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Impacts of Transfer Admissions Requirements: Evidence from Georgia

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Abstract
One-third of all post-secondary students transfer colleges and roughly two-thirds of public 4-year colleges require a minimum college GPA to be eligible for transfer admissions. Yet, little is known about how these policies influence who, when, and where students transfer. This paper studies the minimum transfer admissions requirements at institutions within the University System of Georgia. At the GPA thresholds, I estimate that the probability of transferring within 1 year of earning 30 credits increases by 0.5 to 3.1 percentage points, or about 67 to 200%, depending on the GPA threshold and student group analyzed. The short term transfer impacts persist over time, but are less distinct. These results suggest that (a) minimum transfer GPA requirements often generate excess demand for attendance at these institutions, which may have important implications for college match and access to selective colleges and (b) minimum transfer GPA requirements can influence access to these colleges both through the timing of transfers and whether students ever transfer.

Keywords College transfer · College admissions · College access

Introduction

About one-third of all post-secondary students in the United States transfer at least once (Shapiro et al., 2018),[1] and transfer may be even more common among students who eventually complete a bachelor's degree (Andrews et al., 2014).[2] Unlike freshman admissions, the most important factor in transfer admissions is typically college grades received at previous institutions (Clinedinst & Patel, 2018). Additionally, roughly two-thirds of

[1] The share of students who transfer is relatively consistent across different datasets, including among students in Texas public institutions at 31% (Andrews et al., 2014), the National Longitudinal Survey of Youth 1997 cohort at 27% (Dillon and Smith, 2020), the National Educational Longitudinal Study at 33% (Goldrick-Rab and Pfeffer, 2009), the High School and Beyond Survey at 22% (Hilmer, 2000), and National Student Clearinghouse data at 38% (Shapiro et al., 2018).

[2] Among students at Texas public institutions, Andrews et al. (2014) show that 49% of BA recipients had transferred at least once.

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public 4-year colleges use GPA-based minimum transfer admissions criteria.[3] These policies require students to have a cumulative college GPA above a certain threshold to be eligible for transfer admissions, where students transfer credits from their previous institution to a new institution. Despite the prevalence of college transfers and the use of minimum transfer GPA criteria among 4-year colleges, little is known about how these transfer admissions policies influence who, when, and where students transfer. Transfers can represent an alternative admissions path for students to access selective colleges or create a better academic match, and strict admissions thresholds can create inefficiencies in the college matching process.

In this paper, I study how the minimum transfer GPA requirements at institutions within the University System of Georgia (USG) impact transfer patterns within the system. The USG requires its research universities to have a minimum transfer GPA of at least 2.3 and its state and comprehensive universities to have a minimum transfer GPA of at least 2.0. These minimum GPA requirements apply for students who have completed at least 30 credits. USG's two most selective institutions, the University of Georgia (UGA) and the Georgia Institute of Technology (Georgia Tech), set their minimum transfer GPAs higher than what USG requires, at 3.2 and 3.0, respectively.

My analysis first notes that 22% of students within USG who complete at least 30 credits later transfer to another USG institution. This is striking since these students are official transfer admits (i.e., taking completed credits from one institution to another), rather than simply enrolling in multiple institutions over time which is often how transfer rates are calculated. Moreover, much of the attention on college transfers in the literature focuses on transfers from 2-year to 4-year colleges. Since USG institutions primarily grant bachelor's degrees, this finding contributes to the literature by highlighting that transfers between 4-year colleges is also common and emphasizes that this student population warrants further study. I also find that most of these transfers are conceivably "upward" transfers, where students move to an institution with a higher institutional sector classification within USG (e.g., transfers from a state college to a university), which highlights how these transfer admissions policies may be important for access to more selective colleges.

Second, I examine the transfer impacts of the minimum transfer GPA requirements across institutions. I use a regression discontinuity (RD) research design that compares students with GPAs at 30 credits that are just above and just below the minimum GPAs to be eligible to transfer to different institutions within USG. I find that, in most cases, these GPA requirements do influence transfer patterns, at least in the short run. I find effects at the threshold on the probability a student transfers within 1 year of earning 30 credits at each minimum transfer GPA threshold, except for Georgia Tech. Estimated transfer impacts vary between 0.5 and 3.1 percentage points, depending on the GPA threshold and student group analyzed. These are large effects in percent terms, representing between about 67 to 200% increases relative to means just below the thresholds.

These short run transfer effects persist even in later terms as students earn more credits. Estimates of the effects on whether students ever transfer after earning 30 credits are of a similar or slightly smaller magnitude to the estimates of effects on transfers within 1 year. This suggests that where students' GPAs fall relative to the transfer GPA thresholds can influence whether they ever end up transferring in their college history and are not merely

[3] This statistic is based on the author's calculation from visiting websites of a 20% random sample of public 4-year colleges using the Integrated Postsecondary Education Data System to obtain a list of colleges. As far as I'm aware, there are no existing statistics on the prevalence of the use minimum transfer GPA requirements.

a temporary hurdle. However, the discontinuities in the probability of transfer at the admission thresholds are more apparent in the long run than in the short run. These patterns may occur because students have many opportunities to transfer and can improve their GPAs over time. These results suggest that the minimum GPA requirements can have an effect on both when students transfer and whether students ever transfer.

The remainder of this paper is organized as follows: In the next section, I discuss the related prior literature, the policy details and setting, and the data used in the analysis. Section 3 describes the RD empirics and details diagnostics to assess the validity of the methodology in this setting. Section 4 reports the results of the analysis. Finally, Sect. 5 concludes with a discussion of the findings.

Background and Data

Related Literature

This paper contributes to a literature that studies how admissions and other related institutional policies influence college transfers. For example, an existing literature exists that studies how state articulation agreements, which makes explicit which course credits can transfer from community colleges, affects college transfer patterns (Anderson et al., 2006; Baker, 2016; Boatman & Soliz, 2018; Grote et al., 2020; Roksa & Keith, 2008; Shaat, 2020; Spencer, 2019a; Worsham et al., 2021). Much of the broader literature studies policies related to transfers from 2-year colleges to 4-year colleges (e.g., Kopko & Crosta, 2016; Spencer, 2019b; Schudde et al., 2022). Due to the setting of the data I use in this paper, I primarily study transfers to and from 4-year colleges.

I advance this literature by considering the effects of minimum GPA requirements in transfer admission. The only other paper in this vein is Andrews (2016), which studies a program that grants guaranteed transfer admissions to the University of Texas at Austin for students who were not admitted as freshmen but who enroll in another institution within the University System of Texas and who maintain a minimum GPA. Compared to Andrews (2016), I study a more general, yet more commonplace transfer admission policy that is not targeted specifically at students who applied but were not admitted to a particular college as a freshman. Moreover, my analysis considers minimum GPA requirements across several institutions within a large university system.

The University System of Georgia and Higher Education in Georgia

The USG currently consists of 26 public institutions. Based on each institution's specific mission and function,[4] these institutions are grouped into four sectors: research universities, comprehensive universities, state universities, and state colleges.[5] While teaching is a core focus at all USG institutions, the four sectors differ in their emphasis on research and the types of degrees offered. Research is emphasized the most at research universities,

[4] Due to consolidations, some institutions have a "blended" function, where institutions serve the functions of multiple sectors. Institutions that operate with a blended function currently include Georgia State University, Albany State University, Middle Georgia State University, and the University of North Georgia.

[5] Currently, there are four research universities, four comprehensive universities, nine state universities, and nine state colleges.

followed in order by comprehensive universities and state universities. Research and comprehensive universities typically do not offer associate degree programs but do offer master's-level and doctoral programs. State universities offer undergraduate and master's-level programs, while typically having very few or limited doctoral or associate degree programs. State colleges offer bachelor's and associate degree programs, as well as general education courses, but offer no graduate programs. Some state colleges offer mostly associate degree programs with only a few select, professionally-oriented bachelor's degree programs.

Currently, most of USG's institutions primarily grant bachelor's degrees; however, a few institutions were classified as 2-year colleges (which only offer sub-baccalaureate awards) during the first few years of the data. Each of these institutions were subsequently either reclassified as a state college or consolidated with another state college or state university.[6]

Other than USG institutions, Georgia also has 31 private colleges and universities and 22 public technical colleges in the Technical College System of Georgia (TCSG) that offer certificate, diploma, and associate degree programs. Among public high school graduates in Georgia who attend college immediately after high school, about 63% enroll in an institution in the USG, 13% enroll in an institution in the TCSG, 9% enroll in a Georgia private institution, and 15% enroll in an out-of-state institution.[7]

Minimum Transfer Admissions Requirements

According to USG policy, institutions must set minimum transfer admissions requirements based on their institutional sector. The admissions criteria exist for multiple reasons, including: (i) to increase the chances for student success at the receiving institution, (ii) to support a rational allocation of students across the system in the presence of capacity constraints, and (iii) to limit excessive enrollment churn within the system. For the three types of universities, USG requires setting a minimum college GPA that students must have for transfer admissions consideration. Specifically, USG's minimum transfer admissions requirements for each institutional sector as follows:

- Research universities must have a minimum transfer GPA of at least 2.3.
- Comprehensive and state universities must have a minimum transfer GPA of at least 2.0.
- State colleges must require that students be eligible to continue or return to their sending institution.

