

Tuition Equity: A Study of the Disparate Impacts of Block Tuition

Dr. Nicholas A Baine P.E., Grand Valley State University

Nicholas Baine, Ph.D., P.E. is an Associate Professor in the School of Engineering. His expertise is in the design of electrical control systems and sensor data fusion techniques. As an instructor, he specializes in first-year engineering course development as well as control system courses. He is actively involved as a member of the board of the North Central Section of ASEE and is a Program Evaluator for ABET.

Dr. Karl Brakora, Grand Valley State University

Karl Brakora and affiliate faculty member at Grand Valley State University and an engineer for BT Engineering. With BT Engineering, he has worked on conformal vapor-phase deposited EMI/HPM shields for circuit boards, and has worked to develop lightweight

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Abstract

Equality of access to college gets a lot of attention. The media, policy makers, and academic literature often focus on the convoluted and secretive admissions process at elite schools and overall college affordability. What has not been discussed in detail is how university tuition and fee structures make different college degrees more expensive and also how differing tuition rates apply to students earning the same degree. Such tuition and fee structures can have an outsized impact on engineering students and counter efforts to provide targeted financial aid support. We are motivated by the United Nations Sustainable Development Goals (SDG-4) for equity in education and have chosen to adopt the conceptual framework for equity described in *Handbook on Measuring Equity in Education*. As such, our work uses the impartiality measures put forward in the handbook.

This research paper seeks to answer this question: How equitable is the impact of the block tuition structure? Block tuition is the practice of charging a flat rate for a range of credit hours. For example, at Grand Valley State University, students are charged a flat rate for enrolling in 12-15 credit hours. This rate is equal to the cost of 12 credits at the per-credit-hour rate so that a student enrolled in 15 credit hours would have paid for 12 and gotten 3 credits for free. The effect is a tuition discount of up to 20% (paying for 12 of 15 credits), encouraging full-time enrollment near 15 credits per semester. This tuition structure provides a discount that is not accessible to all students and penalizes those who cannot enroll in 15 credits due to constraints on their time or finances, limited course options, or prerequisite requirements.

Engineering degree programs tend to stymie block tuition's accessibility for several reasons. First, engineering programs require more credits (typically 5-25 more semester credits) than other programs. Second, engineering students tend to have a higher number of wasted credits that do not satisfy specific degree requirements. Finally, there is very limited flexibility, resulting from strict prerequisite requirements within engineering curricula. The result is that most engineering students take fewer than the optimal number of credits per semester to maximize the block tuition discount or take additional, unusable courses to get to 15 credits. Even without factoring in the increasingly common policy of having variable tuition rates between different programs, engineering degrees require more credits and take longer to complete. This results in students paying higher tuition for additional terms at lower credit loads and has a significant impact on the total cost of the degree.

Student data from Grand Valley State University (GVSU) were examined to compare the effective amount of block tuition discount by graduation for different groups of students who graduated with a 4-year degree. Impartiality measures are presented based on Pell Grant eligibility, gender, race, and transfer status for both engineering degreed graduates and all other majors. These measures focus on the average discount per credit hour resulting from the block tuition structure for each student. This analysis shows that the block tuition structure has a disparate impact on the different groups, providing a financial advantage to some demographics over others. Transfer students, students of color, and Pell-eligible students are found to benefit the least from block tuition, paying more per credit. This work explores the systemic inequality created by this previously unconsidered mechanism and will hopefully result in a much-needed conversation about the disparate impacts of tuition structures.

Introduction

Equality of access to college gets a lot of attention. The media, policy makers, and academic literature often focus on the convoluted and secretive admissions process at elite schools and overall college affordability [1] [2] [3]. Advocates also are drawing attention to the fact that seemingly neutral policies such as requiring remedial courses and limiting credit transfers from associate degree programs can contribute to structural racism in higher education [4]. However, there has been less study of policies regarding tuition and fees outside of financial aid and assistance. The work has recently done to explore how tuition and fee systems in different countries support or inhibit participation of low-income students [5].

What has not been discussed in detail is how university systems such as tuition and fee structures are making various college degrees more expensive and also involve charging different tuition rates to students earning the same degree. These tuition and fee structures can have an outsized impact on engineering students and can counter efforts to provide targeted financial aid support as was seen in a recent study that explored the equity of the upper- / lower-division tuition structure, which is popular in the State of Michigan [6]. As with that study, we are following the United Nations Sustainable Development Goals (SDG-4) for equity in education and utilizing the conceptual framework for equity described in *Handbook on Measuring Equity in Education* [7]. This handbook identifies five categories of impartiality measures to gauge equity in learning: These are the gap or difference in selected values between groups; the ratio of representation in learning to the general population; the covariance or correlation between membership in a group and some outcome; the concentration index comparing strata of the population to educational outcomes; and comparisons of group-level cumulative information. UNESCO posits that the most equitable outcome would be one in which all identifiable groups are indistinguishable in their educational hurdles and outcomes. The analysis within this paper relies on the gap or difference in the mean of the identified groups to show the disparate impact of tuition structure based on the dispersion in the student population and how membership in certain groups correlates to dissimilar outcomes.

