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Equity in student enrolment: A quantitative population perspective on international students in Australian universities

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Abstract

Nearly a third of Australian university students are international and are major contributors to Australia's economy. Focusing on population rates, this paper explores the contribution of international student enrolment in Australian universities to global higher education equity. Findings indicate that, in 2022, the median rates of international student enrolment per 100,000 population were highest for the Indian subcontinent and lowest for Sub-Saharan Africa. National rates varied from 0.03 to 403 per 100,000 of the population. There were no indications of regional or national patterns with gross domestic product (GDP), proportion of GDP spent on education or access to national higher education, apart from some high GDP countries with high rates of student enrolment in Australia. Repeating the analyses for 2019 and restricting the population to ages 15-24 made no substantial difference. Given the high fees for international students, these results indicate that individual ability to pay is the most important predictor of becoming an international student in Australian universities. This paper argues that Australia should develop a strategy for international higher education based on global need rather than solely Australia's economic benefit.

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Practitioner Notes

1. Enrolment of international students in Australian universities per 100,000 of the population varies between countries and regions in a way that does not mirror their need for higher education.
2. Individual ability to pay is likely the most important predictor of becoming an international student in Australian universities.
3. A national strategy for international students should be based on reducing global inequity in access, rather than solely on their economic value to Australia.
4. Universities should come together to create a network for global online learning to redress the current global inequity in access.
5. Australia could take a leadership role in creating a global alliance to support access to higher education for all individuals and populations.

Keywords

higher education; international students; global equity; population perspective

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Introduction

In the context of large differences in access to higher education globally, in recent years the numbers of students accessing higher education outside their own country has increased considerably (OECD, n.d.-a). Australia is second only to Luxembourg in the proportion of its university students who come from other countries, with international students comprising nearly a third of all tertiary enrolments (OECD, n.d.-b). Indeed, the financial base of Australian universities now depends heavily on fees paid by international students. In 2019, before the Covid-19 pandemic, nearly a quarter of total Australian university revenue came from this source (Ferguson & Spinks, 2021), including over one quarter of university research income (Norton, 2020). These fees now comprise Australia's fourth largest export industry (Australian Government, 2023).

In recent reports, the Australian Government has expressed pride in the contribution of its universities to international education. For example, the Government's strategy for international education focuses on the economic benefits to Australia from international students (Department of Education, 2021). Similarly, while Australia's South East Asia economic strategy includes a section on the importance of this education to the region, it mainly identifies the benefit of the education sector to Australia, calling it "a national asset" (Department of Foreign Affairs and Trade, 2023, p. 85). In full support of international education, the interim report of the Australian Parliamentary inquiry into international education also offers a marketing strategy and discusses the need for a "market diversification plan" (Parliament of Australia, 2023, p. XVII).

However, none of these reports suggest how global or regional needs might be partially or wholly met through university education in Australia. Indeed, Heller (2022a) and Heller (2023b) have expressed concern about the ethical implications of Australia's focus on the provision of international student education to benefit Australia, rather than taking account of global needs. The motivations of universities and the wider Australian economy for international student income is thus in potential conflict with global needs for increased access to higher education, which include considerations of equity and human rights.

Literature Review

An equity framework

A series of graphs published by Ritchie et. al. (2023) on the Our World in Data website clearly demonstrate large global inequities in access to higher education. Atherton et. al. (2016) also state:

> Understanding the extent of the inequality in participation in HE across the world is still a work in progress. But there is enough evidence to argue that, where certain dimensions of social background are concerned, inequality of access is a genuinely global problem. It occurs in countries and across continents with different levels of wealth and contrasting political and educational systems (p. 23).

Similarly, a paper titled "Equity should be at the heart of international higher education" published by UNESCO (2023) highlights the potential for the provision of international education to contribute to attaining the Sustainable Development Goals (SDGs). The most relevant SDG to

this research (4.3) states: “By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university” (Department of Economic and Social Affairs, n.d.).

Sit (2024) also describes global inequalities in higher education and highlights the importance of global policy priorities, including the need for data, while the World Access to Higher Education Network (WAHEN, n.d.) has been established to support global equitable access and success in higher education.

Human-rights

Article 4 of the UNESCO Convention against Discrimination in Education (1960) states that “higher education [should be] equally accessible to all on the basis of individual capacity” (p. 6). While Australia has accepted, but not ratified, this Convention, it has ratified the UNESCO Global Convention on the Recognition of Qualifications concerning Higher Education (2019) “to strengthen educational, geographical, humanitarian, cultural, scientific and socioeconomic ties between States Parties …” (p. 5). Australia is also a party to the United Nations International Covenant on Economic, Social and Cultural Rights (1966) which includes Article 13, the Right to Education, but this presumably relates only to Australia’s own population (Australian Human Rights Commission, n.d.).