Institutions can set minimum transfer admissions requirements that are higher than what USG requires. UGA and Georgia Tech do this, with minimum transfer GPAs of 3.2 and 3.0, respectively. Importantly, the GPA criteria only apply to students with at least 30 transferrable credit hours. Students with fewer credit hours are subject to the freshman admissions requirements at each institution (e.g., SAT/ACT scores). Finally, the GPA requirements are *minimum* admissions criteria, so meeting an institution's GPA requirement does not guarantee transfer admission to that institution.

[6] The data can track students before and after the consolidations. Students who are continuously enrolled at an institution before and after its consolidation with another institution are not treated as transfer students.

[7] These numbers are calculated from the High School Graduate Outcomes dashboard of the Governor's Office of Student Achievement: https://gosa.georgia.gov/dashboards-data-report-card/data-dashboards/hs-grad-outcomes.

Data, Sample Description, and Transfer Student Characteristics

This paper uses USG administrative data between 2007 and 2019. These data include student-by-term enrollment records, allowing identification of all student transfers between USG institutions during this period. The data also contain students' cumulative GPAs at the end of each term, which is critical for determining students' eligibility for transfer admissions to different institutions. I follow students' enrollment histories at all USG institutions and track whether, when, and where students transfer between institutions.[8] I observe transfers by using an identifier that indicates whether students were admitted as a transfer student. Thus, I focus on officially recorded transfers, where students transfer credits from previous institution(s), as opposed to simply observing whether students enroll in multiple institutions over time.

I make three restrictions to the data to create the full analysis sample. First, I limit the analysis to students who enter a USG institution as a first-time freshman to exclude students who may have entered USG as transfer students from outside USG and other types of students. Second, I restrict the analysis to students who enter a USG institution between the Fall 2007 and Fall 2013 terms to allow students sufficient time to progress through a degree program. Finally, I limit the analysis to students who have earned at least 30 credit hours, since these are the students who are plausibly subject to USG's minimum transfer admissions requirements. The final analysis data set includes one observation per student, with variables including students' cumulative GPA and institution in the term in which they complete 30 credits, indicators for whether students transfer after earning 30 credits, the institution to which students transfer, and information on students' demographics and background.

Table 1 shows average characteristics and student outcomes of the full sample, as well as for populations of students who transfer by destination institution and for students who do not transfer. Within the full sample, 31% of students identify with a race/ethnicity that are underrepresented (URM) and 56% completed a bachelor's degree.[9] Transfer and non-transfer students are very similar on average in terms of demographics. For instance, URM students make up 32% of transfer students and 31% of non-transfer students.

There are substantial differences in transfer student characteristics by the transfer institution destination. Students who transfer to the University of Georgia are more likely to be male, White, and have a higher adjusted gross income (AGI) than other students and other transfer students. Students who transfer to Georgia Tech are more likely to be male, Asian, and have a higher AGI; the proportion of Georgia Tech transfer who are male is especially striking at 88%. In contrast, students who transfer to Georgia State University or any comprehensive university, state university, or state college are more likely to be female, URM, and have a lower AGI than other students and other transfer students.

Table 1 also shows that transfers in this context tend to be "upward" transfers (i.e., transfers to an institution with a higher sector classification). Overall, two-thirds of all transfers can be considered upward transfers. For example, aggregating across transfer students to the three research universities in columns (4) through (6), about 93% transfer from an institution with a lower sector classification, and 50% transfer from a state college or 2-year college. Meanwhile, in column (7), 64% of students who transfer to any state or comprehensive university transfer from a state college or 2-year college. These statistics demonstrate that transfers often provide students alternative paths to more selective colleges.

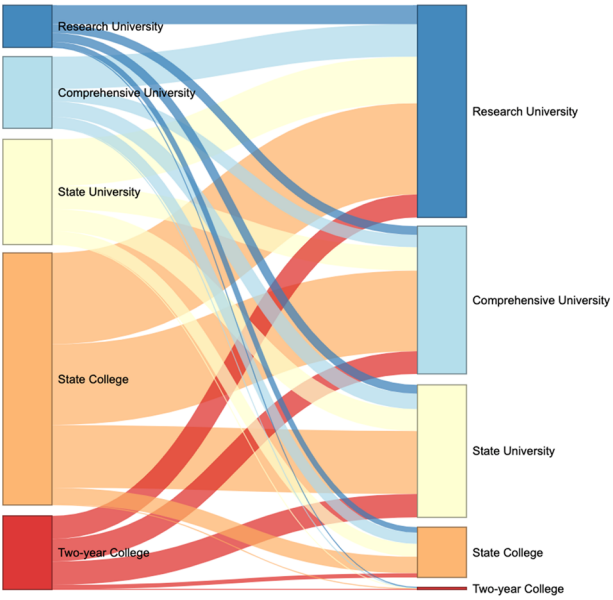
[8] A weakness of the data is that I do not observe student enrollments in institutions outside of the USG. All outcomes, such as degree completion or transfers, can only be observed if they occur within the USG.

[9] I classify students as URM if they identify as Black, Hispanic, or Native American.

Table 1 Full sample and transfer student characteristics

	Full sample (1)	Non-transfer students (2)	Any (3)	Transfer students by transfer destination				
				UGA (4)	GA Tech (5)	GA State (6)	State/Comp. Univ. (7)	State Colleges (8)
Demographics								
Female	0.570	0.573	0.562	0.483	0.222	0.604	0.585	0.631
White	0.563	0.566	0.553	0.734	0.537	0.345	0.556	0.542
Black	0.246	0.243	0.258	0.059	0.110	0.357	0.301	0.300
Asian	0.058	0.068	0.069	0.089	0.208	0.126	0.036	0.046
Other race	0.029	0.030	0.026	0.023	0.026	0.038	0.024	0.024
Unknown race	0.035	0.034	0.036	0.038	0.046	0.048	0.030	0.042
Hispanic	0.059	0.059	0.058	0.057	0.073	0.087	0.052	0.046
URM	0.308	0.305	0.320	0.118	0.186	0.449	0.356	0.351
Background								
High school GPA	3.229	3.267	3.094	3.273	3.378	2.940	3.047	3.072
Max SAT score	1095	1111	1037	1107	1191	1014	1002	1029
AGI (in $1000s)	92.3	94.4	85.1	115.0	105.0	70.6	78.6	79.3
Missing AGI	0.102	0.111	0.068	0.090	0.093	0.064	0.060	0.068
Original institution								
Research university	0.272	0.323	0.087	0.106	0.202	0.041	0.068	0.110
Comp. university	0.181	0.188	0.153	0.192	0.218	0.136	0.125	0.228
State university	0.245	0.257	0.205	0.259	0.286	0.190	0.173	0.256
State college	0.259	0.208	0.440	0.392	0.238	0.493	0.491	0.331
Two-year college	0.044	0.024	0.115	0.051	0.055	0.140	0.144	0.075
Number of students	284,375	222,088	62,287	9822	3492	9249	32,100	6178

Notes: This table shows average student characteristics, where each column refers to a student population. The sample includes all first-time freshman students entering between Fall 2007 and Fall 2013 who completed at least 30 credits. AGI stands for adjusted gross income, URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Max SAT scores are calculated using SAT or ACT scores, where ACT scores are converted into the SAT scale using official concordance tables. AGI stands for adjusted gross income and is obtained from students' filings of the Free Application for Federal Student Aid



Notes: This figure is a Sankey diagram of the 62,287 college transfer flows in the sample. On the left-hand side is the institution classification of transfer students' sending institution. On the right-hand side are the institution classification of transfer students' receiving institution. The size of the paths between sending and receiving institution type are proportional to the number of students taking each transfer path.

Fig. 1 College transfer flows by sending and receiving institution classification

The Sankey diagram in Fig. 1 provides a more comprehensive depiction of the patterns of transfer flows within the USG. The classification of transfer students' sending institution is on the left-hand side, while the receiving institution is on the right-hand side. The figure further illustrates that most transfers are "upward". Over 50% of transfer students originate from a state or 2-year college, while the vast majority of all transfer students transfer to a research, comprehensive, or state university. Meanwhile, "parallel" transfers (i.e., transfers to and from similarly classified institutions) and "reverse" transfers (i.e., transfers to an institution with a lower sector classification) are much less common in this context.

Methodology

The different minimum transfer GPAs across institutions within the USG create four distinct transfer admissions thresholds: UGA at 3.2, Georgia Tech at 3.0, Georgia State University at 2.3,[10] and all state and comprehensive universities at 2.0. Table 2 shows average student characteristics and outcomes within the full sample (students who have earned at least 30 credits) as well as within the subsamples used in the RD analyses at each of the

[10] Although a 2.3 GPA is USG's required minimum for research universities, the University of Georgia and Georgia Tech set higher thresholds. Accordingly, we only consider this 2.3 GPA threshold for transfers to Georgia State University. There is a fourth research university, Augusta University; however, we do not analyze the effects of the transfer GPA requirements at Augusta University because it enrolls a modest number of undergraduate students during the time period of our analysis data set.

