.

This figure shows that where international students live in Greater Sydney can vary greatly according to their country of birth. Chinese international students generally live in inner Sydney with pockets of high Chinese student populations in Hurstville and in Strathfield/Burwood. By contrast, international students from India and Nepal live in greater numbers further west, especially around Parramatta.

Table 2 shows that there are approximately 80,000 fewer international students living in New South Wales because of the coronavirus. The Mitchell Institute estimates this will equate to approximately 72,000 fewer international students living in the Greater Sydney area. However, this reduction is unlikely to be spread evenly throughout the city. Those regions with a higher proportion of Chinese international students are more likely to be experiencing a reduction in international students.

To visualise where this loss has occurred in the Greater Sydney region, Figure 5 is a three-dimensional map that estimates where those 72,000 international students would be living if not for coronavirus. Essentially, the higher the column, the greater the reduction in international students and the greater the impact on local business and communities.

**Figure 5:** Three-dimensional map showing the reduction in international students in the Greater Sydney area because of the coronavirus pandemic (October 2020 estimate)



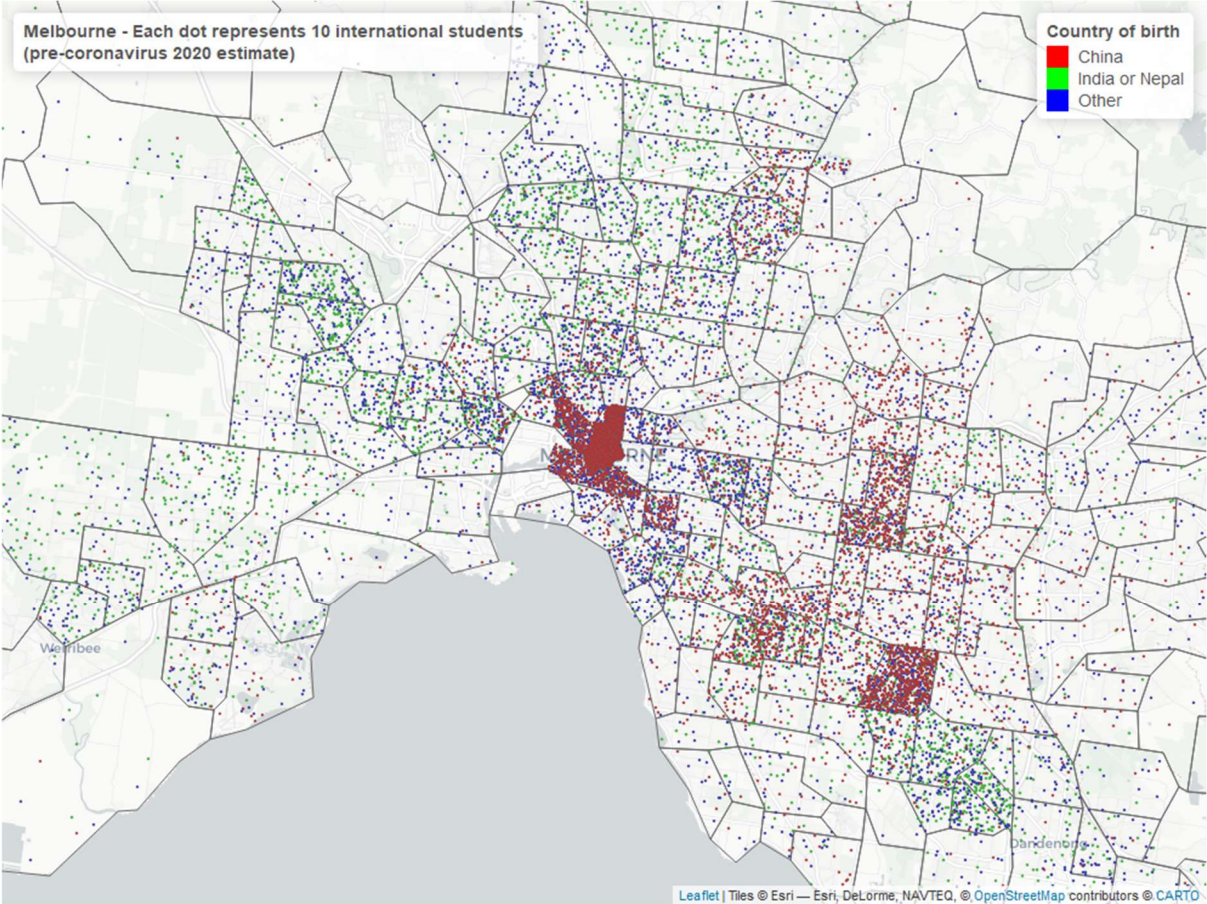
Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and Australian Bureau of Statistics (2016) data.