As far back as 2011, Robertson (2011) described the shift in Australia from international students being transient consumers to potential citizens, which “illuminates the social and political consequences of the education-migration nexus in Australia” (p. 2192). This is reflected in the recent debate about how international students contribute to Australian immigration levels, with the Government responding to a surge by proposing to introduce a cap on international student numbers (Norton, 2024). From the perspective of countries from which students are being sourced, Mulvey (2021) also calls for global justice in the recruitment of overseas students, and identifies the negative effects of brain drain on a state’s human and institutional capacity. Marginson (2022) also raises concerns about exposing those from the Global South to education provided in the Global North as a form of neo-colonialism.

The research questions

Building on an equity and human rights perspective, this paper explores global access to Australian higher education and how it relates to global population needs. It aims to provide recommendations for a future population-based ethical approach to international education. The research answers questions relating to the extent of variation across regions and individual countries in the proportion of the population who are international students in Australia. It further investigates whether this variation can be related to three key factors: a nation’s gross domestic product (GDP), access by its own population to higher education, and the proportion of GDP spent on education. In addition, a comparison between international and domestic students in Australia is made in terms of choice of level of course and field of education.

In sum, the research answers the following key research questions:

> **Research question 1:** What proportion of the total population, and of those aged 15-24 years, from different regions and individual countries were enrolled as international students in Australia in 2022?

Research question 2: Is there a relationship between rates of international students enrolled in Australian universities from different countries and regions in 2022 and markers of their potential need for higher education including GDP, total rates of enrolment in higher education and the proportion of GDP spent on education?

Research question 3: Is there a difference between international and domestic students in Australia in the choice of level of course or field of education?

Method

A population approach to a descriptive analysis forms the basis of the method used, whereby the researchers calculated rates using the number of students enrolled in Australian universities as numerators, which were taken from government reports. The population size of the region and individual countries from which the students came were used as denominators. The data were used to ascertain relationships between potential need for increased access to higher education, expressed by these countries and regions through population data (i.e. median rates per country and region), and the rates at which their populations are students in Australian universities.

Data sources

Table 1 shows the data sources used for this research. Data were selected from the regions of South-East (SE) Asia, the Pacific, the Indian subcontinent, Sub-Saharan Africa, and China. Countries with fewer than 20 students studying in Australia were not included.

While it was known that the overall number of international students in Australia increased in 2023 (Parliament of Australia, 2023; Hurley & Hildebrandt, 2023), the most recent full year data available at the time of conducting this research were student data from 2022, which were compared with data from 2019 before the Covid-19 pandemic.

Table 1

Sources of Data

Data	Source	Table / Figure
Numbers of overseas students	Department of Education (2020, 2023a)	Tables 2 & 3 (regions)
Country and region of permanent home residence	Department of Education (2020, 2023a)	Tables 2 & 3 (regions)
Population size	Worldometer (2023); NationMaster (2020)	Tables 2 & 3 (regions)
Rate per 100,000 population of international students in Australia	Calculated	Tables 2 & 3 (regions) Figures 1 – 4 (countries)
Gross Domestic Product (GDP)	World Bank (n.d.-a.)	Tables 2 & 3 (regions) Figures 1 – 4 (countries)
Percentage of GDP spent on education	World Bank (n.d.-b.)	Tables 2 & 3 (regions)
Gross enrolment ratios for tertiary education	World Bank (n.d.-c.)	Tables 2 & 3 (regions)
Field and level of study	Department of Education (2020, 2023a, 2023b)	Table 4

Data published by the Australian Department of Education were examined for numbers of Australian university overseas students, according to their country of permanent home residence, in the full years of 2022 (Department of Education, 2023a) and 2019 - before the Covid-19 pandemic (Department of Education, 2020). Using United Nations Population Division estimates of the population sizes of each country and region (Worldometer, 2023), access rates per 100,000 population were calculated. The gross GDP of each country was expressed as purchasing power parity (PPP) per capita in international dollars (World Bank, n.d.-a), and the percentage of GDP spent on education (World Bank, n.d.-b) in each country for the last year in which data were available. Gross enrolment ratios for tertiary education, i.e. the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to tertiary education in each country came from the World Bank (World Bank, n.d.-c). The distances of each country from Australia were obtained from Geodatos (https://www.geodatos.net/en). For the field and level of study, 2022 data for international students (Department of Education, 2023a) and domestic students (Department of Education, 2023b) were examined, as well as the same data for 2019 (Department of Education, 2020). Population denominators for further analyses restricted to those aged 15-24 years (to cover the years when people are most likely to attend university) came from NationMaster (2020).