Table 2 Regression discontinuity sample comparison

	Full sample (1)	UGA RD sample [2.8, 3.6] (2)	Georgia Tech RD sample [2.6, 3.4] (3)	Georgia State RD sample [1.9, 2.7] (4)	State/Comp. Univ. RD sample [1.6, 2.4] (5)
Demographics					
Female	0.570	0.593	0.581	0.530	0.509
White	0.563	0.606	0.576	0.458	0.418
Black	0.247	0.198	0.234	0.367	0.414
Asian	0.068	0.071	0.065	0.048	0.045
Other race	0.029	0.029	0.029	0.030	0.030
Unknown race	0.035	0.034	0.036	0.037	0.037
Hispanic	0.059	0.061	0.062	0.060	0.057
URM	0.309	0.262	0.299	0.431	0.475
Background					
High school GPA	3.229	3.327	3.241	2.942	2.856
Max SAT score	1095	1110	1088	1020	1006
AGI ($)	92,309	98,237	92,978	75,197	70,571
Missing AGI	0.102	0.099	0.095	0.094	0.097
Transfer Outcomes					
Ever transfer	0.219	0.232	0.233	0.217	0.190
Transfer within 1 year	0.083	0.088	0.087	0.082	0.066
Number of students	284,375	125,309	118,959	73,242	50,714

Notes: This table reports summary statistics for various analysis samples. Column 1 shows the full sample of students who earned at least 30 credits. Columns 2 through 5 show subsamples of students with GPAs at 30 credits within a 0.4 GPA-point bandwidth around the four minimum transfer GPA thresholds. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Max SAT scores are calculated using SAT or ACT scores, where ACT scores are converted into the SAT scale using official concordance tables. AGI stands for adjusted gross income and is obtained from students' filings of the Free Application for Federal Student Aid. Transfer rates are calculated using only transfers that occur after a student earns 30 credits

four transfer admissions thresholds. These "RD samples" include all students whose GPA at 30 credits are within 0.4 GPA points of the transfer GPA thresholds.

Within the full sample, 22% of USG students transfer to another USG institution after earning 30 credits. This is striking since these are students who have been officially admitted as a transfer student and does not include students simply enrolling in multiple institutions over time. Moreover, these are nearly all transfers between 4-year colleges. The differences across RD samples reflect the relationships between students' GPAs and their characteristics and outcomes. The students in the higher GPA samples are more likely to be female, white, and have higher family incomes than the students in the lower GPA samples.

RD Specification

I use a RD design, where students' GPAs at 30 credits is the running variable, to identify the effect of the four separate minimum transfer GPA requirements. The intuition is to

compare two groups of students who are similar to each other on average except that only one group has a GPA that makes them eligible for transfer admissions to a particular institution. The estimating equation is:

$$Transfer_{ic}^{j} = \alpha \cdot 1\left[GPA_i \geq T^j\right] + f\left(GPA_i - T^j\right) + \delta_c + \mu_{ic}, \quad \text{with} \left|GPA_i - T^j\right| \leq k. \quad (1)$$

$Transfer_{ic}^{j}$ indicates whether student i in entry cohort c transferred to institution (or group of institutions) j after earning 30 credits. GPA_i is student i's GPA at the end of the term in which students' earn 30 credits. T^j is the minimum transfer GPA threshold for institution(s) j. I include a college entry cohort fixed effect (δ_c) and μ_{ic} is the error term. I treat $GPA_i - T^j$ as linear and allow the slope to vary on either side of each cutoff.

I estimate Eq. 1 separately for each of the four transfer admissions thresholds. These estimates are obtained within a bandwidth, k. For the main results, I report estimates using a bandwidth of 0.4 GPA points around each threshold, which is roughly the median of the computed optimal bandwidths across thresholds and transfer outcomes (Calonico et al., 2017). Table 7 shows that most estimates are fairly consistent across smaller or larger bandwidths. I report robust standard errors clustered by the GPA running variable.

At the thresholds, students gain eligibility for transfer admissions consideration at institution(s) j. Thus, α captures the effect of access to transfer to institution(s) j on the eligibility margin and we can interpret any observed "jump" in transfer rates that occurs at a given GPA threshold as the effect of the minimum GPA requirement. Additionally, a jump in the transfer rate at a GPA threshold would illustrate that there likely are students who desire to transfer but are unable to do so because their GPA makes them barely ineligible.

RD Diagnostics

Two conditions must hold in order for the RD design to produce valid estimates of the effect of being above the transfer admissions thresholds: (i) students do not finely manipulate their GPAs (at 30 credits) specifically to make themselves eligible for transfer admissions, and (ii) all other observed or unobserved factors that might predict transfer are smooth through the thresholds.

I test for manipulation by examining the density of students' GPAs at 30 credits. Traditional density tests (e.g., Cattaneo et al., 2018; McCrary, 2008) are unhelpful here due to the discrete nature of grades, which I discuss more below. Thus, I rely on other analyses to investigate possible manipulation. Figure 7 shows that there are clear jumps in the density of students' GPAs at (or slightly above) a GPA of 2.0 and 3.0. These jumps would be problematic for the research design if they occur due to students attempting to gain eligibility for transfer admissions. However, I argue that these jumps are likely the result of other reasons.

First, the 2.0 and 3.0 GPAs are important for reasons unrelated to transfer admissions. A 3.0 GPA is required for students to maintain eligibility for the HOPE Scholarship, Georgia's generous merit-based financial aid program. Also, a 2.0 GPA is typically required to maintain satisfactory academic progress and retain eligibility for federal financial aid.[11] It is possible that the jumps in densities at 2.0 and 3.0 are related to the incentives created by

[11] Students typically do not immediately lose federal financial aid eligibility once their GPA falls below 2.0. Students typically first receive a warning and have at least one term to improve their GPA above 2.0 before losing federal aid eligibility. Even then, students often have the ability to appeal to received aid while being put on academic probation.

these other programs. At the 2.3 and 3.2 thresholds, however, as far as I'm aware there are no other relevant policy thresholds or other "treatments."

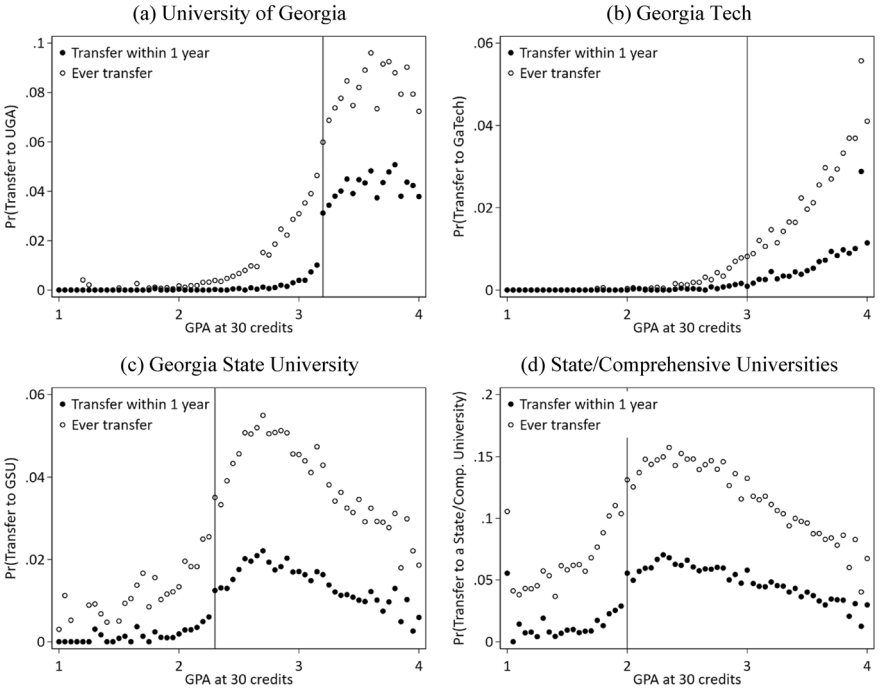
Second, certain GPAs—particularly round number GPAs—are mechanically more likely to occur because, due to the discrete nature of grades, there are simply more combinations of grades that compute to GPAs at round numbers as opposed to decimal GPAs (Barreca et al., 2016; Zimmerman, 2014). Ost et al. (2018) illustrate this directly by showing that jumps in GPA densities at round numbers persist even when grades are randomly assigned. Figure 7 shows that jumps in the GPA density—similar in size to the jump at 2.0—also exist at GPAs of 2.25, 2.5, 2.75, 3.25, 3.5 and 3.75, none of which are relevant for transfer admissions within USG or other state-wide policies or programs, as far as I am aware. Excluding observations with GPAs exactly equal to these multiples of 0.25 [Panel (b)] reveals a much smoother distribution. I later report results using this "donut" sample as a robustness check.

Importantly, while there are jumps in the density of GPAs at 30 credits at 2.0 and 3.0, there are no observed jumps at GPAs of 2.3 or 3.2. If students were finely manipulating their GPAs in response to the transfer admissions thresholds, it seems unlikely this manipulation would occur at the transfer admissions thresholds for Georgia Tech and state and comprehensive universities, but not at the thresholds for Georgia State and UGA. There is no evidence of any issues with the validity of the RD design for either the 2.3 GPA threshold to transfer to GSU or the 3.2 GPA threshold to transfer to UGA.

