Student Satisfaction and University Enrollments: Does the Urban or Regional Status of Australian Higher Education Institutions Matter?

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ABSTRACT

In the aftermath of World War II, Western nations witnessed unprecedented growth in university enrollments, particularly in business schools, driven by the expansion of the publicly funded higher education system. This growth has prompted higher education providers to re-evaluate the critical role of student satisfaction in shaping learning, engagement, and overall institutional success. While the impact of student satisfaction on engagement and academic outcomes is well documented, its influence on broader university enrollments remains underexplored. Using longitudinal data from the Australian Government-funded Quality Indicators for Learning and Teaching (QILT) surveys and universities' annual reports (2012-2017), we find that universities with higher student satisfaction show significantly higher enrollment rates. Moreover, the positive impact of student satisfaction on enrollment is more pronounced in metropolitan universities. Beyond contributing to social justice theory, this study provides actionable insights for government and higher education management to improve equitable access to higher education and reduce social disparities through strategically allocating resources, capabilities, and support services.

KEYWORDS

Student Satisfaction, Equity, University Enrollments, Regional, Metropolitan, Higher Education

INTRODUCTION

The incredible growth of university enrollments, especially in business schools across the United States and other Western nations after World War II, is largely attributed to the expansion of publicly funded higher education (HE) system (Khurana, 2010).[1] This growth was fueled by the rationale that increasing the number of university graduates would accelerate entrepreneurial activities, economic development and societal welfare. Many Western governments gradually adopted a performance-based funding model for HE providers to justify higher spending for the tertiary education system (e.g., Australian Government, 2014). This performance-based funding model pushed HE providers to focus on ensuring "superior student satisfaction," which is critical for HE providers to remain competitive in the market. Consequently, HE institutions have adopted a more student-centric approach, emphasizing inclusivity, accessibility, and flexibility to boost HE participation and deliver quality learning experiences (Bexley, 2019), as suggested in the Australian Universities Accord (Australian

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[1] In this study, the terms "university" and "higher education (HE) institution" are used interchangeably.

Government, 2024a). This student-centric approach has yielded higher satisfaction, increased engagement, improved academic performance, and reduced attrition rates (Costea et al., 2016; Wong & Chapman, 2023), which arguably helped them to attract a large number of international students. Several scholars argue that the influx of international students has accelerated the notion of "student consumerism," where students are increasingly treated as "customers" (Arambewela, 2010; Rezk & Gamal, 2020; DeShields et al., 2005; Laing & Laing, 2016). Guilbault (2018) contends that when students are treated as customers, they may expect to receive what they want, when they want it, and at a predetermined price (such as a degree with a fixed cost). Critics argue that this customer-centric approach risks compromising academic rigor (Bay & Daniel, 2001), potentially resulting in diluted course content and grade inflation (Hassel & Lourey, 2005).

Conversely, some scholars argue that not treating students as "customers" may lead to higher dropout rates, negatively impacting university enrollments, completion rates, and the institution's reputation in a competitive market (Conway et al., 1994). HE is an experiential service that prioritizes the consumer's experience when engaging with the institution beyond just the functional benefits of its products and services (Voss & Zomerdijk, 2007). The expectancy-disconfirmation model (Oliver, 1977) suggests that service perception is evaluated through the confirmation or disconfirmation of expectations; a gap between performance and expectations results in disconfirmation, whereas alignment leads to confirmation. On the other hand, positive disconfirmation occurs when the observed performance of a service exceeds initial expectations—when it is "better than expected." On the contrary, negative disconfirmation arises when performance falls short of expectations, resulting in a "worse than expected" experience. With rising student expectations for service quality and value for money in today's student-centric, globalized HE environment, student satisfaction has garnered considerable attention from key stakeholders, including HE providers, governments, scholars, current and prospective students, and their families (Arambewela, 2010). Wilkins et al. (2012) argue that universities' increasing dependence on tuition fees has intensified pressure on institutions to boost enrollment and completion rates by prioritizing student satisfaction.

However, to the best of our knowledge, the relationship between student satisfaction and university enrollments remains underexplored, especially from a broader institutional perspective within Western market-driven, performance-based HE settings such as Australia. While it seems intuitively clear that satisfied students could drive higher enrollments, empirical evidence on this assumption is sparse. Increasing consensus in the HE literature suggests that universities operate as multiproduct firms (Lenton, 2015), where student satisfaction significantly influences enrollments and graduate outcomes. Yet, limited data provides insight into whether this relationship truly exists and to what extent satisfaction impacts enrollment numbers. This brings us to our first research question: *To what extent is student satisfaction associated with university enrollments?*

Over the last few decades, HE has been crucial in accelerating global socio-economic progress by fostering sustainable growth, reducing poverty and inequality, and promoting shared prosperity (World Bank, 2021). With a growing emphasis on increasing participation among students from diverse backgrounds, higher education has become an increasingly vital focus worldwide (Wilson-Strydom, 2015; Biswas et al., 2023). A report by the Australian Parliament (2022) highlights that higher attrition and lower completion rates are more common among students enrolled in regional or non-urban universities than in metropolitan institutions. The Quality Indicators of Learning and Teaching (QILT) (2018) survey, funded by the Australian Government, reveals that 22% of students from regional or remote locations considered leaving their studies, compared with 19% from metropolitan areas. Additionally, students from regional or remote locations were three percentage points less likely to rate learner engagement positively than their metropolitan peers. Empirical studies (e.g., Gibson et al., 2022; Cardak et al., 2017; James, 2001) support these findings, indicating that regional or remote students may experience lower satisfaction with their learning experiences and educational providers

due to factors such as lower socio-economic status, greater distance from home to the institution, reduced engagement in educational activities post-enrolment, and limited family support. The growing evidence of socio-economic disparities between urban and regional students has led us to investigate whether student satisfaction varies between regional and metropolitan HE providers. This brings us to the second research question: *Does the geographic location of HE providers moderate the association between student satisfaction and university enrollment?*

Using longitudinal data from the Australian government-funded QILT surveys and university annual reports between 2012 and 2017, our results reveal that universities with higher student satisfaction experienced increased enrollments. Furthermore, the positive impact of student satisfaction on enrollments is more pronounced at metropolitan-based institutions than at their regional or rural counterparts. These findings offer valuable practical and policy implications for government and HE providers, pointing to strategies for broadening participation in higher education.