Data analysis

Enrolment rates in Australian universities were calculated per 100,000 of the population for each country and as median rates for each region. Rankings of regional enrolment rates were tabulated against the regional rates of other measured variables: GDP; percentage of GDP spent on education; gross enrolment ratios for tertiary education; and distance from Australia. Within each region, enrolment rates for each country were plotted against GDP, percentage of GDP spent on education, and gross enrolment ratios for tertiary education. Where there were some countries at the extremes of the distribution, the plots were repeated omitting these countries. Analyses were also repeated after restricting the age group to the population most likely to attend university, i.e. those aged 15-24 years.

Results

There are large regional differences in the proportion of the population who were international students in Australia (Table 2) with the median rate per 100,000 of the population varying from 0.5 in Sub-Saharan Africa to 42 in the Indian subcontinent. It was also found that, while the between-region differences in the rate at which students study in Australia are large, the variations within each region are much greater.

In SE Asia, three countries stand out as having very high access rates. These are Singapore (403 per 100,000), Brunei Daraussalam (115 per 100,000) and Malaysia (63 per 100,000). At the same time, Myanmar, Thailand, Laos, the Philippines, and Indonesia have rates less than 5 per 100,000 population. Malaysia and Singapore together provided 47% of international student numbers in Australia in 2022, but comprised only 6% of the total population of SE Asia. Indonesia provided 12% of international student numbers in Australia, but comprised 40% of SE Asia's combined population.

Table 2

Numbers and Rates of International Student Enrolment in Australian Universities from Regions

Region (number of countries)	Total number of students in Australian universities (range across countries)	Median rate/100,000 pop. of students in Australian universities (range across countries)	Median GDP PPP* (range across countries)	Median % GDP on education (range across countries)	Median distance from Australia in km -	Median gross enrolment ratio in tertiary education** (range across countries)
SE Asia (n = 11)	98,308 (79, 29,419)	5.8 (2.9, 403.5)	13,461 (4657, 127,603)	2.9 (1.4, 4.4)	4,738	35 (12, 97)
Pacific (n = 10)	2,352 (23, 1,321)	28.9 (12.8, 336.5)	5,423 (2365, 14,362)	5.6 (1.9, 15.6)	4,659	18*** (2, 51)
Sub-Saharan Africa (n = 21)	12,251 (20, 3,227)	0.5 (0.0, 183.5)	3,976 (1,733, 29,772)	3.5 (0.5, 9.6)	10,773	10 (4, 44)
Indian subcontinent (n = 7)	109,789 (219, 54,076)	42 (2.9, 266.2)	8,400 (4,727, 25,125)	3.6 (1.2, 8.1)	7,464	23 (14, 36)
China (n = 1)	150,039 (n/a)	10.5 (n/a)	21,483 (n/a)	3.3 (n/a)	7,448	72 (n/a)

* PPP is Purchasing Power Parity (PPP) per capita in International Dollars; ** Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to tertiary education; *** Data available from only 5 countries (Fiji, Papua New Guinea, Samoa, Tonga, Vanuatu)

There are no obvious patterns of GDP, percentage of GDP spent on education, proportion of the population enrolled in higher education (gross enrolment ratio in national tertiary education) or distance from Australia that relate to the differences in access as international students to Australia. Table 3 shows the regional rankings of each of these characteristics, with no consistent positive or negative associations between the rankings, although China tended to rank highest and Sub-Saharan Africa lowest across the characteristics.

Table 3

Ranking of Regional Characteristics

Region (number of countries with 20+ students)	Median rate/100,000 population of students in Australian universities	Median GDP PPP*	Median % GDP on education	Median distance from Australia in km	Median gross enrolment ratio in tertiary education**
SE Asia (n = 11)	4	2	3	2	2
Pacific (n = 10)	2	4	1	1	4
Sub-Saharan Africa (n = 21)	5	5	2	5	5
Indian subcontinent (n = 7)	1	3	5	4	3
China (n = 1)	3	1	2	3	1

* PPP is Purchasing Power Parity (PPP) per capita in International Dollars; ** Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to tertiary education.

The three countries in SE Asia with the highest population rates of access to Australian universities (Singapore, Brunei Darussalam and Malaysia) are also the three countries with the highest GDP (in the same rank order). Similarly, in Sub-Saharan Africa, Mauritius and the Seychelles differ greatly from other countries in the region in terms of both access to Australian universities and GDP, as does Nauru in the Pacific. Otherwise, there are few patterns to be observed within the regions when the population rate of access to Australian universities is plotted against the other measured variables.