Finally, I conduct "placebo" tests by comparing the full sample density of GPAs to the density of GPAs around the institution-specific transfer thresholds for students who were already enrolled at the relevant institution at 30 credits [Panels (c) through (e)]. The intuition is that students should not exhibit manipulation around a transfer admissions threshold to an institution they are already attending. Institution-specific GPA distributions around the relevant thresholds that are similar to the full sample distributions would provide evidence that manipulation is not a significant issue. Indeed, the institution-specific GPA densities in the neighborhoods of the relevant thresholds for students at UGA, Georgia Tech, and Georgia State display similar patterns to the full sample densities. Together, I interpret these findings to suggest that (i) the jumps at 2.0 and 3.0 are likely unrelated to manipulating GPAs to gain transfer eligibility, and (ii) there are no validity concerns with the 2.3 and 3.2 thresholds.[12]

The other necessary condition is that nothing else changes discontinuously at the thresholds that would affect the probability a student transfers. I provide evidence that this assumption is satisfied by running placebo checks that use available predetermined covariates—including gender, race, family income, high school GPA, and maximum SAT scores—as outcomes in the RD specification in Eq. 1. Estimates from these regressions are presented in Table 5 and the graphical relationships are shown in Fig. 8. None of these covariates change discontinuously at any of the four transfer admissions thresholds.

[12] Several other studies with similar RD settings that use GPAs as a running variable find little empirical evidence of fine manipulation of GPAs around thresholds (Bleemer and Mehta, 2021b; Carruthers and Özek, 2016; Denning and Jones, 2021; Ost et al., 2018; Zimmerman, 2014).



Notes: This figure shows graphical relationships between transfer outcomes and students GPAs at 30 credits, which are placed in bins of 0.05 GPA points. The solid dots show rates of whether students transfer within 1 year of earning 30 credits. The hollow dots show whether students ever transfer after earning 30 credits. The vertical lines represent the minimum transfer GPA threshold for each institution or group of institutions.

Fig. 2 Transfer impacts of minimum GPA requirements

Results

Main Results

The main results are presented graphically in Fig. 2 and the regression estimates are reported in columns 1 and 2 of Table 3. For each of the four admissions thresholds, I analyze two outcomes: whether students ever transfer after earning 30 credits and whether students transfer within 1 year after earning 30 credits. Analyzing both these shorter-run and longer-run transfer outcomes helps to assess how the minimum GPA requirements affect the timing of transfers.

I focus first on the transfer impacts of the University of Georgia's minimum GPA requirement in Panel (a) of Fig. 2. Overall, transfer rates are relatively low, because only one transfer destination institution is included in the transfer rate, and the sample includes students from all other USG institution when they earn 30 credits. At the 3.2 GPA threshold, there is a sharp and distinct jump in the probability of transferring to UGA within 1 year of earning 30 credits. Just below the threshold, about 1% of students transfer, while 3.1% transfer just at the threshold. This indicates that students just above UGA's transfer eligibility threshold at 30 credits are three times more likely to transfer there within 1 year than students just below the threshold.

Table 3 Regression discontinuity estimates

	Institution(s)-specific transfer		Any transfer within USG	
	Within 1 year (1)	Ever (2)	Within 1 year (3)	Ever (4)
Above 3.2 GPA (UGA)	0.023***	0.017***	0.027***	0.011
N = 106,184	(0.002)	(0.003)	(0.005)	(0.007)
	[0.010]	[0.046]	[0.079]	[0.237]
Above 3.0 GPA (Georgia Tech)	0.000	−0.001	0.001	0.003
N = 100,521	(0.000)	(0.001)	(0.005)	(0.009)
	[0.001]	[0.008]	[0.075]	[0.214]
Above 2.3 GPA (Georgia State)	0.005***	0.005**	0.005	0.005
N = 68,870	(0.001)	(0.003)	(0.006)	(0.007)
	[0.006]	[0.026]	[0.084]	[0.210]
Above 2.0 GPA (State/Comp. Univ.)	0.022***	0.013***	0.020***	0.008
N = 50,665	(0.004)	(0.004)	(0.006)	(0.006)
	[0.029]	[0.104]	[0.046]	[0.170]

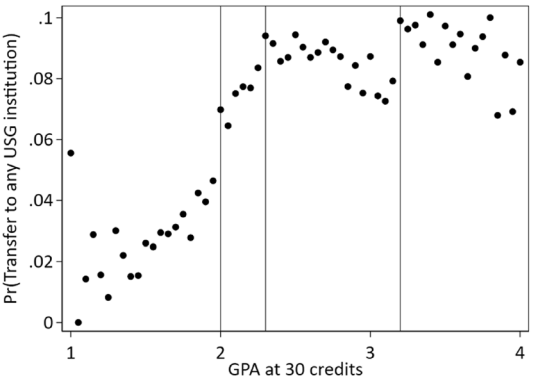
Notes: This table reports regression discontinuity estimates using Eq. 1 using a 0.4 GPA-point bandwidth around each threshold and including entry year cohort fixed effects. Each estimate comes from a separate regression. The outcome in columns 1 and 2 are transfers to the institution(s) that the minimum transfer GPA is relevant for. The outcome in columns 3 and 4 are transfers to any institution within USG. Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, ***p < .01). Means of the outcomes just below the threshold are reported in brackets

These short-run transfer impacts also appear to persist in the long run. At the 3.2 GPA threshold, there is still a small discontinuous jump in transfer rates by about 1.5 percentage points, but the relationship has become much less distinct. A substantial number of students were below UGA's 3.2 GPA threshold at 30 credits but eventually transferred to UGA. This is likely due to the dynamic nature of college transfer opportunities. Students can attempt to transfer in nearly any term. A student who is ineligible to transfer to UGA at one point in time may become eligible at a later point in time by improving their GPA in future terms. As the later analyses will indicate, this pattern where the effects of the minimum transfer GPA requirements are more distinct in the short run than in the long run is consistent across different institutions and types of institutions.

Next, I consider the impact of Georgia Tech's 3.0 minimum transfer GPA requirement in Panel (b). Here, I observe no effect of being above Georgia Tech's threshold on transfer either within 1 year or ever after earning 30 credits. I cannot determine from the data why there is an effect of other minimum transfer GPA requirements but not Georgia Tech's threshold. One potential reason could be that Georgia Tech is so selective with transfer admissions that students generally need a much higher GPA to be competitive.[13] Institutional and curricular factors at Georgia Tech, which offers relatively distinct majors with specific pre-requisites, could also be at play.

Panel (c) illustrates the transfer impacts of the minimum GPA requirements to transfer to Georgia State. Students just above a 2.3 GPA at 30 credits are less than 1 percentage

[13] According to institution's reported information from the Common Data Set (see Table A2), Georgia Tech's transfer acceptance rate during the 2018–2019 academic year was about 30%, compared to 63 and 76% at Georgia State and UGA, respectively.



Notes: This figure shows the graphical relationship between whether students transfer to any USG institution within 1 year of earning 30 credits and their GPAs at 30 credits, which are placed in bins of 0.05 GPA points. The vertical lines show the three minimum transfer GPA thresholds where institution-specific transfer impacts were found (UGA at 3.2, Georgia State at 2.3, and state or comprehensive universities at 2.0.)

Fig. 3 Impact of minimum GPA requirements on all transfers

point more likely to transfer to Georgia State than students just below. Although, this represents nearly a 100% increase. The effect on ever-transfer rates to Georgia State is of a similar magnitude as the jump in transfer rates within 1 year. Although, similar to the impact of the UGA's minimum GPA, the relationship is less distinct in the long run. Finally, Panel (d) assess the impact of the 2.0 GPA requirement to transfer to any state or comprehensive university. Because I am considering transfers to many institutions here, overall transfer rates are much higher than in previous figures. Having a GPA just above the 2.0 GPA threshold at 30 credits increases the probability of transfer to a state or comprehensive university within 1 year by about 2 percentage points (or roughly 67%). The effect for ever-transfer rates is also roughly 2 percentage points, although this relationship again is less distinct than with transfer rates within 1 year.

Lastly, I consider whether the institution-specific transfer impacts of the minimum GPA requirements carryover to the broader transfer patterns within the system. If a student would like to transfer to a particular college, but their GPA makes them ineligible to do so, do they end up immediately transferring to a different college that they are eligible to transfer to? For example, if a student would like to transfer to UGA but has a GPA below the 3.2 threshold, they could instead attempt to transfer to Georgia State if their GPA is higher than 2.3. To assess this, I repeat the RD analyses while replacing the institution-specific transfer indicators with an indicator for whether students transfer to *any* institution within USG. If students simply transfer to another institution when they find themselves ineligible to do so at a given institution, I would expect to find no transfer impacts (or at least smaller impacts) at the admissions thresholds. The results are presented graphically in Fig. 3 and estimates reported in columns 3 and 4 of Table 3.