The remainder of this paper is organized as follows: First, we distil the literature on student satisfaction, including its context, measures, and impact in the next section. This is followed by a discussion of moderating factors, such as the influence of geography and socio-economic attributes follows. Next, we outline the methods, including sample selection and data collection. We then present our empirical models and results. Finally, we link our findings with existing theories, highlighting student satisfaction's practical and policy impacts on university enrollments, especially for access equity and reducing social inequalities in higher education.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

UNDERSTANDING AND CONTEXTS OF STUDENT SATISFACTION IN HIGHER EDUCATION

Student satisfaction, articulated as students' attitudes shaped by their subjective evaluations of educational experiences, support services, and facilities provided by their institutions, is a crucial success factor for HE providers (Wong & Chapman, 2023). It plays a pivotal role in attracting, engaging, and retaining students through successful completion while enhancing institutional reputation (Weerasinghe & Fernando, 2017). In the competitive HE landscape, student satisfaction has become a focal point for institutions worldwide, regardless of their geographic location. It also indicates HE institutions' overall performance (Jereb et al., 2018; McLeay et al., 2017).

Satisfaction is generally understood as the fulfillment of an anticipated outcome (Baker & Crompton, 2000). Specifically, student satisfaction reflects the relative level of experiences and perceived institutional performance based on students' subjective evaluations of their educational journey, including support services and facilities provided by HE institutions (Elliott & Shin, 2002). To ensure efficient use of taxpayer funds and stimulate competition among institutions, regulators have encouraged HE providers to focus on improving student satisfaction. Regular student satisfaction surveys by HE providers and governments, such as the UK's National Student Survey and Australia's Quality Indicators of Learning and Teaching (QILT), demonstrate the practical importance of monitoring student satisfaction (Maguad, 2007).

EVOLUTION AND CHALLENGES IN STUDENT SATISFACTION SURVEYS IN AUSTRALIAN HIGHER EDUCATION

Like other Western universities, Australian universities have regularly conducted student satisfaction surveys since 1974, utilizing outcomes to improve teaching practices, guide curriculum development, and assess teaching performance (Gannaway et al., 2018). However, despite the widespread use of satisfaction surveys, scholars have raised concerns regarding their validity and reliability, due to

factors such as discipline context, class size, response rate, participant year level, and students' comprehension of assessments. Buckley (2021) emphasizes caution when interpreting student survey results, especially when linking survey outcomes to student satisfaction. In response to growing expectations from students, families, and communities, the Australian government commissioned the Social Research Centre in 2014 to administer the Quality Indicators for Learning and Teaching (QILT) survey (Australian Government, 2024b). This survey assesses tertiary students' satisfaction to help prospective students make informed decisions about their preferred providers and programs. All 41 Australian universities and over 70 non-university HE providers participate in the annual QILT surveys (QILT, 2022). Every year, the government publishes comparative QILT satisfaction data, detailing the student life cycle from commencement to employment.

The QILT surveys have provided nationally comparable data on student experience, graduate satisfaction, and employer satisfaction. This has elevated QILT's recognition among students and parents, influencing their choice of providers and incentivizing institutions to excel in satisfaction scores. Many HE providers use their QILT rankings strategically in marketing to attract prospective students (Oliver & Jorre de St Jorre, 2018). We adopted the QILT satisfaction score to measure student satisfaction in this study for reliability, validity, and broad recognition. However, using self-reported data in satisfaction surveys presents risks, such as common method bias and subjective interpretation. For instance, one student's perception of "excellent" teaching may be seen as merely "satisfactory" by another, as students value educational dimensions differently (Elliott & Shin, 2002). Additionally, academics often express frustration that, despite maintaining high teaching standards and providing detailed feedback, they may receive lower satisfaction scores if perceived as strict graders compared to colleagues with more lenient marking practices.

Student satisfaction surveys have faced criticism for subjectivity, self-report bias, and the complex factors influencing student perceptions (Appleton-Knapp & Krentler, 2006). Despite these challenges, the trend towards student-centric outcomes in HE, both in Australia and internationally, is evident, with innovations such as gamification and machine learning applications being integrated to enhance the student experience (Barber, 2021). This shift underscores that, despite ongoing debates, student satisfaction surveys remain a valuable tool for universities to assess teaching quality, allocate resources to improve learning experiences and enhance support services.

FACTORS IMPACTING STUDENT SATISFACTION IN URBAN AND RURAL INSTITUTIONS

According to Appleton-Knapp and Krentler (2006), student satisfaction in higher education is shaped by several personal and institutional factors. Personal factors include demographic aspects such as age, gender, socio-cultural background, Indigenous status, employment, family income, learning motivation, and career aspirations. Key institutional factors affecting satisfaction encompass content quality, teaching delivery, constructive feedback on assessments, the physical and virtual learning environment, facilities, and institutional reputation (Wilkins et al., 2012; Siming et al., 2015; Brown & Mazzarol, 2009).

Several factors contribute to the higher satisfaction levels typically found among students at metropolitan HE providers compared to their regional or rural counterparts. A significant factor is access to resources and facilities. Metropolitan universities generally offer superior infrastructure, advanced libraries, laboratories, and technology, enhancing the student learning experience (Baker & Pomerantz, 2000; Richardson & Friedman, 2010; Christensen & Nilsen, 2021). These institutions also attract high-quality faculty due to the availability of better living conditions, career opportunities, and competitive salaries. Additionally, metropolitan universities usually provide a broader range of courses and specializations, enabling students to tailor their education to align with personal interests and career goals.