For each of the four regions examined, Figures 1 to 4 plot the relation between the rate of students in Australian universities and the GDP. For SE Asia, these are repeated omitting Singapore, Brunei Darussalam, and Malaysia and, for Sub-Saharan Africa, Mauritius and the Seychelles were omitted in a repeat analysis.

Figure 1 shows the data for SE Asia and the extreme values for Singapore, Brunei Darussalam and Malaysia, who have both the highest GDP and rate of their population studying in Australian universities. When these countries are omitted, there is no apparent association between a country's GDP and the rate of its population that accesses Australian universities. Although not shown here, there is also no apparent association with percentage of GDP spent on education or the gross enrolment ratio for tertiary education (i.e. a measure of the proportion of the home country that is enrolled in tertiary education) against the rate of each country's population enrolled in Australian universities, although Singapore has the highest values for both characteristics.

Figure 1a

International Students from Countries in SE Asia

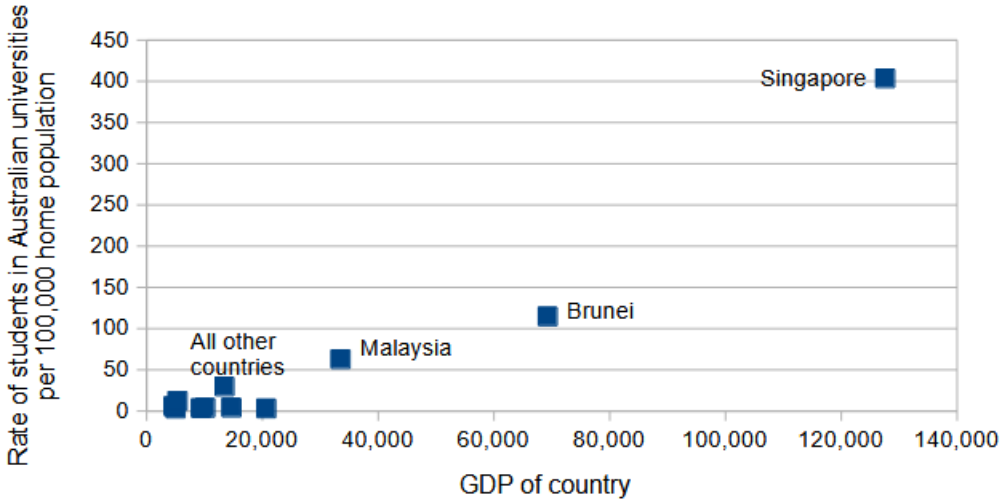
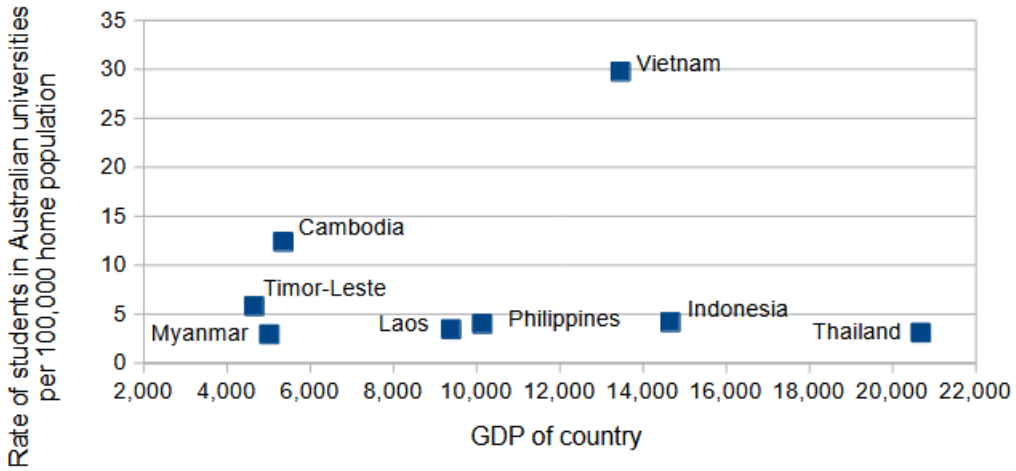