The results show that the three transfer admissions thresholds with institution-specific transfer impacts documented above also have impacts on transfers to any USG institution, at least in the short run. Moreover, these impacts on transfers to any USG institution are of a similar magnitude as the institution-specific transfer impacts. This indicates that the local effects of these transfer GPA requirements are also meaningful in determining broader transfer patterns within USG. It also suggests that students' transfer preferences may often

be limited to a single institution, since students' typically do not immediately transfer to another institution when they are barely ineligible to transfer to a given institution.

Robustness Checks

Table 7 tests how robust the main results are to alternative bandwidth choices. Results using different sized bandwidths are reported across the columns. Panel A shows that estimates of transfer impacts within 1 year of earning 30 credits are robust to bandwidth choice. Panel B shows the estimates of impacts on ever transferring after earning 30 credits. These results are considerably more "fuzzy" than the short-run results and some estimates are less robust to very small bandwidth choices. In particular, the ever transfer impacts at the 2.3 and 2.0 GPA thresholds attenuate and become statistically insignificant with very small bandwidths. However, the estimates for ever transfer impacts around the 3.2 GPA thresholds are robust across bandwidths.

Table 8 reports results using the "donut" RD samples. For reasons discussed in Sect. 3.2, these regressions exclude from the sample students with GPAs exactly equal to round numbers and GPAs at multiples of 0.25. The results using this alternative sample are very similar to the main estimates. Column 4 of Table 7 shows results that add controls for demographic and student background variables to Eq. 1 using the main 0.4 GPA bandwidth. Estimates with these controls are identical to the estimates without them. Finally, column 5 of Table 7 uses a quadratic function of the running variable instead of a linear function. Here, while a couple estimates attenuate and lose statistical significance, most estimates are consistent with the main estimates.

Heterogeneous Effects

In this subsection I analyze whether the minimum GPA requirements have heterogeneous effects on transfer patterns by student subgroups. Goldrick-Rab and Pfeffer (2009) show that transfers between 4-year colleges is more common among students with higher socioeconomic status. Also, Bleemer and Mehta (2021b) find that underrepresented minority students are disproportionately affected by minimum GPA requirements to enter particular college majors. Finally, incentives to transfer colleges may vary across different types of institutions students are originally enrolled in. Indeed, Fig. 1 shows that, in this context, students primarily transfer from the state and 2-year colleges, but rarely from the research universities, as discussed in Sect. 2.

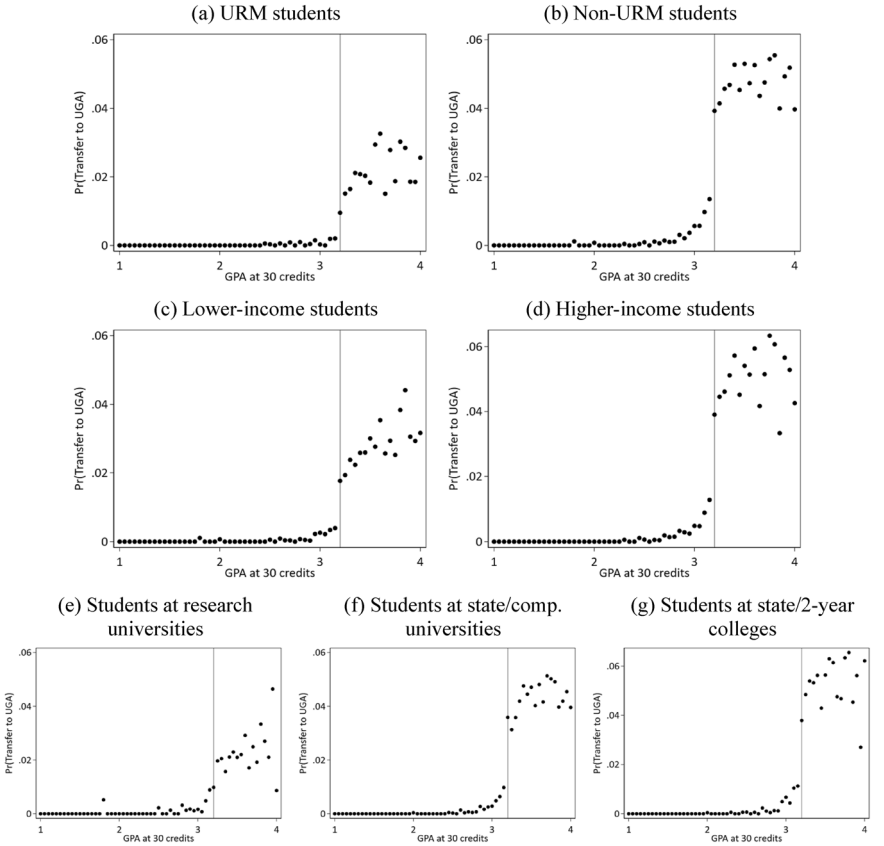
To do this analysis, for each of the three transfer admissions thresholds that demonstrated transfer impacts, I estimate Eq. 1 separately for multiple student subgroups, including by race/ethnicity, family income, and institution type. For race/ethnicity, I classify students as either URM or non-URM. For family income, I classify students as "higher" or "lower" income by whether their AGI was reported on their FAFSA (Free Application for Federal Student Aid) to be less than or greater than $60,000. Finally, for types of institutions, I observe the institutions students were enrolled in during the term in which they earned 30 credits and use USG's sector classifications. The RD estimates are reported in Table 4 and the analogous graphical results of these analyses are reported in Figs. 4, 5, and 6. I focus here on the heterogeneous transfer impacts within 1 year of earning 30 credits where effects are most evident.

The results show that the transfer impacts of UGA's minimum GPA requirement are concentrated among non-URM and higher-income students. The increase in transfer rates

Table 4 Estimates of the heterogeneity in short-term transfer impacts

	By race/ethnicity		By family income		By institution type		
	URM students (1)	Non-URM students (2)	Lower-income students (3)	Higher-income students (4)	Students at research univ (5)	Students at state and comp. univ (6)	Students at state and 2-year colleges (7)
Above 3.2 GPA	0.010***	0.028***	0.014***	0.031***	0.009***	0.024***	0.031***
(UGA)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)
	[0.015]	[0.041]	[0.004]	[0.013]	[0.009]	[0.010]	[0.011]
N	30,569	75,622	48,081	49,533	20,002	52,719	33,470
Above 2.3 GPA	0.004	0.005***	0.004**	0.006***	−0.002	0.004*	0.007***
(Georgia State)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)
	[0.007]	[0.005]	[0.006]	[0.005]	[0.002]	[0.005]	[0.008]
N	29,374	39,510	36,819	25,412	7551	34,069	27,264
Above 2.0 GPA	0.025***	0.020***	0.023***	0.031***	0.004	0.023***	0.025***
(State/Comp. Univ.)	(0.007)	(0.005)	(0.006)	(0.006)	(0.004)	(0.008)	(0.007)
	[0.030]	[0.027]	[0.027]	[0.027]	[0.006]	[0.017]	[0.005]
N	24,058	26,597	28,549	17,195	7104	23,661	19,890

Notes: This table reports estimates of transfer impacts within 1 year of earning 30 credits from Eq. 1, run separately for several student subgroups which entry year cohort fixed effects. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Students are classified as lower or higher income based on whether their adjusted gross income was reported to be above or below $60,000. Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, *** p < .01). Means of the outcomes just below the threshold are reported in brackets

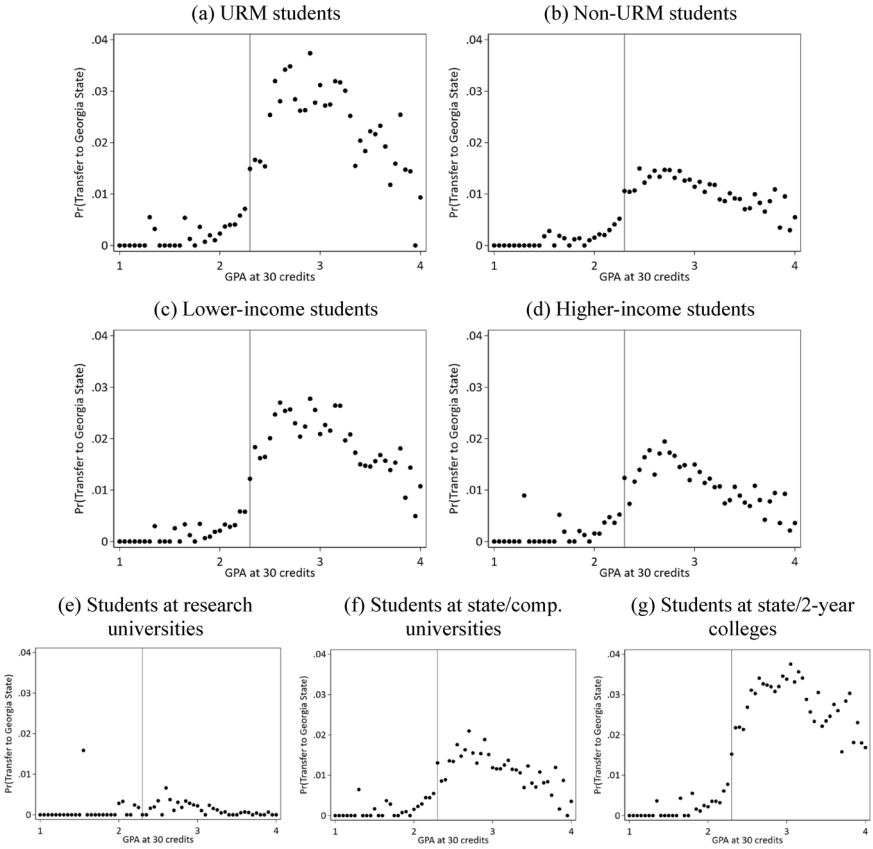


Notes: This figure shows the the heterogeneous impacts of UGA's minimum GPA requirement, where each panel represents a student subgroup. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Students are classified as lower or higher income based on whether their adjusted gross income was reported to be above or below $60,000.

