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Clearing Up Transfer Admissions Standards: Impact on Access and Outcomes

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Students' college choices can affect their chances of earning a degree, but many lack the support to navigate the opaque college application and admissions process. This paper evaluates whether guaranteeing four-year college admissions based on transparent academic standards affected community college students' enrollment choices and graduation rates. Guaranteed admissions increased high-GPA graduates' transfer rates to highly-selective colleges by 30 percent. Increased transfers to highly-selective colleges also accompanied higher graduation rates and lower student debt. Gains were largest for students with historically lower transfer rates. Transparent admissions standards can increase access to selective colleges at low to no cost.

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CLEARING UP TRANSFER ADMISSIONS STANDARDS: THE IMPACT ON ACCESS AND OUTCOMES

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ABSTRACT

Students' college choices can affect their chances of earning a degree, but many lack the support to navigate the opaque college application and admissions process. This paper evaluates whether guaranteeing four-year college admissions based on transparent academic standards affected community college students' enrollment choices and graduation rates. Guaranteed admissions increased high-GPA graduates' transfer rates to highly-selective colleges by 30 percent. Increased transfers to highly-selective colleges also accompanied higher graduation rates and lower student debt. Gains were largest for students with historically lower transfer rates. Transparent admissions standards can increase access to selective colleges at low to no cost.

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1 INTRODUCTION

More college students start at a public community college than any other type of college in the U.S., but they may have the lowest chance of earning a degree (BPS: 12/17; NCES 2020). Community colleges can be an appealing starting point for postsecondary education, given their proximity to students, flexible course schedules, and lower tuition. Yet only about 30 percent of community college students earn an associate degree and 13 percent earn a bachelor's degree on-time, even though 80 percent of entering community college students intend to earn a bachelor's degree (Shapiro et al. 2017; NCES 2017). Nearly half of bachelor's degree recipients attended multiple colleges, highlighting the prevalence of switching colleges before completing degrees (Andrews, Li, and Lovenheim 2014).

One million students switch colleges each year, but few choose selective colleges (Shapiro et al. 2018; Jenkins and Fink 2016). Most transfer to non-selective colleges, which have fewer resources, lower graduation rates, and lower earnings than more selective colleges on average (Hoekstra 2009; Zimmerman 2014; Andrews, Li, and Lovenheim 2016; Dillon and Smith 2018; Andrews, Imberman, and Lovenheim 2020). Even academically qualified students apply to more selective colleges at lower rates (Hoxby and Avery 2013). Transfer students can graduate at similar or higher rates than students who enrolled as freshmen (Xu et al. 2018; Jenkins and Fink 2016; Bowen, Chingos, and McPherson 2009), even at flagship colleges, suggesting academic ability may not be the primary barrier to selective colleges. Rather, the college application and admissions system's complexity, opaqueness, and costs may deter students from considering more selective colleges (Hodara et al. 2016)—particularly when selective colleges reject most applicants (NACAC 2018). Recent research shows that making financial aid application decisions transparent can significantly increase enrollment at selective

public colleges because students value certainty (Burland et al. 2022; Dynarski et al. 2021). Given the similarities between financial aid and selective admissions processes, it is possible that reducing uncertainty in admissions may also affect students' enrollment decisions.

In this paper, I explore whether more students would enroll in highly selective colleges if standards for admissions were clear and transparent. I leverage the introduction of a new policy in Virginia that guaranteed transfer admissions based on recent college performance such as grade point averages (GPA). I explore this question in the context of college transfer students, who appear more likely than high schoolers to apply where they will be accepted (Clinedinst and Patel 2018). Prospective community college transfer students, who are more likely to be lower-income and the first in their families to attend college, often lack access to informal and traditional advising to assess their qualifications and options. Personalized advising and information, however, from peers and family or technology, can affect college choices and outcomes (Altmejd et al. 2021; Oreopoulos and Ford 2019; Castleman and Goodman 2018; Center for Community College Student Engagement 2018; Carrell and Sacerdote 2017; Bettinger et al. 2012). In absence of personalized support and advising, clear and transparent admissions standards may inform students' decisions in an otherwise opaque and complicated college application process.