Figure 1b

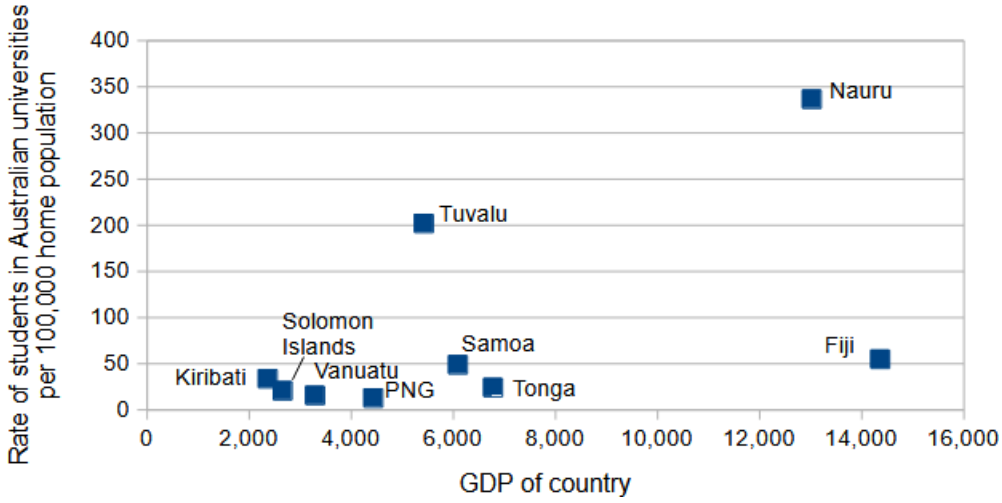
International Students from Countries in SE Asia (omitting Singapore, Brunei and Malaysia)



In the Pacific, Nauru and Tuvalu stand out as having the highest access rates (336 and 202 per 100,000 population respectively) with Nauru having the second highest GDP in the region (Figure 2). Although Papua New Guinea (PNG) provides the most students (1321) from the Pacific region to Australia, it has the lowest rate at 13 per 100,000 population. There are no apparent associations between the rate at which a country's population attend Australian universities and the GDP, and this is repeated (although not shown here) when rates of enrolment are plotted against percentage of GDP spent on education, the gross enrolment ratio for tertiary education or distance from Australia. Unfortunately, data for gross enrolment rates for tertiary education was not available for many Pacific countries so these data are limited for this particular region.

Figure 2

International Students from Countries in the Pacific



Sub-Saharan Africa has two countries with high access rates to Australian universities, Mauritius, and the Seychelles, with 183 and 28 students per 100,000 population respectively (Figure 3a). They also have the highest GDPs at 22,787 and 28,835 respectively.

Figure 3a

International Students from Sub-Saharan African Countries

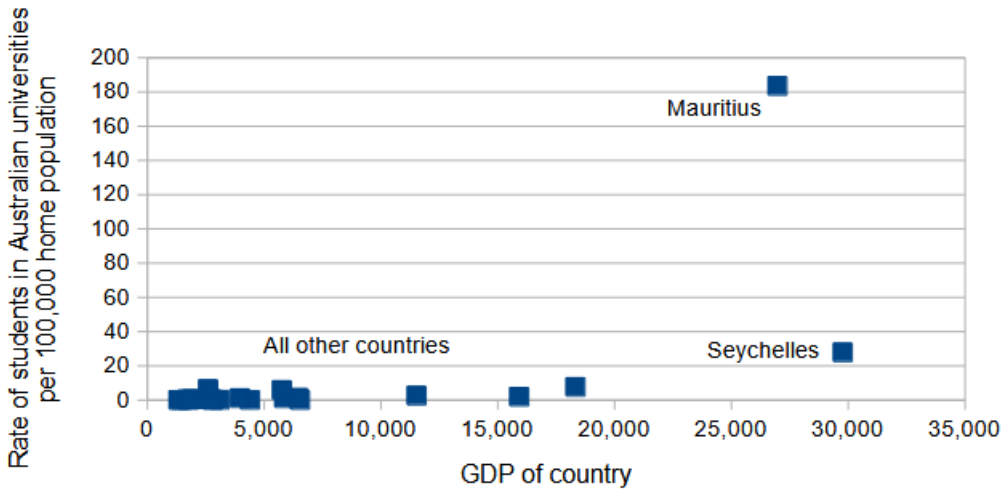
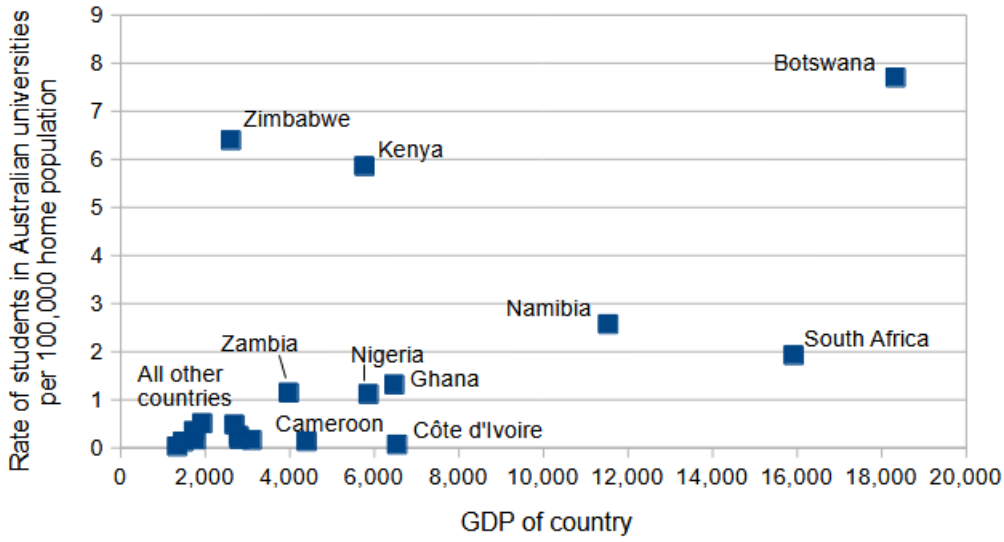