Fig. 4 Heterogeneity in the impacts of UGA's minimum GPA requirement

at the threshold are 2.8 and 3.1 percentage points for non-URM and higher-income students, respectively, but only 1.0 and 1.4 for URM and lower-income students. Meanwhile, the transfer impacts of the minimum GPA requirements to transfer to Georgia State and any state or comprehensive university are somewhat larger for URM and lower-income students. Finally, transfer impacts across all three thresholds are generally largest among students at state colleges or 2-year colleges, and there is generally little to no effects among students at research universities. Table 9 disaggregates the URM subgroup to assess how consistent the results are across the individual race/ethnic categories that make up the URM students in my data.[14] Estimates of the effect of the GPA thresholds for transfer admission to Georgia State and state or comprehensive universities are similar between

[14] I include Black, Hispanic, and Native American students in the URM subgroup. I only show results separately for Black and Hispanic students since Native American students make up a very small share of the sample.

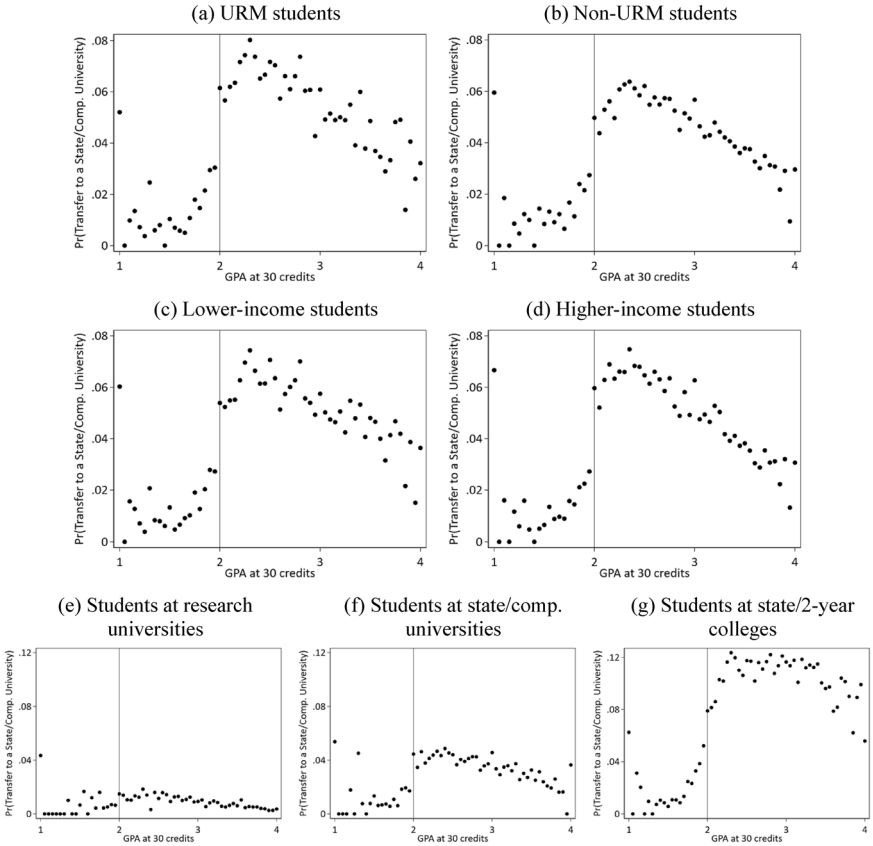


Notes: This figure shows the the heterogeneous impacts of Georgia State's minimum GPA requirement, where each panel represents a student subgroup. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Students are classified as lower or higher income based on whether their adjusted gross income was reported to be above or below $60,000.

Fig. 5 Heterogeneity in the impacts of Georgia State's minimum GPA requirement

Black and Hispanic students. Although, the estimates suggest that the effect of the GPA threshold for transfer to UGA is larger for Hispanic students than Black students.

The data cannot determine the reasons for why some differences in transfer impacts of the minimum GPA requirements by student groups exist. However, it is worth noting that the patterns are generally consistent with the average characteristics of transfer students to these institutions presented in Table 1. It seems possible that these heterogeneous impacts reflect the differential demand across student groups to attend these institutions. Some potential partial explanations for these differences could be several institution-specific factors, including the cost of attendance across institutions, the characteristics of where institutions are located, and the availability of desired academic programs.



Notes: This figure shows the heterogeneous impacts of the minimum GPA requirement to transfer to a state or comprehensive university, where each panel represents a student subgroup. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Students are classified as lower or higher income based on whether their adjusted gross income was reported to be above or below $60,000.

Fig. 6 Heterogeneity in the impacts of the minimum GPA requirement to transfer to state/comp. universities

Discussion and Conclusion

Many US college students will end up transferring between institutions at least once. This holds true even among students at the mostly bachelor's degree granting institutions within the USG: 22% of students transfer between USG institutions after earning 30 credits. Also, institutions often require students have a minimum cumulative college GPA to be eligible for transfer admissions. In this paper, I study how the minimum transfer admissions requirements at institutions within the USG influence transfer patterns within the system. I find that these requirements do appear to have an influence on the transfer patterns in the system. However, the transfer GPA requirements have a more significant effect on when students transfer as opposed to whether students are ever able to transfer.

My findings demonstrate that these minimum transfer GPA requirements generate excess demand for attendance at many of these institutions: very similar students have distinctly different probabilities of transferring based on where their GPAs fall relative to arbitrary thresholds. Lowering the GPA thresholds, providing exemptions for students close to the thresholds, or removing them altogether could increase transfer enrollment at these institutions if they are not already facing capacity constraints. Using strict GPA thresholds that determine transfer eligibility may reduce administrative burden by creating an easy way to limit admissions consideration costs, although the extent of these administrative benefits is unclear. My results do not imply that GPAs should never be used in transfer admissions considerations. Figure 9 shows that students' GPAs early in their college career have a strong positive association with later bachelor's degree completion, suggesting GPA should be an important factor in transfer admission considerations. However, based on academic preparation alone, it is difficult to justify the use of strict GPA thresholds that determine whether a student is considered for transfer admission, since students just below the thresholds are essentially the same, on average, as students just above. Importantly, it is feasible that institutions could still consider a student's GPA when they apply for transfer admission without using a strict GPA threshold to determine whether they are considered for admission at all.

My results also show that the transfer GPA requirements not only affect transfers to the institution(s) that the GPA requirements determine transfer eligibility for, but they also affect whether students transfer to *any* USG institution. This advances an understanding of college transfer preferences, since it suggests that when students find themselves barely ineligible for transfer admissions to a given institution based on their GPA, they do not immediately transfer to another institution that they are eligible to transfer to.

The excess demand for transfer admissions below the GPA thresholds may also have implications for institutions in crafting their student population. Figure 8 shows that college GPA has a negative relationship with the share of students of an underrepresented race/ethnicity and a positive relationship with family income. This implies there are more relatively lower-income students and students of an underrepresented race/ethnicity below each threshold than above. Thus, the excess demand below the transfer admissions thresholds also possibly represents an alternative pathway to support a diverse student population. This point is supported by Bleemer and Mehta (2021a) who study minimum GPA requirements to enter particular college majors, which operate similarly to the college transfer GPA requirements studied in this paper. They find that after college major GPA requirements are introduced the share of underrepresented minority college students in that major decreases by 20%, leading these students into less-lucrative majors. Minimum GPA requirements for transfer admission could have similar impacts.

These findings are also important in light of the potential for college transfers to be beneficial for students' long term outcomes. There are many reasons why students may decide to transfer colleges which suggest transfers could be beneficial. College investment decisions occur in a dynamic setting and students may decide to change schools after periodically reassessing the costs and benefits of their investment options (see e.g., Manski, 1989; Altonji, 1993; Stange, 2012). In terms of costs, students may transfer to lower their tuition or living expenses or improve their financial aid package. For benefits, students may transfer to reach a higher quality college or obtain a better academic match after learning

more about their own aptitudes and the academic rigors of their current and prospective colleges. For example, Dillon and Smith (2020) find evidence that transfers tend to reduce gaps between student ability and college quality.[15] Lastly, recent research demonstrates that there is a large consumption value of college which suggests that students could also transfer colleges to better match their social and consumption preferences (Gong et al., 2021; Jacob et al., 2018).