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Employment prospects further contribute to student satisfaction, as metropolitan students have easier access to internships and job opportunities within nearby businesses and industries (Richardson & Friedman, 2010; Nelson et al., 2018; Baker & Pomerantz, 2000). Beyond academics, students in metropolitan areas benefit from a more vibrant social life, with a wide array of cultural and recreational activities. Support services, such as counseling, academic advising, and career services, also tend to be more comprehensive and accessible at metropolitan universities. Together, these elements foster a more enriching and supportive environment for students, resulting in higher satisfaction levels than those in regional or rural areas (Brown & Mazzarol, 2009; Christensen & Nilsen, 2021). Studies in Australia support these trends, revealing that students in regional and remote areas often face disadvantages due to limited infrastructure, fewer course options, and weaker support networks. These disparities contribute to lower satisfaction levels and higher dropout rates among regional students, particularly those from equity groups, including Indigenous students or those from low socio-economic backgrounds (Shah & Widin, 2010).

HYPOTHESES DEVELOPMENT

Research examining the antecedents and consequences of student satisfaction has attracted significant interest from scholars, university administrators, and policymakers (Qazi et al., 2022). The influence of student satisfaction on learning outcomes and academic success is well-established (Gibbons et al., 2015; Guilbault, 2018). Critical factors for enhancing student satisfaction include institutional strategy, resource allocation, and professional support. The Resource-Based View (RBV) suggests that organizations can gain sustainable competitive advantages by effectively leveraging their resources and capabilities to implement strategies that improve overall performance (Barney, 1991).

In line with the RBV, HE providers in today's demand-driven, market-oriented environment have strategically allocated both tangible and intangible resources to enhance student satisfaction (Zahra, 2021). The positive link between student satisfaction and university enrollment is premised on the assumption that satisfied students are more likely to recommend their institution, remain enrolled, and contribute to a favorable institutional reputation (Neumann & Rodwell, 2009). Students' positive experiences can thus boost the university's appeal to future applicants, attracting both new students and returning students seeking further qualifications (Paul & Pradhan, 2019). This relationship is primarily driven by factors such as word-of-mouth recommendations, improved student retention, and an enhanced institutional appeal to prospective students. For instance, students may experience higher satisfaction when a university improves teaching quality, support services and campus facilities, which can lead to positive word-of-mouth and higher enrollments in subsequent years. However, the impact of student satisfaction on university enrollment has received limited empirical attention (Malik, 2010; Biswas et al., 2023). More research is needed to establish whether student satisfaction directly influences institutional enrollment rates, leading us to propose the following hypothesis.

H1: There is a positive association between student satisfaction and university enrollments.

Debates about justice and equity in accessing higher education among diverse cohorts have established common ground for applying Rawls's (1999) social justice theory (SJT). This theory provides a framework for promoting equity, access, and inclusion in higher education, based on the principle that all students—regardless of socio-economic background or geographic location (urban or regional)—should have equal access to university education. Under this framework, higher education management is encouraged to foster equitable learning environments actively (Wilson-Strydom, 2015). SJT also emphasizes the need to address systemic issues related to power, privilege,

and oppression, creating inclusive spaces that account for race, gender, sexual orientation, class, disability, and other forms of diversity.

Applying Rawls's (1999) social justice theory, which focuses on fairness, equal opportunities, and redistributive resource allocation to support the least advantaged, we propose that student satisfaction may impact enrollment more strongly in metropolitan universities, where competition and accessibility are greater. However, literature and government reports reveal that students from low socio-economic backgrounds, particularly those in regional and remote areas, often experience lower-quality learning, higher attrition rates, and reduced university participation compared to metropolitan students. For instance, scholars at the Victorian University (2015) in Australia find that students from rural and remote areas have limited access to educational services compared to their metropolitan counterparts. They attend school less regularly, are less likely to pursue university education and face a higher risk of dropping out.

According to Rawls's difference principle, which supports resource distribution that benefits the least advantaged, regional universities may prioritize other strategies, such as improving access and offering financial support, to attract students. As a result, socio-economic and structural constraints may weaken the positive link between student satisfaction and enrollment in regional areas, limiting student choice regardless of satisfaction levels. This approach aligns with creating supportive learning environments that value contributions from all students, regardless of background (Davids & Waghid, 2021).

We posit that the association between student satisfaction and enrollment is moderated by contextual factors, particularly the university's location in metropolitan or regional areas. Research shows that remote students often have lower levels of belonging, confidence, purpose, and perseverance, leading to higher dropout rates than their metropolitan peers (Holden & Zhang, 2018). Geographical factors such as a provider's location further influence the link between satisfaction and enrollment. Winters (2012) argues that geographic measures are randomly used in the U.S. to examine the impact of school choice—urban or rural—on student achievement in public schools. Studies in developing countries similarly reveal disparities in student achievement between urban and rural areas, with urban students typically outperforming their rural peers (Johnston & Ksoll, 2022; Echazarra & Radinger, 2019). This disparity has prompted concerns among scholars and policymakers in many countries, as regional universities often serve students from low socio-economic backgrounds, first-generation learners, females, and Indigenous communities, who are more likely to experience higher attrition rates (Richardson & Friedman, 2010; Australian Government, 2019). After conducting a systematic review, Christensen and Nilsen (2021) conclude that geographical separation of staff and students, inconsistent technology, and reluctance to innovate are key moderators that impact student satisfaction and outcomes at multi-campus universities in Australia.