Starting in the 2006-07 academic year, three selective public colleges in Virginia published admissions standards for community college students based on GPA, courses, and credits. The average transfer students already met or surpassed each highly-selective public four-year's GPA eligibility thresholds at baseline, so the policy made these signals of academic

qualifications transparent and accessible for the first time.[1] By introducing a GPA-based admissions guarantee, Virginia's transfer policy differed from most states' strategy to promote college transfers from community colleges to four-year colleges using articulation agreements, which only guaranteed that associate degree credits counted towards a bachelor's degree. The new admissions policy required no new financial investment to implement or maintain, according to admissions offices. Students could apply to colleges even if they did not meet all the requirements for guaranteed admissions. Virginia's selective four-year public colleges did not concurrently change their college application requirements or introduce new recruitment strategies, making it possible to isolate the effect of clear admissions standards and certainty.

I examine how college transfer, graduation rates, and debt loads changed among community college graduates who are academically eligible when highly selective four-year universities guaranteed admissions based on GPAs. I first use a difference-in-differences (DD) design that compares changes based on variation in students' academic eligibility and graduation year (pre- and post-policy). Then, I examine how these outcomes change using a triple-differences design that incorporates distance to the highly selective four-year universities. I also show that transfer results are robust when using alternative samples that replace graduating cohorts with entering and exiting cohorts of students. The key identifying assumption in the DD model is that there are no contemporaneous shocks that differentially affect students as a function of their GPA and the treatment timing, and that there are no pre-treatment trends. Estimates would be biased if more motivated students increased their GPAs or graduation rates

[1] Unlike the traditional holistic admissions used in the U.S., this new policy resembled a commitment contract for students from any of Virginia's 23 community colleges: if they take the right classes, meet the required grades, and complete their application, then the four-year college will admit them.

to become eligible for the policy or if the policy diverted students from four-year colleges to two-year colleges. I see no evidence of increasing effort for eligibility, as GPA distributions remain stable over time, and there is no increased bunching around the GPA eligibility cut-offs after policy implementation. Event study estimates showed positive effects for the graduating cohort immediately after the policy was announced, which can also assuage concerns that four-year college diversion drove the results.

The intent-to-treat estimates show that clear admissions standards increased eligible community college graduates' transfers to highly selective public four-year colleges by 2.9 percentage points (a 30 percent increase from a base of 9.6 percentage points) and completion there within 3 years of earning their associate degree by 2.2 percentage points (a 32 percent increase from a base of 7.1 percentage points). These results are statistically significant ($p < 0.001$) and robust to regression specifications, controls, eligibility bandwidths, and transfer definitions. Higher-GPA students primarily shifted from regional and private colleges to highly selective public four-years. There is suggestive evidence that transferring to a highly selective public four-year instead of non-selective regional or private colleges increased graduation rates and decreased borrowing, which may be partly influenced by increased access to institutional aid rather than faster time-to-completion. The total enrollment for transfers and non-transfers increased at highly selective public four-years, as did the ratio of transfer to non-transfer students, which implies that college access at highly selective publics expanded.

The primary mechanism for increased transfers to highly selective four-years is likely that transparent admissions standards were salient and reduced uncertainty. First, the guaranteed admissions agreements did not improve college preparation or decrease time-to-completion, so students did not transfer at higher rates because they became more academically qualified or

became more efficient with course-taking. Second, most students did not satisfy all the course requirements to qualify for guaranteed admissions so students primarily responded to the transparent standards by making different application choices, rather than gaining admissions. Finally, heterogeneous treatment effects show that gains were driven by students attending community colleges that had historically lower transfer rates, which suggests that the clear admissions standards may have filled in for advising—particularly because these high-GPA students may have gotten in anyways. Altogether, the evidence suggests that students responded to the transparent guarantee, which not only provided a positive signal about their academic qualifications, but also reduced uncertainty and made the ability to transfer salient.