A critical need for future research is developing credible evidence on how transfers, and different kinds of transfers, impact student success outcomes. Table 10 shows summary statistics of bachelor's degree completion for students near the various transfer admissions thresholds at 30 credits. Students transferring to UGA, Georgia State, or a state or comprehensive university have higher completion rates than students who do not transfer to these institutions. Although, completion rates of transfer students are typically lower than students who are already at the respective receiving institution, except for Georgia State. For instance, students who transfer to UGA have a BA completion rate of 79%. This is higher than the 61% completion rate of students who do not transfer to UGA and lower than the 91% completion rate of students who were already at UGA. These simple stats suggest that transferring could be meaningful for students in terms of BA completion, although there is potential for selection bias.

This paper provides a potential road map for researchers to estimate causal effects of college transfers on student success outcomes such as bachelor's degree attainment. Several papers estimate how transfer and non-transfer students perform in college, typically relying on matching or selection-on-observables research designs (Andrews et al., 2014; Hilmer, 2000; Light & Strayer, 2004). Many institutions and systems seem to use minimum college GPA requirements in determining eligibility for transfer admissions. While it is difficult to generalize my results, it seems likely that minimum GPA requirements have impacts on transfer patterns in other contexts as well. Thus, with the appropriate data, opportunities potentially exist to estimate how transfers impact student outcomes using a two-stage RD design that uses whether students are above or below the transfer GPA threshold as an instrument for whether students actually transfer.[16] Understanding whether, and in what situations, transfers tend to be beneficial for college students would create new implications for transfer admissions and other related policies. And since college transfers often involve differences in the selectivity of the sending and receiving college, this area of research has implications for understanding the mechanisms behind how college characteristics and academic match operate as inputs of long-run student outcomes.

[15] Specifically, Dillon and Smith (2020) find that undermatched students (i.e., relatively high ability students who enroll in relatively lower-quality colleges) have a higher conditional probability of transferring to a higher-quality college; though overmatched students (i.e., relatively low ability students who enroll in relatively higher-quality colleges) do not have a similarly higher conditional probability of transferring to a lower-quality college.

[16] The data requirements for this two-stage RD design are steep. Indeed, the current context was not able to support attempts of the study of second stage outcomes due to lack of power and/or a relatively weak first stage.

Appendix

See Tables 5, 6, 7, 8, 9 and 10 and Figs. 7, 8 and 9.

Table 5 Covariate balance

	Female (1)	URM (2)	AGI ($1000s) (3)	HS GPA (4)	Max SAT score (5)
Above 3.2 GPA	0.006	−0.008	−0.485	−0.001	−0.134
(UGA)	(0.007)	(0.006)	(1.881)	(0.013)	(4.641)
Above 3.0 GPA	0.002	0.002	−2.202	−0.007	−2.607
(Georgia Tech)	(0.007)	(0.007)	(1.805)	(0.013)	(4.329)
Above 2.3 GPA	0.005	0.005	−1.817	0.007	−1.764
(Georgia State)	(0.008)	(0.007)	(1.132)	(0.010)	(3.547)
Above 2.0 GPA	0.002	0.003	−0.159	−0.015	−7.340
(State/Comp. Universities)	(0.012)	(0.008)	(1.477)	(0.016)	(6.684)
Bandwidth	0.4	0.4	0.4	0.4	0.4

Notes: This table reports estimates of Eq. 1 where covariates are used as the outcome and including entry year cohort fixed effects. Each coefficient comes from a separate regression. Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, ***p < .01)

Table 6 Fall 2018 admissions statistics

Institution name	First-time Freshman Admissions			Transfer Admissions		
	Applicants (1)	Admits (2)	Admit rate (3) (%)	Applicants (1)	Admits (2)	Admit rate (3) (%)
Georgia Institute of Technology	35,612	8037	23	2068	606	29
University of Georgia	26,027	12,659	49	2757	2085	76
Georgia State University	19,838	12,393	62	4687	2947	63
Kennesaw State University	13,427	7779	58	7185	4544	63
Georgia Southern University	11,522	7797	68	2324	1797	77
University of West Georgia	8154	4745	58	1670	1169	70
University of North Georgia	6498	4792	74	1496	1011	68
Valdosta State University	6557	4105	63	1311	1050	80
Columbus State University	3841	2166	56	1417	995	70
Fort Valley State University	3684	1950	53	335	243	73

Notes: The data in this table comes from Common Data Set reports obtained from each institution's website. Only USG institutions who report the Common Data Set on their website are included in the table

Table 7 Estimates with alternative specification choices and bandwidths

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Transfer within 1 year							
Above 3.2 GPA	0.021***	0.022***	0.023***	0.023***	0.017***	0.024***	0.026***
(UGA)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Above 3.0 GPA	0.000	0.001	0.000	0.000	0.000	0.000	−0.000
(Georgia Tech)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Above 2.3 GPA	0.004***	0.005***	0.005***	0.005***	0.004**	0.006***	0.007***
(Georgia State)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Above 2.0 GPA	0.021***	0.021***	0.022***	0.021***	0.021***	0.025***	0.027***
(State/Comp. Univ.)	(0.005)	(0.005)	(0.005)	(0.004)	(0.006)	(0.004)	(0.004)
Panel B. Ever transfer							
Above 3.2 GPA	0.015***	0.017***	0.017***	0.017***	0.010***	0.016***	0.020***
(UGA)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Above 3.0 GPA	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001
(Georgia Tech)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Above 2.3 GPA	0.003	0.004	0.005**	0.006**	0.002	0.007***	0.009***
(Georgia State)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Above 2.0 GPA	0.008	0.010**	0.013***	0.010***	0.008	0.017***	0.019***
(State/Comp. Univ.)	(0.006)	(0.005)	(0.005)	(0.005)	(0.008)	(0.005)	(0.004)
Bandwidth	0.3	0.35	0.4	0.4	0.4	0.45	0.5
Controls				X			
Quadratic					X		

Notes: This table reports estimates from variants of Eq. 1 where alternative specification choices and bandwidths are used. Entry year cohort fixed effects are included in each specification. Controls added in column 4 include controls for race, gender, AGI, high school GPA, SAT score, and initial institution fixed effects. Panel A reports estimates for whether students transfer within 1 year after earning 30 credits to the institution(s) the GPA threshold is relevant for. Panel reports estimates for whether students ever transfer after earning 30 credits to the relevant institution(s). Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, ***p < .01)

Table 8 Donut regression discontinuity estimates

	Institution(s)-specific transfer		Any transfer within USG	
	Within 1 year (1)	Ever (2)	Within 1 year (3)	Ever (4)
Above 3.2 GPA	0.025***	0.018***	0.031***	0.011
(UGA)	(0.002)	(0.003)	(0.005)	(0.007)
N = 94,529	[0.010]	[0.046]	[0.079]	[0.237]
Above 3.0 GPA	0.000	−0.001	0.004	0.009
(Georgia Tech)	(0.000)	(0.001)	(0.005)	(0.007)
N = 90,320	0.005***	0.004*	0.002	0.003
Above 2.3 GPA	0.005***	0.004*	0.002	0.003
(Georgia State)	(0.001)	(0.003)	(0.006)	(0.007)
N = 62,580	[0.007]	[0.028]	[0.087]	[0.215]
Above 2.0 GPA	0.017***	0.010*	0.014***	0.007
(State/Comp. Universities)	(0.004)	(0.006)	(0.005)	(0.007)
N = 46,542	[0.029]	[0.104]	[0.046]	[0.170]

Notes: This table reports estimates from a specific variant of Eq. 1 that uses a sample that excludes students with GPAs at 30 credits exactly equal to multiples of 0.25. Each coefficient is from a separate regression. Entry year cohort fixed effects are included in each specification. The outcome in columns 1 and 2 are transfers to the institution(s) that the minimum transfer GPA is relevant for. The outcome in columns 3 and 4 are transfers to any institution within USG. Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, ***p < .01). Means of the outcomes just below the threshold are reported in brackets