This research paper seeks to answer the question: *How equitable is the impact of the block tuition structure?* Block tuition (also known as flat-rate tuition) is the practice of charging a flat rate for a range of credit hours. For example, at Grand Valley State University, students are charged a flat rate for enrolling in 12-15 credit hours. This rate is equal to the cost of 12 credits at the per credit hour rate so that a student who enrolled in 15 credit hours would have paid for 12 and gotten 3 credits for free. In this case, the effect is a tuition discount of up to 20% (paying for 12 of 15 credits), encouraging full-time enrollment near 15 credits per semester. This tuition structure provides a discount that is not accessible to all students and penalizes those who cannot enroll in 15 credits due to constraints on their time or finances, limited course options, or prerequisite requirements.

Table 1 summarizes the tuition rates for public universities in the State of Michigan [8]. As of the 2023-24 academic year, 11 of 15 public universities employed a form of block tuition. Wayne State University began using block tuition in 2023, citing a desire to improve graduation rates [9]. There has been a study that found a measurable positive impact on four-year graduation rates; however, the study did not include information on five- or six-year rates, a demographic breakdown, or any analysis on the programs' equitability. [10].

The economic and personal impacts of student debt is a growing problem [11] that has a disproportionately negative effect on marginalized groups [12]. For instance, federal Pell Grants are awarded solely based on financial need and can typically be used to pay only a fraction of total tuition as the maximum Pell Grant award for 2024-25 remains fixed at \$7,395, the same as the previous year [13]. Because the cost of attendance typically exceeds the level of support, changes in fees or tuition structure will affect Pell Grant recipients on a dollar-for-dollar basis, leaving them with more debt than their peers [14]. Pell Grant recipients strongly correlate to marginalized identities and have been consistently found to have the highest default rates on student loans [15].

Table 1: Comparison of Tuition (per Credit Hour) and Block Tuition Rates for Public Michigan Universities [8]

	Tuition per Credit	Block Tuition	Block Credit Range		% Difference	
	< min	In range	min	max	@min	@max
<i>Central Michigan University</i>	\$458.00	-	-	-	0.0%	0.0%
<i>Eastern Michigan University</i>	\$637.35	\$7,600.00	12	16	0.6%	25.5%
<i>Ferris State University</i>	\$483.00	-	-	-	0.0%	0.0%
<i>Grand Valley State University</i>	\$614.00	\$7,314.00	12	15	0.7%	20.6%
<i>Lake Superior State University</i>	\$582.00	\$6,984.00	12	16	0.0%	25.0%
<i>Michigan State University</i>	\$521.75	\$7,824.00	12	18	-25.0%	16.7%
<i>Michigan Technological University</i>	\$682.00	\$9,037.00	12	18	-10.4%	26.4%
<i>Northern Michigan University</i>	\$517.00	\$6,204.00	12	16	0.0%	25.0%
<i>Oakland University</i>	\$507.50	-	-	-	0.0%	0.0%
<i>Saginaw Valley State University</i>	\$408.00	-	-	-	0.0%	0.0%
<i>University of Michigan</i>	\$671.00*	\$8,448.00	12	18	0.0%	32.3%
<i>University of Michigan-Dearborn</i>	\$606.00	\$7,272.00	12	UNL	0.0%	UNL
<i>University of Michigan-Flint</i>	\$536.00	\$6,432.00	12	UNL	0.0%	UNL
<i>Wayne State University</i>	\$519.46	\$6,246.49	12	18	-0.2%	33.2%
<i>Western Michigan University</i>	\$603.92	\$7,247.00	12	15	0.0%	20.0%

***First credit hour is \$1,066. UNL = Unlimited (no published cap)**

Additionally, the U.S. Supreme Court ruling in *Grigg v. Duke Power Company* [16] (as modified [17]) essentially made tests, examinations, fees, or other impediments to hiring, promotion, or advancement illegal for most private companies if those impediments have a disparate impact upon all Title VII protected classes (race, color, sex, and national origin) [18]. Title VI of the 1964 Civil Rights Act imposes similar requirements upon all organizations that receive federal funds [19]. The U.S. Department of Justice uses the following three-part test to determine if an organization receiving federal funds has violated Title VI [20]:

1. **Disparate impact:** Does the adverse effect of the policy or practice fall disproportionately on a race, color, or national origin group? ...