This paper builds on three literatures. This paper provides new evidence that transparent admissions and reduced uncertainty can affect students' enrollment decisions. The policy change in Virginia offers a new opportunity to test the impact of a salient admissions guarantee on college choices, in absence of personalized outreach, advising, or technology. This study adds to a growing body of literature showing that transparency in admissions and financial decisions, such as Promise programs, can significantly affect college choices (Dynarski et al. 2021; Burland et al. 2022; Bell 2021; Perna, Wright-Kim, and Leigh 2020; Gurantz 2020; Weiss et al. 2019; Denning 2017). This study contributes evidence about the role of college grades in enrollment decisions; there is little evidence on this topic even though studies show that grades affect important decisions, such as dropping out and major selection (Ahlstrom and Asarta 2019; Arcidiacono 2004; Arcidiacono et al., 2014; Stinebrickner and Stinebrickner 2012; Zafar 2011) and students often benchmark their grades against those of their peers (Mulhern, 2020; Hoxby & Turner, 2015). Furthermore, information on financial aid and college returns appear to be more effective when students know they are being contacted because of their academic qualifications

(Hurwitz and Smith 2018; Barr and Turner 2018; Dynarski et al. 2018; Bleemer and Zafar 2018; Blagg 2017; Hoxby and Turner 2014; Cohodes and Goodman 2014). This study introduces new evidence on the effect of transparent admissions standards and guarantees in absence of other incentives and tools.

Second, this study evaluates the impact of using recent *college* academic performance in admissions, rather than traditional *high school* academic standards such as GPA and SATs or ACTs, on college access and success. Non-traditional students may consider their recent college experience and performance most relevant when determining the optimal type and level of education to pursue (Stange 2012). Furthermore, this study shows that students admitted using college GPA can perform well, even if they may have had a low probability of being accepted through traditional freshman admissions based on their high school records. Strategies that have shown potential to address the socioeconomic disparities in college entrance exam performance and participation include encouraging students to (re)take college entrance exams (Bulman 2015; J. Goodman, Gurantz, and Smith 2018; Goodman 2016; Hurwitz et al. 2015) and send scores to more colleges (Pallais 2015)—or for colleges to reweight existing scores (Bettinger, Evans, and Pope 2013). Yet few alternatives to college entrance exams exist besides coordinated admissions programs (Andrews 2016) and high school percent plans, which currently exclude students applying outside of freshman admissions (Black et al., 2020; Black et al., 2015; Bleemer, 2021; Cortes & Lincove, 2019; Daugherty et al., 2014). Furthermore, changes to admissions rules and criteria may not have an impact on later academic outcomes (Grosz 2023). This paper offers new evidence on the potential impact of using recent college performance in admissions.

Finally, this paper also builds on the extensive economics literature on the differences in college quality and selectivity by evaluating how student debt varies by college type. A robust

literature documents how attending more selective institutions can increase graduation rates and earnings (Goodman, Hurwitz, and Smith 2017; Cohodes and Goodman 2014; Zimmerman 2014; Dale and Krueger 2002), particularly at flagship institutions (Andrews, Li, and Lovenheim 2016; Hoekstra 2009). Recent national policies have focused on addressing student debt, but there is limited evidence on how borrowing relates to college choices, even though studies have documented how low-income students usually pay less and receive more instructional resources at selective schools (Hoxby and Turner 2014; Avery 2013; Hill, Winston, and Boyd 2005; Hoxby 2009).

The structure of the paper is as follows. Section 2 describes the details of college transfers and Virginia's guaranteed admissions policy. Section 3 describes the data and summary statistics. Section 4 explains the empirical strategy, section 5 presents the estimated effects of clear admissions standards on transfers and graduation, and section 6 discusses the mechanisms. Section 7 presents robustness checks. Finally, section 8 discusses the results and concludes.

2 BACKGROUND

As more states and communities implement free community college programs, there is more pressure to improve student outcomes, particularly when studies show community colleges may reduce four-year transfer and bachelor's degree completion for some students (Mountjoy 2022; Long and Kurlaender 2009). Given that 80 percent of community college students intend to enroll in a four-year (NCES, 2017), most community college students are considering *where* to transfer rather than *whether* to transfer. However, waiving or reducing community college tuition costs have increased community college graduation rates but barely affected four-year transfer outcomes, suggesting costs alone do not impose barriers to transfer (Weiss et al. 2019;

Denning 2017). While most state transfer policies guarantee that community college credits will count towards a bachelor's degree (ECS 2020), there remains weak to mixed evidence that the incentive to transfer credits improves transfer decisions to four-year colleges and bachelor's degree attainment (Boatman and Soliz 2018; Baker 2016; Roksa and Keith 2008; Anderson, Sun, and Alfonso 2006). This paper shows that these articulation agreements can be more effective when paired with a GPA standard. Since reducing costs and guaranteeing credits alone do not appear to affect college transfer choices, it is possible that students may care more about whether it is worthwhile to undertake the high effort and cost of applying to transfer, particularly given selective colleges' high rejection rates.