This figure shows that Sydney's inner suburbs are likely to be experiencing the biggest fall in international students. Areas such as Hurstville and Strathfield will also have a significant reduction in international students, likely because of their higher proportion of Chinese international students.

The impact of coronavirus on international students will vary by city and by suburbs within cities. For instance, Melbourne also has a large international student population with a high proportion of Chinese international students.

Figure 6 is a dot density map that estimates where international students lived in Greater Melbourne by country of birth before the coronavirus pandemic. This figure shows international students from China in red, from India and Nepal in green, and from other countries in blue.

**Figure 6:** Dot density map of Melbourne estimating the place of usual residence of international students by country of birth where each dot represents ten international students (pre-coronavirus 2020 estimate)



Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and Australian Bureau of Statistics (2016) data.

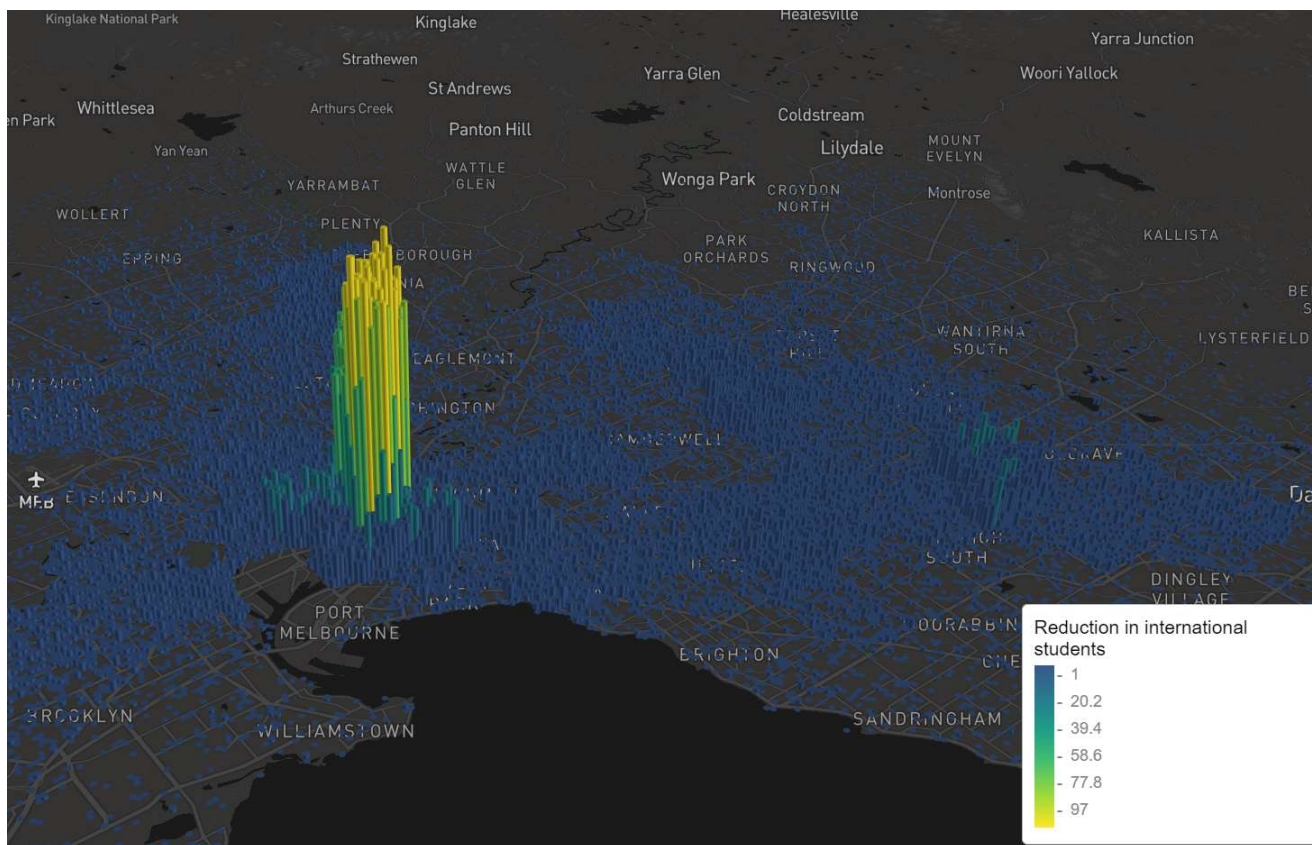
This figure shows, similar to Greater Sydney, the geographical location of international students can differ by country of birth. There are more Chinese international students living in Melbourne’s CBD and south-eastern suburbs. Indian and Nepalese international students are more likely to live in the west and north of Melbourne, as well as in south-eastern regions such as Dandenong.