A study by Adams (2016) explored how contextual factors influence student satisfaction and retention of non-traditional learners at regional campuses of Utah State University, identifying factors such as financial aid availability, convenient class schedules, and knowledgeable academic advisors as critical to regional students. Many of these factors are context-specific and may differ from those prioritized by metropolitan students. Thus, geographic location emerges as a key factor in moderating the relationship between student satisfaction and enrollment in HE. We hypothesize that the positive association between student satisfaction and enrollment is stronger for metropolitan universities than regional providers, as students in metropolitan areas have greater access to educational resources and options that align with their preferences and expectations. This hypothesis acknowledges that geographic location introduces varying degrees of access to educational opportunities, with metropolitan institutions often better resourced to leverage student satisfaction as a driver for enrollment.

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H2: The positive association between student satisfaction and university enrollment is moderated by the university's location.

RESEARCH DESIGN

SAMPLE AND DATA

Our sample included all Australian tertiary institutions participating in the national QILT surveys from 2012 to 2017. We chose 2012 as the starting point for data collection due to the initial availability of QILT's graduate satisfaction, with 2017 as the endpoint to capture the most recent data. We used a purposive sampling technique to address our research objectives and data availability, focusing on institutions that met specific criteria, such as participation in the QILT surveys and complete financial and demographic data (Campbell et al., 2020). This sampling approach enabled us to target institutions most relevant to our study, ensuring a robust and meaningful analysis. We sourced graduate satisfaction data, student enrollment figures, and demographic information from QILT surveys published by the Australian Government's Department of Education. Additionally, university-specific financial data was manually gathered from annual reports of Australian universities from 2012 to 2017. After merging the QILT data with financial information and excluding incomplete observations, our final sample included 165 university-year observations across 3 unique universities. Table 1 presents the sample selection process.

Table 1. Sample Selection

	Observations
Total Number of Universities in Australia from 2012-2017	*246*
Less: Universities Not Rated by QILT	*(5)*
Less: Universities with Not Available Annual Reports	*(76)*
Final Sample Size	*165*

EMPIRICAL MODELS

We use the following regression model for testing our hypothesis 1 (H1):

$$STUDENT\_ENROL_{i.t}= \beta_0 + \beta_1 SAT\_OVERALL_{i.t} + \beta_2 SIZE_{i.t} + \beta_3 ROA_{i.t} + \beta_4 CFO_{i.t} + \beta_5 ADINT_{i.t} + \beta_6 GOVT\_GRANT_{i.t} + \beta_7 DISTANCE_{i.t} + \beta_8 UNDER30_{i.t} + \beta_9 FEMALE_{i.t} + \beta_{10} INDIGENOUS_{i.t} + \beta_{11} LANGUAGE_{i.t} + \sum YEAR_{i.t} + \varepsilon_{i.t}$$
$$(1)$$

where *STUDENT_ENROL* is the university-level performance measured by annual student enrollment numbers, while *SAT_OVERALL* is the average satisfaction score calculated based on post-graduate research and coursework, as well as undergraduate satisfaction scores. We also control for several university-specific and student characteristics in Equation (1). More specifically, we control for university size *(SIZE)*, profitability *(ROA)*, cash flow *(CFO)*, advertising *(ADINT)*, and government grants *(GOVT_GRANT)*. Additionally, we also control for variables that may influence the students' satisfaction: the proportion of distance students *(DISTANCE)*, students under 30 years old *(UNDER30)*, female students *(FEMALE)*, Indigenous students *(INDIGENOUS)*, and students' first language *(LANGUAGE)*. Appendix A provides the definition of all variables.

To test our hypothesis 2 (H2), we include an interaction term between student satisfaction *(SAT_OVERALL)* and the university's location *(METRO)* $(SAT\_OVERALL_i \times METRO)$ in Equation (1). We

expect a positive coefficient on *SAT_OVERALL* to support H1 and a positive coefficient on *SAT_OVERALL×METRO* to support H2, respectively. We estimate Equation (1) using the Poisson regression method, as our dependent variable (i.e., *STUDENT_ENROL*) is a count data.

RESULTS

DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

Table 2, Panel A reports the summary statistics. The average student enrollment *(STUDENT_ENROL)* across universities is 35,287, with a median of 37,181, indicating that half of the universities have enrollments above 37,181. The close values of the mean and median suggest a balanced distribution of enrollment figures, with moderate variability. The average (median) overall graduate satisfaction score *(SAT_OVERALL_RAW)* is 83.63, with postgraduate satisfaction *(SAT_POST_RAW)* averaging 84.36 and undergraduate satisfaction *(SAT_UNDER_RAW)* averaging 82.12, indicating that undergraduate satisfaction is lower than postgraduate satisfaction. The average (median) size of our sample universities measured as the natural logarithm of the total assets is 7.391 (7.423), corresponding to average total assets of $2,862 million. The sample universities show an average (median) profitability *(ROA)* of 3.80% (2.90%), demonstrating profitability across the sample. The average (median) cash flow from operations to total assets ratio *(CFO)* is 0.088 (0.053), and the average advertising intensity *(ADINT)* is 2.215. The average (median) government grant *(GOVT_GRANT)* is 5.639, implying average grants of $379.245 million. Approximately 16.74% of students are distance learners *(DISTANCE)*, 65.07% are under 30 *(UNDER30)*, 60.42% are female *(FEMALE)*, 0.53% identify as Indigenous or Torres Strait Islander *(INDIGENOUS)*, and 26.15% speak a first language other than English *(LANGUAGE)*. Notably, 82.40% of universities in the sample are located in metropolitan areas *(METRO)*.

Table 2, Panel B and C report the mean and median tests. Panel B shows that universities with higher satisfaction scores have greater student enrollments. Panel C shows that student enrollment and satisfaction are higher in metropolitan areas compared to regional areas.