Table 9 Regression discontinuity estimates disaggregated by URM subgroups

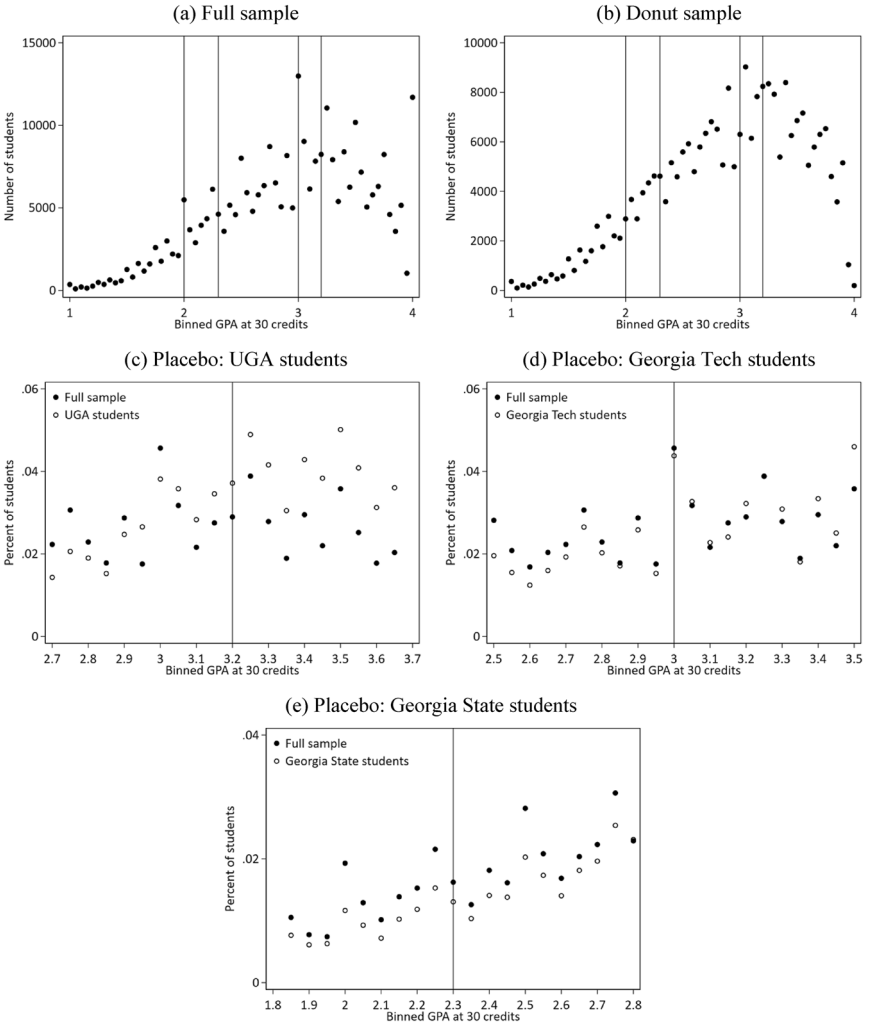
	All URM students (1)	Black students (2)	Hispanic students (3)
Above 3.2 GPA	0.010***	0.005**	0.025***
(UGA)	(0.002)	(0.002)	(0.005)
	[0.015]	[0.014]	[0.003]
N	30,569	23,443	6,782
Above 2.3 GPA	0.004	0.003	0.005
(Georgia State)	(0.002)	(0.003)	(0.006)
	[0.007]	[0.007]	[0.002]
N	29,374	25,004	4091
Above 2.0 GPA	0.025***	0.025***	0.021**
(State/Comp. Univ.)	(0.007)	(0.007)	(0.009)
	[0.030]	[0.032]	[0.013]
N	24,058	20,950	2906

Notes: This table reports estimates of transfer impacts within 1 year of earning 30 credits from Eq. 1, run separately for student groups within the URM subgroup. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. I only show results separately for Black and Hispanic students since Native American students make up a very small share of the sample. Heteroskedasticity robust standard errors clustered at students' GPA at 30 credits is reported in parentheses (*p < .10, **p < .05, ***p < .01). Means of the outcomes just below the threshold are reported in brackets

Table 10 Bachelor's degree completion rates for students near transfer admission threshold at 30 credits

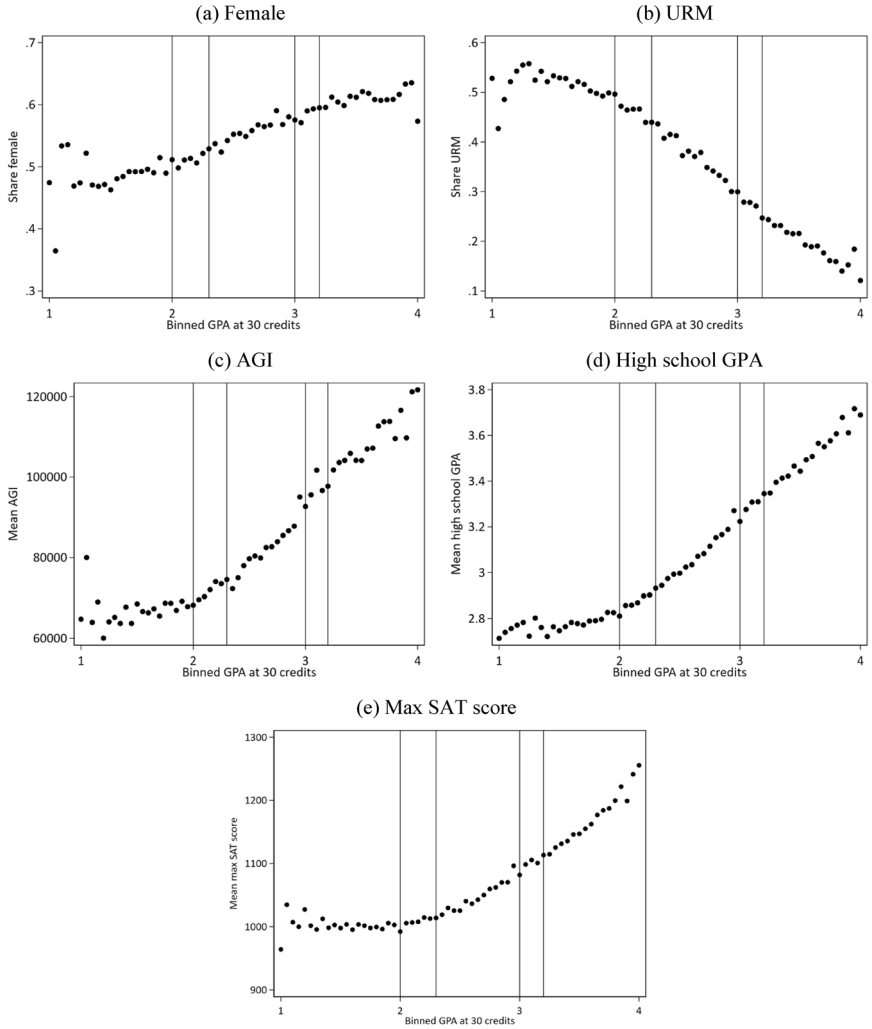
Institution(s)	Students transferring to [institution(s)] (1)	Students not transferring to [institution(s)] (2)	Students already at [institution(s)] (3)
University of Georgia	0.790	0.610	0.905
	(0.005)	(0.002)	(0.002)
	[5686]	[100,628]	[18,968]
Georgia State University	0.421	0.353	0.377
	(0.006)	(0.002)	(0.007)
	[2330]	[66,632]	[4268]
State/Comp. Universities	0.281	0.258	0.336
	(0.006)	(0.002)	(0.003)
	[6342]	[44,383]	[23,656]

Notes: This table reports summary statistics of bachelor's degree completion within 6 years of entering USG by students' transfer status. Means and standard errors are obtained from univariate regressions for each of the relevant populations of students within a 0.4 GPA bandwidth of a given institution's transfer admission threshold at 30 credits. Heteroskedasticity robust standard errors are reported in parentheses (*p < .10, **p < .05, ***p < .01). Number of students are reported in brackets



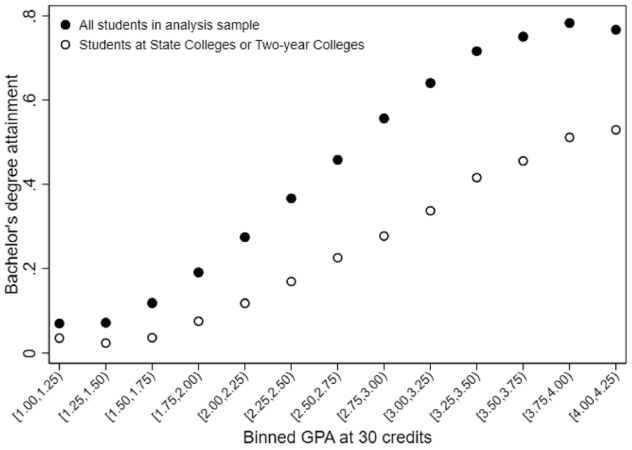
Notes: This figure displays the density of GPAs (in bins of 0.05 GPA points). Panel (a) includes the full sample of students who have earned at least 30 credits. Panel (b) excludes students with GPAs exactly equal to a multiples of 0.25. Panels (c) through (e) compare GPA densities around the institution-specific transfer thresholds between the full sample and students already enrolled in the institution (at 30 credits) for which the transfer threshold is relevant for.

Fig. 7 Density of GPAs at 30 credits



Notes: This figure shows the relationships between covariates and GPAs at 30 credits in bins of 0.05 points. URM stands for underrepresented race/ethnic minority, which includes students who identify as Black, Hispanic, or Native American. Max SAT scores are calculated using SAT or ACT scores, where ACT scores are converted into the SAT scale using official concordance tables. AGI stands for adjusted gross income and is obtained from students' filings of the Free Application for Federal Student Aid.

Fig. 8 Covariate balance



Notes: This figure shows average bachelor's degree attainment rates for groups of students in different GPA ranges measured when students completed 30 credits. Bachelor's degree attainment is defined as receiving a bachelor's degree at a USG institution within 6 years of first entering the USG. The solid dots are averages including students who were enrolled in any USG institution at the time they earned 30 credits. The hollow dots include only those students who were enrolled in an institution that was classified at the time as a state college or two-year college.

Fig. 9 Relationship between GPA at 30 credits and bachelor's degree attainment rate

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Data Availability This paper uses confidential administrative data from the University System of Georgia that were obtained through a restricted data sharing agreement. The author therefore cannot make the data available to other researchers.

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