Virginia became the first to introduce transparent signals about academic qualifications corresponding to a guarantee in college admissions; the state-wide policy set up clear admissions standards for each four-year institution and a guaranteed acceptance to community college graduates who met those standards. Up until that point, it was difficult for transfer students to assess whether they were academically qualified because transfer-specific admissions and outcomes information were often unavailable, particularly because colleges were not required to collect or report that data (P.L. 107-279; IPEDS, 2019). In the 2005 Higher Education and Restructuring Act, the Virginia legislature directed its public four-year institutions to develop their own transfer guaranteed admissions agreements (GAA) that applied to students in all 23 community colleges starting as early as the 2006-2007 academic year (§ 23-9.2:3.02). Each college therefore published a more transparent and certain admissions process, making it easier for students to find a clear checklist about what classes to take and what grades were necessary

to qualify for admissions at each four-year institution.[2] Since community college graduates still needed to take the SAT or ACT, complete application forms, and pay the application fee, the treatment was disclosure of clearer admissions standards.

While this study may rely on Virginia's policy and data, results can generalize more broadly to other settings and even nationally. Like the U.S., approximately 80 percent of Virginia's college students are enrolled in public institutions and, of those in public colleges, about half are enrolled in community colleges. Transfer students' graduation rates nationally are also comparable to those in this paper's transfer sample (Shapiro 2021). The fraction of Virginia students transferring from public two-year to four-year colleges is the same as the national average and similar to that of neighboring states (Shapiro, 2018), so these results may be informative to other settings. Also like the U.S., over 40 percent of Virginia's black and Hispanic students are enrolled in community colleges. Virginia's four-year institutions range from open access to highly selective, reflecting the set of college choices available to students nationally. Three of Virginia's 15 public four-year institutions are within the nation's top 10 percent of graduation rates and earnings (College Scorecard 2018). These three highly selective public four-year institutions, however, have among the lowest enrollment rates for Pell grant recipients and community college students. At baseline, only 6 percent of community college graduates ever transferred to any of those three highly selective publics.

The three highly selective public four-year institutions were among the first to publish their guaranteed admissions agreements for the 2007 graduating cohort. The main eligibility factors for guaranteed admissions were (1) students' cumulative community college GPA, which

[2] This clear and transparent process may also make it easier for teachers and advisors to guide students. By establishing clear admissions criteria, GAAs may have also streamlined four-year admissions counselors' work in deciding which students to admit.

admissions counselors nationwide consider to be the most important criteria in transfer admissions (Clinedinst and Patel 2018), (2) earning at least 30 or 45 credits in the Virginia Community College System, and (3) completing certain general education courses. Table 1, which outlines the GAA standards by four-year school, shows that the highly selective public four-years required a 3.4 or 3.6 cumulative GPA for guaranteed admissions.[3]

Virginia's academic performance standards and outreach distinguish it from guaranteed admissions in other states and systems. First, many more students qualified for the highly selective public colleges in Virginia than in other states. About 40 percent of community college graduates met the eligibility criteria for admissions to any of the highly selective public four-years based on GPA alone, whereas a much smaller share of students are eligible based on high school class rank for guaranteed admissions in other states like California (top 4 or 9 percent), Florida (top 20 percent), or Texas (top 7 or 10 percent). Moreover, there were few to no other state-wide high school admissions policies that offered eligibility to the full range of four-year schools like Virginia. Finally, Virginia's eligible students did not receive official letters informing them about their eligibility, unlike in Texas and California.

The new admissions standards were announced in newspapers, websites, and admissions blogs. The salient GPA and credit admissions standards were most prominently featured in announcements (Appendix Figure 1). Students could find the specific course requirements if they could locate the guaranteed admissions agreement on four-years' admissions websites, community college websites, or through academic advisors.

[3] GAA eligibility is officially determined by the cumulative GPA at the time of graduation, but the application deadline for transfer students is in the spring. This means that the GPA that universities use when deciding who to admit may differ from the cumulative GPA used to determine GAA eligibility.