Table 3 reports the correlation matrix. It shows that overall student satisfaction *(SAT_OVERALL)* positively correlates with student enrollment *(STUDENT_ENROLL)*, supporting our prediction that universities with higher satisfaction scores have higher enrollments. To address potential multicollinearity, we examined variance inflation factors (VIFs), with a mean VIF of 2.78 for variables in our model. VIFs above 10 suggest multicollinearity (Greene, 2008); however, our variables fall between 2.00 and 4.83, indicating that multicollinearity is unlikely to be a concern in our regression models.

REGRESSION RESULTS

Our first hypothesis (H1) predicts that student satisfaction is positively associated with university enrollment. Table 4 reports the regression results. The coefficient on *SAT_OVERALL* is positive and statistically significant (β=1.636 p<0.01; β=0.531 p<0.10) in both Models (1) and (2), suggesting that universities with higher student satisfaction tend to have higher enrollment numbers, thereby supporting H1. In terms of economic significance, using the coefficient from Models (1) and (2), we infer that a one standard deviation increase in student satisfaction is associated with an approximately 26.10% and 7.80% increase in the expected number of student enrollments, respectively.[2]

Regarding control variables, we find that the coefficients on *SIZE*, *ROA*, *DISTANCE*, and *UNDER30* are positive and statistically significant in Model 2. This suggests that universities with greater size, high profitability, a higher number of distance students, and students below 30 perform better in attracting more students.

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[2] We compute 26.10% and 7.8% as [exp (1.636×0.142)] and [exp (0.531×0.142)], respectively.

Table 2. Descriptive Statistics
Panel A. Full Sample Summary Statistics

	N	Mean	St. Dev.	Median	1st Quartile	3rd Quartile
STUDENT_ENROL	165	35287.29	16756.58	37181	23532	47229
SAT_OVERALL_RAW	165	83.628	3.123	83.633	81.467	85.567
SAT_POST_RAW	165	84.359	3.027	84.625	82.375	86.150
SAT_UNDER_RAW	165	82.121	4.101	82.100	79.700	84.900
SAT_OVERALL	165	4.381	0.142	4.432	4.401	4.457
SAT_POST	165	4.35	0.243	4.443	4.402	4.465
SAT_UNDER	165	4.42	0.049	4.420	4.392	4.453
SIZE	165	7.391	0.793	7.423	7.003	7.971
ROA	165	0.038	0.051	0.029	0.018	0.041
CFO	165	0.088	0.20	0.053	0.041	0.071
ADINT	165	2.215	0.739	2.155	1.797	2.586
GOVT_GRANT	165	5.639	0.958	5.727	5.160	6.043
DISTANCE	165	16.736	18.323	10.500	5.400	20.200
UNDER30	165	65.07	14.73	69.300	61.400	74.700
FEMALE	165	60.422	6.215	60.500	57.300	64.200
INDIGENEOUS	165	0.534	0.313	0.470	0.336	0.742
LANGUAGE	165	26.148	11.93	24.7	16.400	35.300
METRO	165	0.824	0.382	1.000	1.000	1.000

Panel B. Mean and Median Test Based on Student Satisfaction

	HIGH SATISFACTION		LOW SATISFACTION			Median
	Mean	Median	Mean	Median	Mean Test	Test
STUDENT_NUM	39,927.540	42,000	30,357.03	26,824.50	3.815***	3.785***

Panel C. Mean and median Test Based on the Location of the University

	Metropolitan		Regional			Median
	Mean	Median	Mean	Median	Mean Test	Test
STUDENT_NUM	37,734.99	38,942	23,808.41	19,090	4.272***	4.283***
SAT_OVERALL	4.42	4.44	4.22	4.06	7.683***	7.684***

Note: All variables are described in Appendix A; *** significance at 1% level; ** significance at 5% level; * significance at 10% level.

We also report the regression results separating the overall student satisfaction into undergraduate and post-graduate in Table 5. After controlling for undergraduate students' satisfaction and other university-specific factors, we find that the coefficient on *SAT_POST* is positive and statistically significant. This finding suggests that post-graduate satisfaction drives the result that universities with higher student satisfaction have higher student enrollments.

Table 3. Correlation Matrix

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
STUDENT_ENROL	[1]	1.000											
SAT_OVERALL	[2]	0.488***	1.000										
SIZE	[3]	0.410***	0.253***	1.000									
ROA	[4]	-0.066	-0.094	-0.183***	1.000								
CFO	[5]	-0.043	-0.013	-0.188***	0.675***	1.000							
ADINT	[6]	0.310***	0.175**	0.297***	0.402***	0.465***	1.000						
GOVT_GRANT	[7]	0.342***	0.309***	0.248***	0.167***	0.071	0.230***	1.000					
DISTANCE	[8]	-0.054	-0.203***	-0.270***	-0.036	-0.104	-0.223***	-0.056	1.000				
UNDER30	[9]	0.419***	0.398***	0.197***	-0.097	0.045	0.180**	-0.016	-0.719***	1.000			
FEMALE	[10]	-0.237***	-0.197***	-0.188***	0.091	0.208***	0.063	-0.214***	0.237***	-0.188***	1.000		
INDEGENOUS	[11]	-0.153**	-0.128*	-0.399***	-0.081	-0.003	-0.158**	-0.028	0.432***	-0.228***	0.492***	1.000	
ENGLISH	[12]	0.341***	0.163**	0.203***	-0.055	-0.060	0.131*	0.264***	-0.363***	0.464***	-0.517***	-0.444***	1.000

Note: All variables are described in Appendix A; *** significance at 1% level; ** significance at 5% level; * significance at 10% level.