This geographical distribution of international students means that the impact of the coronavirus on local populations of international students in Melbourne will differ by suburb.

Figure 7 visualises the estimated reduction in international students using a three-dimensional map. There are about an estimated 64,000 fewer international students living in Melbourne because of the coronavirus pandemic. The figure below uses the same colour scale as Figure 5, enabling an easier comparison of the relative impact of coronavirus between Melbourne and Sydney.

**Figure 7:** Three-dimensional map showing the reduction in international students in the Greater Melbourne area because of the coronavirus (October 2020 estimate)





Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and Australian Bureau of Statistics (2016) data.

This figure shows that the largest reduction in international students has been in the Melbourne CBD. Compared to Sydney the loss is much more concentrated in the central city area, with a notable reduction in Melbourne's south-east, surrounding the Clayton campus of Monash University.

This different distribution in the reduction in international students in Australia's two largest cities also appears in rental vacancy data. As there are fewer international students in Australia, there are likely to be fewer properties rented by international students, resulting in an increase in rental vacancy rates.

Table 3 and Table 4 show the top ten areas in Greater Sydney and Greater Melbourne that the Mitchell Institute estimates are experiencing a reduction in international students. The table also shows rental vacancy rates for September 2020 compared to September 2019<sup>1</sup>.

**Table 3: Estimated reduction in international students and rental vacancy rates in Greater Sydney.**

Greater Sydney			
Suburb (SA2)	Estimated reduction in	September 2020	September 2019

<sup>1</sup> Rental vacancy is drawn from unofficial data published by SQM Research.

	<b>international students</b>	<b>vacancy rates</b>	<b>vacancy rates (%)</b>
Waterloo – Beaconsfield	3,550	5.9%	2.8%
Sydney – Haymarket – The Rocks	3,380	12.8%	4.3%
Kingsford	2,840	8.4%	2.7%
Pymont – Ultimo	2,690	8.3%	3.2%
Redfern – Chippendale	2,420	8.4%	2.1%
Burwood – Croydon	2,120	7.4%	2.6%
Kensington (NSW)	2,030	7.5%	3.1%
Macquarie Park – Marsfield	1,910	8.7%	4.7%
Concord West – North Strathfield	1,890	3.8%	2.8%
Hurstville	1,610	5.4%	4.3%

Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and SQM Research (2020) data.