Figure 3b

International Students from Sub-Saharan African Countries (omitting Mauritius and Seychelles)



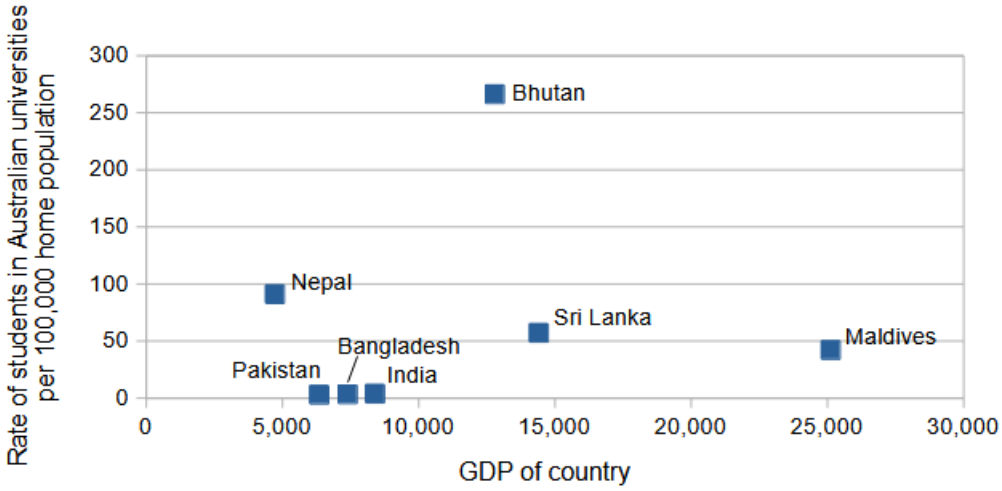
It does appear that these countries with relatively high GDPs have higher student access rates to Australian universities than others, but this relationship is not seen when Mauritius and the Seychelles are omitted from the graph (Figure 3b). Again, but not shown, there is no apparent relationship between rates of enrolment and percentage of GDP spent on education, gross enrolment ratio for tertiary education or distance from Australia.

In the Indian subcontinent, Bhutan, Nepal and Sri Lanka had the highest rates of students in Australian universities at 266, 91 and 57 per 100,000 population of their countries respectively (Figure 4). India, Pakistan and Bangladesh each had fewer than 4 students per 100,000

population in Australian universities. Although India contributed more students (54,076) than any country other than China, this represents only 3.8 students per 100,000 of India's population.

Figure 4

International Students from Countries on the Indian Subcontinent



Choice of level of course and field of education

The findings indicate differences between international and domestic students in both the level of course and the field of education chosen to study. As shown in Table 4, in 2022 35% of international students chose a master's course compared with 14% of domestic students and 53% of international students enrolled in management and commerce or IT courses, compared with 19% of domestic students. Similar patterns were seen for 2019.