Our second hypothesis (H2) envisages that the positive association between student satisfaction and university enrollment is moderated by the university's location, whether in metropolitan or regional/remote areas. To test this moderation effect, we focus on the interaction term between student satisfaction and university location (*SAT_OVERALL×METRO*). This interaction term reflects the difference in the impact of student satisfaction on enrollments between institutions in metropolitan versus regional areas, with the coefficient on SAT_OVERALL capturing the effect in regional universities. The regression results are presented in Table 6. In Column (2), the coefficient on SAT_OVERALL is statistically insignificant, indicating that student satisfaction does not significantly impact enrollments in regional universities. In contrast, the coefficient on SAT_OVERALL×METRO is positive and statistically significant, suggesting that, all else being equal, student satisfaction leads to more significant increases in enrollment for metropolitan universities. These findings suggest that higher student satisfaction contributes to increased enrollments, primarily in metropolitan institutions.

DISCUSSIONS

Our study provides evidence that student satisfaction is positively associated with university enrollment, supporting our first hypothesis (H1). Specifically, universities with higher satisfaction scores—both overall and across student categories—tend to attract more students, as shown by the significant positive association between student satisfaction and enrollment. While prior studies have primarily examined the multifaceted roles of student satisfaction at the individual level—focusing on

Table 4. Regression Results of the Association Between Student Satisfaction and Student Numbers

	Dependent Variable = *STUDENT_ENROL*	
	Model (1)	Model (2)
SAT_OVERALL	1.636***	0.531*
	(3.049)	(1.800)
SIZE	0.246***	0.244***
	(3.843)	(5.264)
ROA	0.344	1.226*
	(0.292)	(1.703)
CFO	-0.160	-0.163
	(-0.704)	(-1.008)
ADINT	0.118	0.093
	(1.123)	(1.050)
GOVT_GRANT	-0.026	0.011
	(-1.210)	(0.736)
DISTANCE	––	0.024***
		(8.203)
UNDER30	––	0.036***
		(8.038)
FEMALE	––	-0.000
		(-0.025)
INDIGENEOUS	––	-0.168
		(-1.283)
LANGUAGE	––	0.001
		(0.530)
Intercept	1.297	3.173***
	(0.584)	(2.650)
Year Fixed Effects	Yes	Yes
Observations	165	165
Pseudo R²	0.383	0.657
Wald Chi2	107.53***	470.60***

Note: This table presents the regression results of the association between student satisfaction and student numbers. Model (1) shows the regression results of the association between student satisfaction and student numbers excluding student characteristics. Model (2) presents the regression results of the of the association between student satisfaction and student numbers including all control variables. The numbers in parentheses are t-statistics. All variables are described in Appendix A; *** significance at 1% level; ** significance at 5% level; * significance at 10% level.

its effects on student engagement, retention, and academic achievement (Gibbons et al., 2015; Guilbault, 2018; Bobe & Cooper, 2020)—our study is among the first to provide empirical evidence of its impact at the institutional level. By establishing a link between student satisfaction and university enrollments, we introduce an institutional-level perspective to the education literature, demonstrating that student satisfaction not only influences individual students but also significantly contributes to broader institutional outcomes.

Table 5. Regression Results of the Association of Post-graduate and Under-graduate Student Satisfaction and Student Number

| | Dependent Variable = *STUDENT_ENROL* | |
	Model (1)	Model (2)
SAT_POST	0.017***	0.007***
	(3.704)	(2.776)
SAT_UNDER	-0.026***	-0.015*
	(-2.710)	(-1.863)
SIZE	0.287***	0.268***
	(4.791)	(5.980)
ROA	1.544	1.642**
	(1.547)	(2.307)
CFO	-0.295	-0.218
	(-1.413)	(-1.362)
ADINT	0.087	0.086
	(0.846)	(0.974)
GOVT_GRANT	-0.026	0.007
	(-1.001)	(0.413)
DISTANCE	−−	0.024***
		(8.445)
UNDER30	−−	0.035***
		(7.932)
FEMALE	−−	0.000
		(0.111)
INDIGENEOUS	−−	-0.188
		(-1.429)
LANGUAGE	−−	0.000
		(0.078)
Intercept	8.944***	6.121***
	(10.327)	(7.739)
Year Fixed Effects	Yes	Yes
Observations	165	165
Pseudo R²	0.439	0.667
Wald Chi2	159.22***	500.88***

Note: This table presents the regression results of the association between student satisfaction and student numbers. Model (1) shows the regression results of the association between student satisfaction and student numbers excluding student characteristics. Model (2) presents the regression results of the of the association between student satisfaction and student numbers including all control variables. The numbers in parentheses are t-statistics. All variables are described in Appendix A; *** significance at 1% level; ** significance at 5% level; * significance at 10% level.

Table 6. Regression Results of the Association Between Student Satisfaction and Student Numbers

| | Dependent Variable = *STUDENT_ENROL* | |
	Model (1)	Model (2)
SAT_OVERALL	1.935*** (3.909)	0.352 (1.143)
SAT_OVERALL×METRO	0.293*** (4.984)	0.130*** (3.458)
METRO	-1.437*** (-5.452)	-0.277 (-1.074)
SIZE	0.271*** (4.177)	0.216*** (4.885)
ROA	0.788 (0.703)	1.348** (2.060)
CFO	-0.210 (-0.968)	-0.176 (-1.200)
ADINT	0.138 (1.272)	0.074 (0.821)
GOVT_GRANT	-0.022 (-1.146)	0.011 (0.877)
DISTANCE	––	0.027*** (6.710)
UNDER30	––	0.036*** (7.772)
FEMALE	––	0.001 (0.134)
INDIGENEOUS	––	-0.150 (-1.166)
LANGUAGE	––	0.003 (1.183)
Intercept	-0.165 (-0.080)	3.852*** (3.289)
Year Fixed Effects	Yes	Yes
Observations	165	165
Pseudo R²	0.432	0.676
Wald Chi2	147.85***	648.98***

Note: This table presents the regression results of the moderating role of the university location in the association between student satisfaction and student numbers. Model (1) shows the regression results of the moderating role of the university location in the association between student satisfaction and student numbers excluding students' characteristics. Model (2) presents moderating role of the university location in the association between student satisfaction and student numbers including all control variables. The numbers in parentheses are t-statistics. All variables are described in Appendix A; *** significance at 1% level; ** significance at 5% level; * significance at 10% level; DV=dependent variable.