**Table 4:** *Estimated reduction in international students and rental vacancy rates in Greater Melbourne.*

<b>Greater Melbourne</b>			
<b>Suburb (SA2)</b>	<b>Estimated reduction in international students</b>	<b>September 2020 vacancy rates</b>	<b>September 2019 vacancy rates</b>
Melbourne	7,670	10.8%	3.2%
Clayton	4,020	7.8%	2%
Carlton	3,910	8.4%	2.8%
North Melbourne	1,810	6.8%	3.2%
Southbank	1,530	16.8%	4.1%
Box Hill	1,370	5.7%	3.3%
Burwood	1,290	5.3%	3.9%
Malvern East	950	9.8%	2.8%
Docklands	930	17.4%	3.2%
Carnegie	900	4.6%	1.4%

Source: Mitchell Institute analysis of Department of Home Affairs (2020b) and SQM Research (2020) data.

This table shows that rental vacancy rates have increased in all suburbs where the Mitchell Institute estimates there has been a significant reduction in international students. Areas close to Melbourne's CBD have experienced some of the biggest increases in rental vacancies, with the Docklands and Southbank areas reporting a rental vacancy rate of more than 16%.

The top ten regions experiencing a reduction in population because of the coronavirus in each state and territory are shown in Appendix 1.

## Policy implications

The above data and analysis suggest that issues facing the sector will continue for some time. The Mitchell Institute had forecast losses to the university sector using a model that assumed a return to international student commencements by mid-2021. This timeline now seems unlikely. Indeed, the point at which Australia's international student enrolments stops declining is unknown. This uncertain environment has a number of policy implications, with key implications discussed below.

### **Losses related to international student will continue to grow**

International student enrolments function like a pipeline. Many international students begin in a pathway or English language course before progressing to a formal VET or higher education course. The process can take several years. As some international students finish their courses, new international students commencing their courses replace them.

The coronavirus has severely disrupted this pipeline. There has now been a compromised intake for semester one 2020 and a missed intake for semester two 2020. It seems likely that there will be another missed intake for semester one 2021 with the earliest possible resumption of onshore commencements occurring in semester two 2021.

The data outlining international applications suggests that these missed intakes have not accumulated, so when new international students can commence their courses, there is unlikely to be three semesters' worth of international students arriving. Applications have largely dried up, suggesting there is little built-up demand.

As currently enrolled international students finish their courses, the number of enrolled international students will continue to decline. Moreover, currently enrolled international students continue to leave Australia, hastening the reduction in onshore international students.

### **Current policy responses may have limited impact**

Since the start of the pandemic, there have been many attempts to enable international students stranded outside Australia to return, and to enable new international students to enrol. In June 2020, the ACT was announced as a trial site for the return of 350 international students (Lowrey & Borys, 2020). This trial is yet to proceed. In September 2020, the Northern Territory government announced a similar pilot program to return 70 international students to Australia (James, 2020).

It is unclear whether such measures will have a substantial impact on the international education crisis. Many currently enrolled international students are choosing to leave the country. The number of international students outside Australia has grown since the start of the pandemic, up from approximately 117,000 in March 2020 to over 135,000 in October 2020 (Department of Home Affairs, 2020b). Consequently, programs to bring international students stranded overseas into the country may not be able to counter the steady reduction of international students living in Australia.

However, the current crisis also brings opportunities. Australia competes with other countries in the international education market, especially the United Kingdom, Canada and the United States. Australia's handling of the pandemic means it may be in a better position to take a

greater share of the international student market, and present itself as a COVID-safe destination for international students.

## **The problem is bigger than just the education sector**

Often debates concerning international students involve the contribution these students make to the economy and the dependence of universities on international student revenue. However, it is also important to highlight the wide-ranging impact of international students on Australian communities.

International students contribute to local communities. In an economic sense, this contribution is substantial. In 2018–19, approximately 57%, or \$21.4 billion, of the \$37.5 billion in annual revenue associated with international education came in the form of goods and services spent in the wider economy (Australian Bureau of Statistics, 2020).

This means that issues affecting international students will also be impacting those who have close connections to them. Indeed, international students are more than just an export revenue stream, and for many Australians they will be neighbours, friends, partners, tenants, colleagues, classmates and customers.