2. **Justification:** If so, does the record establish a substantial legitimate justification for the policy or practice? ...
3. **Less discriminatory alternative:** Is there an alternative that would achieve the same legitimate objective but with less of a discriminatory effect? ...

Student data from Grand Valley State University (GVSU) were examined to compare both the effective amount of block tuition discount and the number of credits earned by graduation for different groups of students who graduated with a 4-year degree. Impartiality measures are presented based on Pell Grant eligibility, gender, race, and transfer status for both engineering degreed graduates and all other majors. The goal of this analysis is to determine if the block tuition structure has a disparate impact on the different groups, providing a financial advantage to some demographics over others.

We further hypothesize that engineering degree programs will tend to restrict the accessibility of block tuition's benefits. First, engineering programs require more credits (typically 5-25 more semester credits) than other programs [21]. Second, they have less flexibility and few if any free electives that allow earned credits outside of their specific degree requirements to be used. Last, strict prerequisite requirements further limit flexibility in scheduling courses. The likely result is that most engineering students either take fewer than the optimal number of credits per semester to maximize the block tuition discount or take additional, unusable courses to claim the discount. To investigate this hypothesis, we performed the analysis twice: first with all students, and then with engineering students exclusively.

Methods

This paper investigates whether the block tuition structure fails to provide an equal benefit to students from marginalized communities. This was done by taking student data from Grand Valley State University, which included the following information for each student:

- Self-reported as a student of color
- Self-reported gender
- Pell Grant eligibility
- Number of transfer credits
- Number of AP/CBE Credits
- Number of changes to degree program at GVSU
- Number of credits attempted at GVSU
 - Separated by level (000, 100, 200, 300, & 400 level)
- Number of credits earned at GVSU
 - Separated by level (000, 100, 200, 300, & 400 level)
- Total credits at graduation
 - Separated by level (000, 100, 200, 300, & 400 level)
- Number of credits attempted at GVSU by semester
 - Credit hours separated by semester

The dataset used for this analysis contained data on 32,454 students who completed a bachelor's degree with a minimum of 120 semester credits. To isolate the effects of this tuition structure, this analysis utilized the attempted hours by semester data and applied the current tuition rate (per credit and block rate) for the 2023-24 academic year. By applying the same tuition rates to all

students from different cohorts, we could simplify the analysis and eliminate the need to correct for inflation, time-value of money, and changing tuition rates. Additionally, our analysis omitted additional charges for certain majors as well as other fees.

The goal of the analysis was the exploration of disparate impacts of the block tuition structure. To start, all transfer, AP, and CBE credits were assumed to be in the students record at the start of the first semester. Then, the history of attempted credits per semester was used to calculate the tuition for each term using the current tuition structure at GVSU. The average of the effective discount percentage was calculated for different groups for comparison, which include:

- Students of color vs. non-students of color
- Male vs. female
- Pell-eligible vs. non-Pell-eligible
- Transfer vs. non-transfer

This analysis was then repeated with data exclusively for engineering students for comparison.