Table 4

International and Domestic Students by Level of Course and Field of Education, 2022 and 2019

Level of course and field of education	International students 2022 n = 448,642 n (% of total)	Domestic students 2022 n = 1,102,757 n (% of total)	International students 2019 n = 521,948 n (% of total)	Domestic students 2019 n = 1,087,850 n (% of total)
Bachelors	231,579 (52)	750,248 (68)	235,458 (45)	770,156 (71)
Masters	157,649 (35)	159,414 (14)	211,183 (40)	143,581 (13)
PhD	23,472 (5)	35,969 (3)	22,379 (4)	36,328 (3)
Other	35,942 (8)	157,126 (14)	52,928 (10)	137,785 (13)
Management and commerce	171,251 (38)	169,199 (15)	216,149 (41)	183,460 (17)
Information technology	66,598 (15)	52,679 (5)	75,643 (14)	40,980 (4)
Engineering and related technologies	40,191 (9)	69,620 (6)	56,065 (11)	65,915 (6)
Health	41,194 (9)	239,693 (22)	41,394 (8)	224,192 (21)
Society and culture	46,180 (10)	288,713 (26)	42,702 (8)	289,453 (27)
Other	83,228 (19)	282,853 (26)	89,995 (17)	283,850 (26)

2019 data

The same analyses using 2019 data, before any impact of the Covid-19 pandemic, showed differences in domestic versus international student course enrolment, whereby total numbers of international students were 521,948 in 2019 and 448,642 in 2022 (including lower numbers from both China and India). However, the regional rankings are the same and the patterns described above were very similar between the years.

Restricting analysis to ages 15-24

Analyses were repeated using the populations aged 15-24 as the denominator in the calculation of enrolment rates (NationMaster, 2020). Rates per 100,000 population aged 15-24 for the Indian subcontinent, the Pacific, China, SE Asia and Sub-Saharan Africa were 347.7, 184.4, 93.8, 26.5 and 3.2 respectively. Thus, regional rankings remain the same as for the total population. There were no substantial differences in the within-region rankings, nor in the relationships with the other measured variables.

Discussion

By analysing population denominators and the calculation of population rates, the results of this study offer a perspective beyond a simple examination of numbers of students. The research reveals large geographical variations in the rates of enrolment in Australian universities among the regions and countries from which the international students come. Analysis also shows that global regions differ in median rates of student enrolment, with the highest rates in the Indian subcontinent, then the Pacific, followed by China and South-East Asia, with Sub-Saharan Africa last. However, no clear pattern was found to explain differences in access to Australian universities between regions by the pattern of rankings of median GDP, percentage of GDP spent on education, enrolment rate in their own universities, or distance from Australia.

Within regions, some countries with high GDP have high rates of student enrolment. However, other than six countries with high levels of GDP and high rates of student enrolment, the GDP of the country within each region does not appear to predict enrolment rates in Australian universities. The same applies when the tertiary enrolment rate in each country is plotted against the rate at which students come to Australian universities as well as the percentage of GDP spent on education by the country. Distance from Australia was found to have no consequence.

If Australia were to take the global equity or human rights approach outlined in the Introduction of this paper, it might be expected that Australia would fill the gaps for countries who have relatively few students in their tertiary education systems, or who have a low GDP or spend only a small proportion on education. However, the results do not demonstrate a relation between national or regional needs for higher education and international student enrolment in Australian universities. In fact, the only obvious relationship is between those six outlier countries with high GDPs within their regions and high rates of study in Australian universities. Given the level of international student fees charged by Australian universities (Ramirez, 2023.) this is not surprising, but it demonstrates a lack of a needs-based approach to international higher education.

Australia's international priorities focus on the Indo-Pacific (Department of Foreign Affairs and Trade, 2025), and to this extent, it is understandable that the Pacific region has a higher priority than Sub-Saharan Africa for offering access to its universities. However, it is difficult to identify a

strategic reason why China, with its own tertiary enrolment rate and GDP around twice the median of that across SE Asia, should have around twice the rate per population of students studying in Australian universities in comparison with SE Asia. The Indian subcontinent has not previously been thought to have a higher strategic priority than SE Asia, although as demonstrated by the results of this research their rates of international students in Australia are seven times higher than those of SE Asia. Within the Indian sub-continent, students from Nepal have a particularly high presence in Australian universities with a rate 24 times that of India, as does Sri Lanka with a rate 15 times that of India. Comparatively, the results of this study show that sub-Saharan Africa has the lowest GDP and the lowest rate of enrolment in higher education, and the lowest proportion of its population accessing Australia's university system. Given population projections and the future global importance of Africa to the world economy, it should be in Australia's long-term strategic interest to contribute to its development through higher education.

Comparisons of domestic and international students showed that international students have relatively higher rates of enrolment in master's awards and relatively more management, commerce, IT and engineering fields of study than Australian domestic students. This may reflect their countries' needs, in conjunctions with marketing of courses by Australian universities for international students. Whatever the reason, given the high proportion of international students in Australia, it may have an effect on decisions by individual universities in the choices of courses to be delivered. Given the financial benefit to universities of enrolling international students, universities may be tempted to skew course offerings towards those which are attractive to international students, with equity implications for domestic students.