These students' varied roles support the need for a policy response that considers the situation of international students and the unique challenges they face.

Hundreds of thousands of international students have had their studies interrupted by the pandemic. Many have had to rely on handouts. International students are not eligible for certain support programs such as JobKeeper. In contrast, some countries have included international students in such support programs, such as New Zealand's COVID-19 wage subsidy program (NZ Government, 2020).

It is clear that many international students are struggling. One report found six out of ten international students who were working lost their job when the pandemic began (Morris et al., 2020). Implementing policies that minimise the losses experienced by international students are an important component of the coronavirus response.

Another example of a possible policy response is the implementation of more flexible visa arrangements. Such arrangements will enable international students to adjust their study plans without fear of contravening the requirements of their visa.

## **Role of migration policy**

Migration policy has an enormous influence on Australia's international education sector. The current crisis is largely the cause of a migration policy in the sense that Australia has shut its international borders and restricted the movement of people.

Figure 8 below highlights the relationship between migration policy and international education. The figure shows international student visas granted per year from 2005–06 to 2019–20. This figure also identifies three significant changes in migration policy relating to international students. The first major change refers to policies introduced around 2009 that 'de-coupled' student visas from permanent residency visas, making it more difficult to use a student visa as a pathway to permanent residency (Ferguson & Sherrell, 2019). The second major change came following the 'Knight Review', which loosened some of the visa eligibility criteria for international students and created more opportunities for graduates to work in Australia after

their studies (Birrell, 2019). The third change is when the government implemented travel restrictions in response to COVID-19.

**Figure 8: International student visas granted (primary applicants) 2005–06 to 2019–20**



Source: Department of Home Affairs (2020a)

This figure shows that the decoupling of student visas from the permanent residency pathway in around 2009 led to a drop in the number of international student visas granted. The number of international student visas granted began to rise again in 2012 after the introduction of reforms following the 'Knight Review'. In 2019–20, the number of international student visas granted again began to fall as the impact of the coronavirus pandemic began to be felt.

As Australia is experiencing an extraordinary disruption to the international student market, it may be an opportune time to revisit the relationship between international education and migration policy. Prior to the coronavirus pandemic, there had been many concerns regarding institutional reliance on international students as well as reports of exploitation (Birrell, 2019; Hurley & Van Dyke, 2020).

The sharp reduction in international students means Australia will be able to better position itself in how it would like to shape any future growth in international students. Indeed, while this paper identifies the extraordinary challenges facing the international education sector, it seems not a case of *if* international students will return but *when*. From a policy perspective, it seems wise to add *how* to the policy discussions. Effort should work towards a more sustainable, equitable, and fairer international student education model that delivers benefits for all stakeholders, including international students themselves.

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## Appendix 1: Top ten areas with the greatest reduction in international students by state and territory

Suburb (SA2)	October estimated reduction
<b>NSW</b>	
Waterloo - Beaconsfield	3560
Sydney - Haymarket - The Rocks	3380
Kingsford	2840
Pymont - Ultimo	2700
Redfern - Chippendale	2430
Burwood - Croydon	2120
Kensington (NSW)	2030
Macquarie Park - Marsfield	1910
Concord West - North Strathfield	1890
Hurstville	1620
<b>VIC</b>	
Melbourne	7710
Clayton	4040
Carlton	3940
North Melbourne	1820
Southbank	1540
Box Hill	1380
Burwood	1300
Malvern East	950



<b>Suburb (SA2)</b>	<b>October estimated reduction</b>
Docklands	940
Carnegie	900
<b>QLD</b>	
St Lucia	1950
Kelvin Grove - Herston	1270
Brisbane City	1100
Surfers Paradise	1020
Sunnybank Hills	890
Eight Mile Plains	810
Runcorn	790
Sunnybank	780
Calamvale - Stretton	760
Southport - North	760
<b>SA</b>	
Adelaide	1510
Plympton	340
Richmond (SA)	290
Windsor Gardens	260
Rostrevor - Magill	230
Enfield - Blair Athol	220
Mawson Lakes - Globe Derby Park	220
Hindmarsh - Brompton	210
Unley - Parkside	210
Payneham - Felixstow	200
<b>WA</b>	