From a practical standpoint, student satisfaction goes beyond mere transactional relationships with providers and teachers; sustained high satisfaction fosters student loyalty, increasing the likelihood that students will continue their education with the same institution. Furthermore, a genuine connection between students and providers enhances the institution's reputation, as satisfied students share positive experiences through word-of-mouth, helping institutions maintain competitiveness in the higher education sector (Paul & Pradhan, 2019). Our findings offer fresh insights into the ongoing debate on whether students should be considered as "customers."

Our study highlights the importance of student satisfaction in supporting sustainable performance for HE providers through increased enrollments. Based on our findings, HE providers should adopt a student-centric approach, focusing on delivering superior learning experiences and professional support services that enhance satisfaction, ultimately driving higher enrollments and improved institutional performance. Given the implications for both students and providers, we recommend that institutions prioritize responsiveness to students' service expectations by being "student-centric," rather than strictly "customer-centric."

Insights from this study suggest that students need not be treated solely as "customers" because they actively contribute to knowledge co-creation, engaging collaboratively with peers and teachers and sharing physical and non-physical resources (McDonald et al., 2021). Our findings highlight the importance of student-centric policies and practices in higher education management, as these facilitate transformative learning experiences. This study has significant policy implications, suggesting that HE management should strategically allocate resources to enhance student satisfaction, given its demonstrated positive impact on university performance, particularly in driving higher enrollments.

Our second hypothesis (H2) proposed that a university's location moderates the positive relationship between student satisfaction and enrollment. Consistent with this hypothesis, our findings reveal that the positive effect of student satisfaction on enrollment is significantly stronger for universities in metropolitan areas. The interaction term *SAT_OVERALL×METRO* was positive and statistically significant, indicating that metropolitan universities benefit more from high student satisfaction than their regional counterparts. This result likely reflects metropolitan universities' heightened competition and visibility, allowing them to leverage high satisfaction scores to attract students effectively. Additionally, regional universities may encounter structural challenges in attracting students, including limited resources and restricted access to educational facilities, despite offering satisfactory student experiences. Kahu's (2013) integrative framework on student engagement in higher education explains why regional universities experience higher attrition rates and lower academic outcomes, possibly contributing to lower student satisfaction. This framework suggests that students' affective, cognitive, and behavioral engagement is heavily influenced by a complex interplay of socio-psychological and socio-political factors involving students, teachers, and institutions.

What distinguishes this study is its application of social justice theory (SJT) at the broader institutional level, suggesting that student satisfaction can support higher education institutions (HEIs) in being inclusive, competitive, and sustainable (Australian Government, 2024b). Our findings indicate that metropolitan universities hold an advantage in attracting and retaining students due to their greater resources and capacity to enhance student satisfaction, which, in turn, reinforces a disparity between metropolitan and regional institutions. This intersection with SJT highlights the equity implications of our study, where the benefits of student satisfaction are unequally distributed, favoring metropolitan institutions.

By identifying student satisfaction as a key factor in educational inequality, we introduce a new focus within SJT: addressing the disparities between institutions across geographic and socio-economic contexts. In higher education, SJT suggests several strategies for fostering a more equitable

and inclusive learning environment, including increasing the representation of underrepresented groups in university decision-making bodies, such as student senate councils, and recruiting faculty from diverse backgrounds. Diverse student and faculty groups can work to dismantle systemic inequalities within institutions, offering the support and resources necessary for disadvantaged cohorts to feel welcomed and thrive in a diverse, inclusive environment. For instance, policies focused on recruiting and retaining faculty from underrepresented groups and supporting first-generation and low-income students could bridge gaps in representation and access (Engle & Tinto, 2008; Pearson et al., 2022). University management can advance these efforts by allocating resources to diversity training for staff and providing targeted support services for students facing academic challenges (Cary et al., 2020).

Scholars and policymakers (e.g., Australian Government, 2022; Stone et al., 2022) are concerned that students with higher attrition rates—often those from low socio-economic backgrounds, first-generation students, women, and Indigenous students—are predominantly enrolled in regional universities. Our findings align with the Australian government's 2017 Higher Education Access Report, which noted that regional universities faced higher attrition rates and lower completion rates compared to metropolitan institutions (Australian Government, 2022). With more substantial resources, Metropolitan universities are financially positioned to attract and retain students more effectively, ensuring successful completion rates. For example, Australia's Group of Eight (Go8) universities, which are highly research-intensive and based in major cities, enroll over 26% of the nation's students and hold significant advantages in student recruitment and retention due to their resources and visibility (Group of Eight, 2019).

Furthermore, the Group of Eight (Go8) universities receive 73% of Australia's competitive government grants (Category 1), and their Bachelor's completion rates are among the highest nationally, with all Go8 members ranked in the top 11 for completions (Group of Eight, 2019, p.1). While merit-based social mobility is often suggested to reduce societal disparities, educational institutions increasingly appear to preserve existing inequalities and create new, caste-like divides (Khan, 2010; Khurana, 2010; Vijay & Nair, 2021). This insight has substantial policy and practical implications for promoting equitable access and increasing participation in higher education, particularly for rural students and regional institutions. We recommend that policymakers focus on providing regional universities with essential resources and support services, including financial and non-financial aid, from institutions and government. Such support could enhance academic engagement and success among regional students, aligning with the UN's SDG 4 mandate for inclusive and equitable quality education.