The benefit to Australia and its economy appears to be the driving force for its international education offerings (Department of Education, 2021; Parliament of Australia, 2023), which is also evidenced in the negative response by the university sector to the announcement of caps on international student numbers (Thompson, 2024). The data presented also raise the question of whether Australia's contribution to international education reduces, or exacerbates, global access to higher education, as individuals with high socio-economic status may leave rather than stay to contribute to their home country. The results of this study do not provide confidence that calls for global justice (Mulvey, 2021) are being met through Australia's international student enrolments.

Implications for the Australian Higher Education Sector

While numbers of international students and their economic benefit to Australia have come to dominate the discourse on international education, the use of population rates in this study demonstrates the potential for a more needs-based approach. While this might be led by a national strategic approach that takes into account the global needs for access to higher education (Heller, 2023b), the higher education sector itself should consider individual and collective contributions. Committed academics with expertise and experience in international education might welcome the opportunity for a needs-based approach. Additional online education could be provided through universities coming together, in partnership with those in low- to middle-income countries, to create a network for global online learning, to help redress the current global inequity in access (Heller, 2022a; Heller, 2022b). The use of profits that Australian universities make from international students might be diverted to allow such a program to be low cost for those who cannot afford the current high fees. This would be assisted by making

educational resources openly available online to allow the use by others globally (Heller, 2023a) and by boosting international partnerships (Habib, 2022).

Thinking more broadly, the creation of a global alliance, is called for. This could be similar to the Framework for Global Health Alliance (FCGH Alliance, n.d.) which is “made up of individuals and organizations who are working together, at all levels, towards a Framework Convention on Global Health to ensure the right to health for all people” (para 1). The UNESCO convention with its provision that higher education be “equally accessible to all on the basis of individual capacity” (UNESCO, 1960, p 6) and the SDG 4 (Department of Economic and Social Affairs, n.d.) offer further information and examples for such global connection. An alliance to support access to higher education for all individuals and populations who have the capacity for it could be a global initiative that would find resonance among universities, governments and other organisations. Australia, with its extensive history in international education, is in a prime position to lead the development of such a global alliance.

Limitations

The findings of this research may not be generalisable to other contexts as data were selected from the countries and regions of most relevance to Australia’s international education focusing on low- to middle-income countries rather than a more comprehensive global approach. China is kept separate from its larger North-East Asia region as it supplies the most students to Australia numerically and has its own characteristics. These countries were, however, chosen because they contributed 83% of the total numbers of international students in Australia in 2022 and would, therefore, provide a sound example of the Australian context with methodological choices that could be replicated for other areas of the globe.

To characterise the population rate at which students attend Australian universities, total population of the country is used as the denominator, and the number of students in Australian universities as the numerator. Knowing that this is a crude measure, as university students are drawn from a more restricted age range, additional analysis was conducted by restricting the population denominator to the ages 15-24, which is a more authentic estimate of the ages from which students might enrol in higher education. No substantial differences in the results were present. Similarly, the measures of GDP, percentage GDP spent on education and gross enrolment ratio for tertiary education that were made at the population level are crude, and factors that are likely to determine which individual students seek to become international students in Australia, such as family income and other socioeconomic variables, were not measured. Further research is warranted to explore if there are other than financial reasons which drive international students to seek enrolment in Australian universities and what alternative mechanisms might be proposed to offer a more equitable approach to global education.

Conclusion

The paper demonstrates considerable variation among and within low- to middle-income country regions in the rate per population of being an international student in Australian universities. There are large regional differences in median rates of student enrolment in Australian universities, with the highest rates in the Indian subcontinent, then the Pacific, followed by China and South-East Asia, with Sub-Saharan Africa last. There are also large within-regional differences in rates of enrolment. However, these results do not mirror the need for increased access to higher

education in these regions or countries. Indeed, there are few identified patterns that appear to govern the rates of international students in Australia, apart from a few countries with a high GDP that have high rates of student enrolment in Australian universities. It is likely, given the high fees for international students, that individual ability to pay is the most important predictor of becoming an international student in Australian universities.

Australia should, at national, sector-wide and individual institutional levels, develop a clear strategy for international higher education students, based on reducing the global inequalities in access rather than solely on their economic value to Australia. This might include universities coming together, in partnership with those in low- to middle-income countries to create a network for global online learning, to help redress the current global inequity in access. In addition, Australia might take a leadership role in a global alliance of universities and others to support access to higher education for all individuals and populations who have the capacity for it.

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Data availability

Data on international student numbers, analyses and graphs can be viewed at Heller, R. F. (2024). *Dataset: A population perspective on international students in Australian universities* [Data set]. Zenodo. https://zenodo.org/records/10515886

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