Results

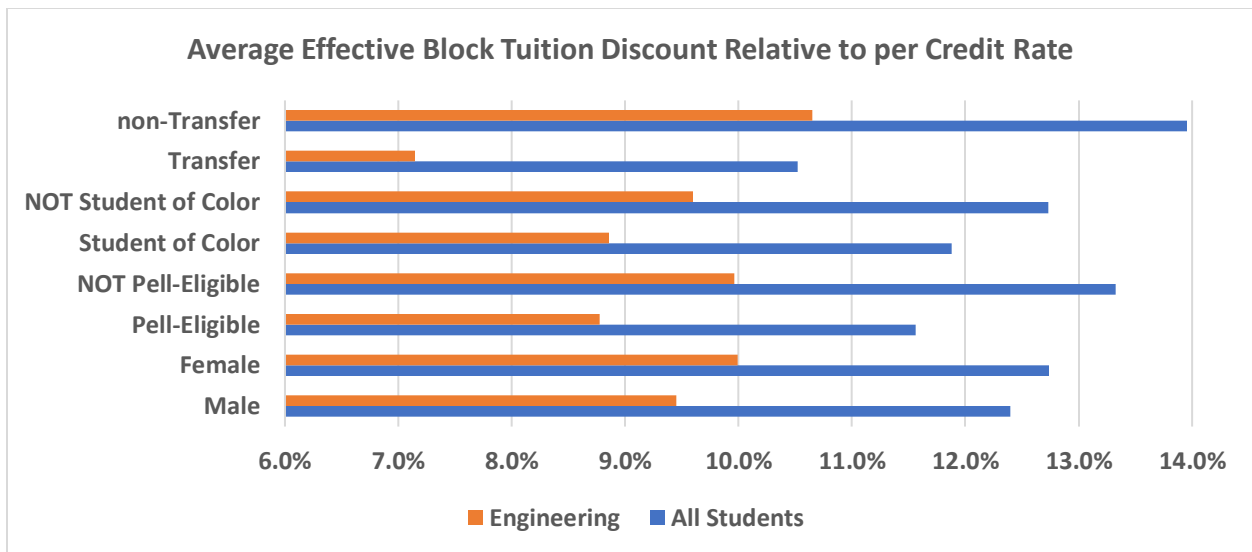


Figure 1: Plot of the impartiality measure (effective discount per credit) resulting from block tuition for engineering students and all students with comparisons between transfer status, race, Pell-eligibility, and gender.

The average effective block tuition discount per credit hour is the impartiality measure used for this analysis. A policy with no disparate impact would result in equal values for the impartiality measure for all demographics studied. As can be seen in Figure 1, this measure is not equal among the demographics. The strongest disparity is evident between transfer and non-transfer students, followed by Pell-eligibility, and race (comparing students of color to white students). There was no significant evidence of a disparate impact based on gender.