The Australian Universities Accord, announced on February 25, 2024, by Education Minister Jason Clare, includes 47 recommendations for reforming Australia's higher education sector to meet future skill demands (Australian Government, 2024a). Our study underscores the importance of student satisfaction in driving university enrollments and institutional performance, aligning with the Accord's call for a more student-centric approach. This shared focus emphasizes the need for universities to prioritize student satisfaction to achieve sustainable performance.

Additionally, our findings reveal significant disparities between metropolitan and regional universities in using student satisfaction to attract enrollments, aligning with the Australian Universities Accord's aim to address geographic and socio-economic inequalities and ensure quality education for all students. These findings suggest that universities should strategically allocate resources to enhance student satisfaction, resonating with the Accord's recommendations for improved financial support and resource distribution to boost student outcomes. By applying social justice theory to address inequalities in higher education, our study aligns with the Accord's focus on inclusivity and diversity, advocating for greater representation and support for disadvantaged students. Overall, our study supports many of the Accord's recommendations, particularly regarding

student satisfaction, equity, resource allocation, and inclusive policies, underscoring the importance of implementing these measures to build a more effective and equitable higher education system in Australia.

Despite offering several theoretical and practical contributions, our research has limitations. Our findings are drawn from data on Australian higher education institutions between 2012 and 2017, which may affect their generalizability to other national contexts. Future research could adopt a longitudinal design, incorporating time-series analysis to capture potential causal dynamics between student satisfaction and university enrollments. By utilizing panel data tracking satisfaction scores and enrollment figures over multiple years, future studies could examine whether student satisfaction changes precede enrollment rate shifts, thereby providing stronger causal evidence. Additionally, further research could explore additional underlying factors influencing university enrollment beyond student satisfaction, such as research intensity, faculty qualifications, student support services, and demographic variables like gender, location, and Indigenous status of faculty members.

Acknowledging these limitations, this study provides practical and policy implications for educators and higher education administrators, advocating for equitable access to higher education regardless of socio-economic background or geographic location. As accessing higher education remains a powerful means to combat social inequalities (Garaz & Torotcoi, 2017), educators and university leaders should focus on designing inclusive and engaging teaching practices that deliver similarly satisfying learning experiences, helping to mitigate the reproduction of social disparities.

CONCLUSIONS

In light of the ongoing debate on whether HE providers should treat students as customers, our findings suggest that educators and HE management should strike a balance between maintaining academic integrity and delivering high-quality learning experiences by adopting a student-centric approach. This approach emphasizes stimulating students' cognitive, affective, and behavioral engagement, equipping them with industry-relevant skills and competencies. In performance-based funding models prevalent in Western higher education systems, student experience—measured through satisfaction with teaching quality—plays a critical role (Bexley, 2019). Consequently, achieving high student satisfaction has become a strategic priority. Our findings support this view, indicating that HE providers should focus on enhancing student satisfaction rather than adopting a corporate-style "customer satisfaction" approach.

Moreover, our study suggests that student satisfaction extends beyond service quality, encompassing broader issues of equity and access. For regional universities serving relatively lower socio-economic and underrepresented groups, improving student satisfaction may help dismantle structural barriers that lead to lower enrollments and higher attrition. This research highlights that student satisfaction is a strategic component in institutional policies promoting inclusivity and support for disadvantaged cohorts, aligning with broader social equity goals. Therefore, educators, HE administrators, and policymakers should collaborate to design and deliver inclusive, enriching learning experiences that benefit both urban and regional students. This effort is essential for increasing participation and employment outcomes, reducing social inequalities that affect nearly 70% of the global population, as noted in the 2020 UN World Social Report.

Ensuring equitable access to higher education, regardless of geographic or socio-economic background, is crucial for promoting long-term social mobility and economic inclusion, as endorsed by the United Nations Sustainable Development Goal (SDG) four. By enhancing student satisfaction, universities not only increase enrollments but also contribute to reducing social disparities. This aligns with social justice principles, underscoring the role that higher education institutions play in fostering inclusivity, equity, and sustainable societal advancement.

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APPENDIX

A: DESCRIPTION OF VARIABLES

Variable Notation	Name of Variable	Description
STUDENT_ENROL	*Student enrolment*	*The number of students' enrolments in a year.*
SAT_OVERALL	*Overall satisfaction*	*The average satisfaction score based on post-graduate research and coursework, and the undergraduate satisfaction score rated by the Department of Education, Skills and Employment.*
SAT_POST	*Postgraduate satisfaction*	*The postgraduate student satisfaction score rated by the Department of Education, Skills and Employment.*
SAT_UNDER	*Undergraduate satisfaction*	*The undergraduate student satisfaction score rated by the Department of Education, Skills and Employment.*
SIZE	*Size*	*The natural logarithm of the total assets of the university at the end of the year.*
ROA	*Profitability*	*The ratio of net income to total assets.*
CFO	*Cash flow*	*The ratio of the operating cash flows to total assets.*
ADINT	*Advertising expenditure*	*The natural logarithm of the total amount of advertisement expenditures.*
GOVT_GRANT	*Government grant*	*The natural logarithm of the total amount of government grants.*
DISTANCE	*Distance learning students*	*The percentage of distance learning students who responded to the QILT survey.*
UNDER30	*Student's age*	*The percentage of students responding to the QILT survey who were aged below 30 years.*
FEMALE	*Female*	*The percentage of female students responded to the QILT survey.*
INDIGENOUS	*Indigenous*	*The percentage of indigenous or Torres Strait Islander students responded to the QILT survey to total students.*
LANGUAGE	*Language*	*The percentage of students responded to the QILT survey whose home language was not English.*
METRO	*Metropolitan*	*An indicator variable that takes a value of 1 if the university locates in the metropolitan area, and 0 otherwise.*