3 DATA AND DESCRIPTIVE STATISTICS

The administrative data used in this paper are from State Council of Higher Education for Virginia (SCHEV), the coordinating body for Virginia's public and private higher education institutions. This study's dataset relies on a sample of 58,448 community college graduates from bachelor credit programs between 2004-2014. Community college graduates were eligible for guaranteed admissions agreements in Virginia. Focusing on graduates is also most policy-relevant because other states' transfer agreements typically apply to graduates. Since students can transfer without graduating, I also examine the effects using a sample of entering and exiting cohorts rather than graduates in section 7 and show that results remain similar.

I assembled data on Table 1's Guaranteed Admissions Agreements implementation dates and GPA eligibility requirements using three main sources: 1) the Virginia Community College System's transfer website and staff, 2) LexisNexis searches on Virginia newspapers and policy documents dating back to 2005, and 3) four-year colleges' admissions counselors. Although many GAAs' eligibility course requirements and eligible programs have changed in recent years, the GPA and credit requirements did not change before 2014.

Table 2 presents baseline means from students graduating before any GAA policies went into effect. About 61 percent of community college graduates transferred to any public four-year institution, 55 percent transferred to regional colleges, and 6 percent transferred to highly-selective public four-year institutions. Approximately 90 percent and 79 percent of transfer students earned a bachelor's degree from highly selective public four-years and less selective regional colleges, respectively (Appendix Table 1), suggesting transfer students graduated at high rates from four-year colleges. Since over two-thirds of graduates transferred to a regional college at baseline, and transfer students made up 30 to 50 percent of each regional college's

cohort, we would expect the new admissions standards to have a larger impact on transfer to highly selective public four-years.

At baseline, there were few observable differences between transfer students to regional and highly selective public four-year colleges (Appendix Table 1). About one-fifth of community college graduates who transferred were dependent students, one-quarter were Pell students, and the average age of community college graduation was around 25. Nearly all transfer students were citizens, 60 percent were women, 12 percent were black, 8 percent were Asian, and 5 percent were Hispanic. Compared to the average transfer student, highly selective public four-year transfer students were younger (23 compared to average of 25), more likely to be dependent (28 percent compared to 21 percent), had higher community college GPAs (3.5 compared to average of 3.2), more likely to be men (55 percent compared to 40 percent) and less likely to be black (6 percent, compared to 12 percent).

After four-year colleges publicized admissions standards, the share that transferred to highly selective public four-years increased by 1.5 percentage points (from 6% to 7.5%) whereas the share of regional transfers did not change significantly. Among graduates who met regional colleges' 2.5 GPA threshold, transfer rates to regional colleges barely changed, from 48.5% to 48.8%. The limited change in transfers to regional colleges may be unsurprising, given the higher rate of transfer there among community college students. Although these regional colleges published their admissions standards, this was unlikely to provide a new source of information about academic qualifications because only 16 percent of students did not meet the eligibility criteria for any regional college. Figures 1 A-D plot average transfer by GPA and shows that high-GPA students' transfers to highly-selective public four-years increased, which also contributed to overall increases in public four-year completion rates**.** Students transferred at

higher rates to colleges they qualified for based on GPA, and at lower rates to colleges where they were unqualified. I will test the impact of the clearer transfer admissions standards at highly-selective publics using a difference-in-differences—and robustness checks using a triple-differences design and different samples.

4 EMPIRICAL STRATEGY

4.1 Difference-in-Differences

This paper evaluates whether new information about guaranteed admissions affected students' transfer rates to highly selective public four-years using a differences-in-differences design. The college graduates' GPA and year of graduation determined their eligibility for guaranteed transfer admissions to Virginia's highly selective public colleges.

The first source of variation in GAA eligibility was cumulative GPA. Students with at least a 3.4 cumulative GPA by the time of graduation could have qualified for guaranteed admissions at a highly selective public college. Since only 6 percent of all community college graduates transferred to highly-selective public four-years at baseline, this new admissions policy informed high-GPA students about their qualifications for an expanded set of four-year colleges. Specifically, I code treatment as the percentage of public universities to which the student can be admitted based on GPA. Students with GPAs above 3.6 were eligible for 100 percent of the highly selective publics, whereas those with GPAs between 3.4-3.6 were eligible for two-thirds of them, and those below a 3.4 were eligible for none.