<b>Suburb (SA2)</b>	<b>October estimated reduction</b>
Bentley - Wilson - St James	700
Perth City	590
Nedlands - Dalkeith - Crawley	520
Cannington - Queens Park	360
Rivervale - Kewdale - Cloverdale	250
Victoria Park - Lathlain - Burswood	190
Manning - Waterford	190
East Victoria Park - Carlisle	190
Nollamara - Westminster	180
Wembley - West Leederville - Glendalough	160
<b>TAS</b>	
Sandy Bay	730
Mount Nelson - Dynnyrne	220
Newnham - Mayfield	180
Hobart	180
Mowbray	140
South Hobart - Fern Tree	70
New Town	60
Glenorchy	40
Invermay	40
West Moonah	40
<b>ACT</b>	
Civic	810

<b>Suburb (SA2)</b>	<b>October estimated reduction</b>
Belconnen	610
Bruce	550
Acton	350
Franklin	300
Harrison	240
Braddon	280
Gungahlin	220
Turner	170
Kaleen	160
<b>NT</b>	
Brinkin - Nakara	30
Darwin City	20
Coconut Grove	10
Stuart Park	10
Nightcliff	10
Lyons (NT)	10
Larrakeyah	10
Wagaman	10
Millner	10
Rapid Creek	10

Mitchell Institute analysis of Department of Home Affairs (2020b) and Australian Bureau of Statistics (2016) data.

# Appendix 2: Technical Appendix

## Calculating student numbers

This report used Australian Bureau of Statistics (ABS) census data and data from the Department of Home Affairs to calculate international student numbers and the location of international students by place of usual residence.

International student data by state/territory and country of citizenship are determined using data provided by the Department of Home Affairs, which has released weekly data since the start of the pandemic on the location of international students.

This data will provide accurate information on enrolments in each state and territory. To estimate where international students are living by place of usual residence within each state and territory, ABS 2016 census data was analysed using TableBuilder. Data was drawn from the following categories:

CITP Citizenship type (Not Australian) + TYPP Type of educational institution attending (University or Other + TAFE or other vocational college) + Country of birth by SA2 area, place of usual residence.

The Mitchell Institute used the census data to estimate the proportion of international students living in each state and territory by Statistical Area 2 (SA2) region. This proportion was then combined with actual state and territory international student data to estimate the total population of international students in a given area.

## Modelling changes to international student figures

To model the changes in international student figures, the Mitchell Institute used a seasonal naïve method (Hyndman & Athanasopoulos, 2018). This method uses observations from the previous seasonal period to predict future changes.

International student data follows a six-monthly seasonal pattern. This is because there are two main intakes each year at the start of semester one and semester two. The forecasts sets the seasonal period as the six months beginning from March 26<sup>th</sup> 2020. The weekly rate of change was ascertained and then applied to future six monthly periods to model changes in international student figures.

## Limitations

All forms of data analysis have limitations and it is important to understand how these limitations will affect analyses and interpretations of data.

Data outlining the location of international students in each state and territory relies on information from the ABS census. This information was collected in 2016 and between 2016 and 2020 there will be changes to where international students live.

ABS census data does not identify whether an individual has an international student visa and, where census data is used, the citizenship status of individuals enrolled in a post-secondary institution is used as a proxy for determining international student status.

The modelling assumes that future seasonal periods will follow the same pattern as the six months from March 29<sup>th</sup> 2020. Changes in government policy, especially relating to border closures, will affect this modelling.

To estimate pre-coronavirus international student levels this analysis uses total student enrolment data from March 2020 and includes international students inside and outside Australia. This is because these figures are the most detailed available dataset outlining international students by country of citizenship and location of enrolling institution. Actual pre-coronavirus levels may differ from this dataset.



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