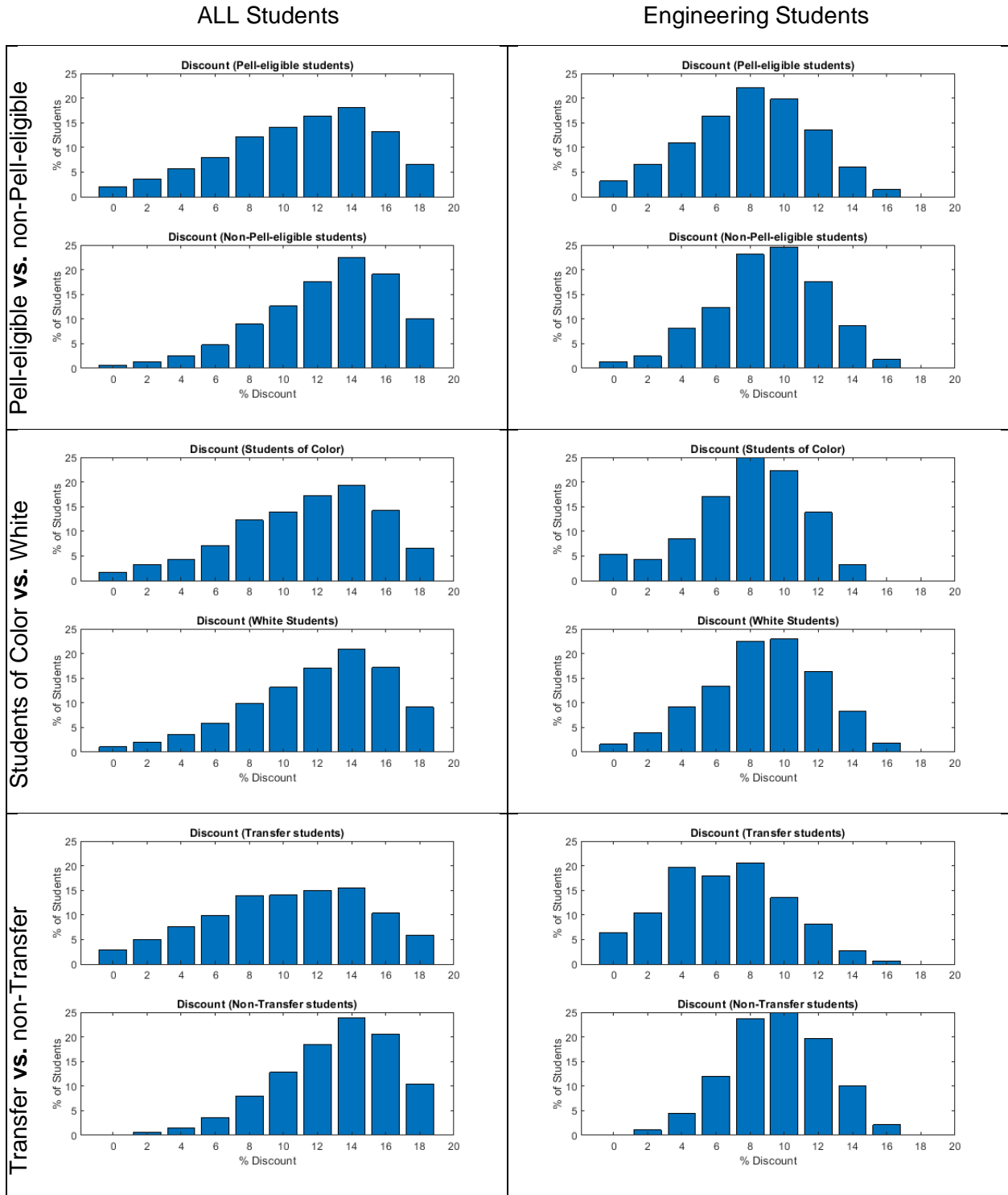


Figure 2: Scaled histograms of average tuition discount resulting from block tuition relative to per credit hour rate. Left column charts are based on data from ALL students. Right column charts are based on data from only engineering students.

Even more striking than the demographic comparison is the disparate impact on engineering students, who benefit significantly less regardless of demographic group. The data indicate that the disparate impact of being in a marginalized group compounds with the disparate impact of

being an engineering student. As a result, engineering transfer students benefit the least from the discount, earning an effective discount of 7.1%, which is roughly half of the 14% discount non-transfer students receive.

Figure 2 includes a series of scaled histograms showing the distribution of the effective discount from block tuition for graduating students. The engineering student distributions of the effective discount are symmetrical with a lower mean relative to the distributions for all students, which are asymmetrical with a distinct skew toward a higher discount. When comparing demographics, the distributions all clearly have a mean shifted to a lower effective discount for transfer students, students of color, and Pell-eligible students.

Discussion and Conclusions

This paper presented a study of the effects of the block tuition structure on different groups of students. This analysis included dispersion metrics as defined by the framework laid out in [7]. The results show that this tuition structure causes disproportionate impacts affecting students of color, Pell-eligible students, and transfer students. There is also a clear disparate impact on engineering students, amplifying the issue for marginalized groups.

The argument for utilizing a block tuition structure is to encourage students to enroll in more credits to reduce the time to graduation. While a study has indicated that this is effective, the same study also found that the majority of students did not benefit financially by the policy [10]. Universities that have recently switched to block tuition are cognizant of the cost of providing such a significant discount on tuition; consequently, adding block tuition is often paired with a significant increase in the per credit tuition rate to ensure that adoption of the policy is revenue neutral. Students who are unable to enroll in the maximum allowed credits in the block tuition range benefit less, and those who are part-time students see no benefit. When the tuition is increased to cover the cost of the discount, the students with lower credit hour enrollments are effectively subsidizing the discount for those with higher credit loads. Clearly, students from marginalized communities who tend to be low-income and transfer from community college benefit less and are effectively subsidizing a benefit for higher-income, non-transfer, white students.

Looking at the three-part test laid out by the U.S. Department of Justice for Title VI [20], this analysis shows that this policy has a measurable *disparate impact* on students of color. The *justification* for this policy is to encourage higher credit loads and improve graduation rates, but there is a possibility of a *less discriminatory alternative*. This analysis has shown this popular policy to be discriminatory, and a viable alternative could make it legally difficult to defend.

While the choice to abandon the block tuition structure is a valid choice, universities are compelled to use it to encourage higher credit loads. While no alternative currently proposed in literature has been proven to have the same impact, one could repurpose this discount to encourage continuous enrollment and lifelong learning. Two possible alternatives are the implementation of a lifetime learning account or a university loyalty program. A university loyalty program would be similar to a popular marketing tool used to encourage consumers (e.g. punch cards or point systems with reward milestones). A simple version of this would track student credits and provide free credits or similarly valued rewards after hitting a milestone (e.g. for every 12 credits purchased, a student could earn 3 credits of free tuition). The other alternative is the creation of a lifetime learning account. To match the discount from block tuition, the lifetime learning account could be funded

by 25% of the tuition of enrolled courses to be used in a future semester, resulting in three credits of tuition for every 12 credits of enrollment. This would incentivize students to continuously enroll, as each semester they will receive a discount based on their level of enrollment in the prior term; this would not exclude students who are unable to enroll full time. Additionally, when students graduate, their last term will result in a credit in the lifetime learning account that can be used at a future date, should they wish to seek additional certifications or coursework.

The study presented here has shown that the block tuition model is flawed as its benefits are not equitably distributed and disadvantage students who are from marginalized communities. It is therefore recommended that the practice be phased out and replaced by less discriminatory alternatives that can provide an incentive to continuously enroll and engage in lifelong learning.

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