A second source of variation in eligibility for four-year guaranteed admissions was exposure to GAAs based on the timing of students' community college graduation. Community college graduates after 2007 had access to GAAs, whereas those graduating before 2007 did not.

Three highly selective public four-year colleges implemented their GAAs in 2007, so students graduating after that year were exposed to the new transfer admissions standards.[4]

I first compare average transfer and completion rates based on students' GPA (eligible or ineligible) and timing of their graduation (pre-GAA or post-GAA). My primary definition of a transfer student is a community college graduate who enrolls in a four-year institution at least half time starting in a fall semester, though results are robust to different transfer definitions and including non-graduates. [5]

The two-by-two table below in Table 3 illustrates the most basic differences in means among those groups. Table 3's panel A shows the mean transfer and bachelor's degree completion rates for the group labeled, along with the standard errors and sample sizes. Highly selective public four-year transfer and bachelor's degree attainment increased for both GPA-eligible and -ineligible students over time. Eligible graduates' transfer and completion rates increased *more* on average, by 2.8 percentage points (29%) and 2 percentage points (27%), respectively.

I investigate this more rigorously using a difference-in-differences design. The main identifying assumptions for the difference-in-differences approach are that there are no contemporaneous shocks that differentially affect students as a function of their GPA and the treatment timing, and that there are no pre-treatment trends. These effects of clear standards and admissions certainty would be biased if the observed differences in transfer and other outcomes between eligible and ineligible community college graduates captured the effect of other

[4] Although some colleges allowed students to qualify one to two years after graduation, the effect should be small for students who graduated before 2007.
[5] For example, students who started at a four-year college, attended a two-year, and then transferred back to the original four-year institution are not considered transfer students here.

contemporaneous changes that affected transfer and completion. To investigate details about the policy and context, I spoke to admissions deans and counselors from University of Virginia, William and Mary, Virginia Tech, as well as stakeholders from the Virginia Community College System and SCHEV. Admissions offices at the highly selective publics reported no changes in application, fees, or personalized outreach for transfer students that may have coincided with the introduction of the GAAs.

I run the following regression to compare changes for students based on their eligibility and graduation timing including cohort and community college fixed effects:

$$Y_{ist} = c_1 + \beta_1(GAA_t * Eligible_i) + \beta_2 Eligible_i + \delta_{1s} + \gamma_{1t} + \boldsymbol{X}_i + \epsilon_{ist} \qquad (1)$$

where Y_{ist} is the transfer or completion outcome of student *i* who graduated from community college *s* in year *t. Eligible* is equal to the share of highly selective publics that the student could be eligible for based on GPA alone. Specifically, *Eligible* is equal to one if the student has a GPA above 3.6, 2/3 if the student has a GPA between 3.4-3.6, and 0 if the student has a GPA below 3.4. *GAA* is an indicator for whether the student graduated in 2007 or later. δ_{1s} is a community college fixed effect and γ_{1t} is a graduation cohort fixed effect. X_i is a vector of student covariates such as race, gender, cumulative GPA, and Pell status. β_1 is the coefficient of interest, which reflects the average change in transfer and completion rates.

Cohort fixed effects eliminate bias from the possibility that reform timing was connected to coinciding shocks that affected cohorts' transfer and completion, such as costs or aid changes, economic trends, or other educational initiatives. Community college institution fixed effects eliminate bias from time invariant school characteristics. The main specification includes both college and cohort fixed effects so that the GAA eligibility impact is identified using differences in eligibility and graduation dates for cohorts from the same school. Results do not change under

these various specifications. Heteroskedasticity-robust standard errors are clustered by GPA (hundredth of a point) to allow for within-GPA serial correlation in the error term because treatment varies at the GPA-level.

4.2 Event Study

The difference-in-difference estimates may be biased if increased transfer and completion rates were driven by diverting talented students away from starting at four-years and instead starting at community colleges. Since it takes community college students at least two years to three to graduate, seeing increases in transfer and completion for cohorts starting in 2008 may assuage concerns about selection driving the results because the vast majority of these graduates were already enrolled in the community colleges when GAAs' admissions standards were announced. Moreover, we do not want to observe transfer and completion rates trending upwards before GAAs, otherwise the effects may be biased by treatments other than the GAAs' transparent standards and admissions guarantees. Therefore, as a robustness check against selection and pre-trends, I estimate the effects for each individual cohort in equation 2:

$$Y_{ist} = c_1 + \beta_{1t} * \sum_{t=2005}^{2014}(Cohort_{it} * Eligible_i) + \beta_2 * Eligible_i + \delta_{1s} + \gamma_{1t} + \boldsymbol{X}_i + \epsilon_{ist} \qquad (2)$$

In these estimates, I measure the effect of eligibility information for highly selective public four-year for each of the cohorts from 2005 to 2014, compared to the 2004 cohort.[6] The coefficient of interest is β_{1t}, which is displayed for each cohort along with 95 percent confidence intervals in Figures 2 A-B.

[6] Results are similar when using the 2006 cohort as the control group.

5 RESULTS

5.1 Transfer and Bachelor's Degree Attainment

Disclosing admissions standards significantly affected high-GPA students' decisions about where to transfer. Table 4 presents the estimated impacts from equation (1) on transfer choices and completion of a bachelor's degree within three years of an associate degree in columns 1-3 and 4-6, respectively. Each panel displays the transfer and completion results based on different four-year destinations: highly selective public college (panel A), regional college (panel B), private college (panel C), or any public four-year college (panel D).

Table 4, panel A column 2, which shows the preferred specification with cohort and community college fixed effects and controls, shows that clearing up transfer admissions standards increased high-GPA students' highly selective public four-year transfer rates by 2.9 percentage points. This estimate is similar to the unadjusted average change (2.8 percentage points). The 30 percent increase in highly selective public four-year transfer among high-GPA students was accompanied by decreased transfer to public regional colleges by 1.7 percentage points (3.3 percent decrease) and to private four-year institutions by 2 percentage points (16.8 percent decrease), shown in panels B and C, respectively. Panel D shows that overall transfer to any public four year increased by 1.1 percentage points. Since most eligible students at baseline were already transferring to public four-year schools, primarily regional colleges, the increase in overall transfer to public four-year schools was positive but small (1.8 percent).

Effects on transferring to highly selective public four-years remain similar at 3 percentage points (31.6 percent increase) when the sample is restricted to the first 3 cohorts in Panel A, column 3. Panel B, column 3 shows that the substitution away from regional colleges was larger, at 2.9 percentage points (5 percent decrease). Altogether, Panel D, column 3 shows

little effect on overall transfer to public institutions within the first three cohorts (.01 percentage points), suggesting guaranteed admissions' immediate effect was to primarily induce switches from less selective private and regional institutions to selective highly selective public four-years, consistent with Goodman (2016).

Table 4's columns 4-6 show similar effects for bachelor's degree completion within three years of earning an associate degree. GAAs increased high-GPA students' highly selective public four-year completion within three years of earning the associate degree by 2.2 percentage points (panel A, column 2). This 31.7 percent increase in on-time completion is statistically significant and robust to different regression specifications. Completions at regional colleges decreased by 1.1 percentage points (panel B) and at private colleges by 0.5 percentage points (panel C), translating to a 3.2 percent decrease in completion at regional four-years and a 7.7 percent decrease in completion at private colleges. Panel D column 5 shows that earning a degree on-time from any public four-year increased by 1.2 percentage points (2.9 percent), which was likely driven by increased highly-selective public four-year access. Given Virginia's original policy design to increase outcomes in the public higher education sector, I estimate the impacts on *ever graduating* from a public four-year college. Appendix Table 2 shows that ever completing from a public four-year college increased 3.1 percentage points (6 percent increase). Both pre- and post-GAA, transfer students graduated at higher rates at highly-selective public four-years, and estimates showing higher graduation rates at more selective colleges are consistent with other studies (Cohodes and Goodman 2014). The completion effects are similar in direction and magnitude when we restrict the sample to only the first three cohorts pre- and post-policy, though completion rates from a regional four-year, and therefore public four-years, were lower (1.4 percent increase).

Breaking effects out by cohort can further validate that the policy primarily affected eligible students in cohorts after GAAs were available. Figures 2 A-B plot the coefficients from equation 2 for each cohort. First, as expected, Figures 2 A-B show that GAAs had no effect, close to zero, on transfer and completion to highly-selective public four-year institutions for unexposed cohorts in the pre-period. This observation alleviates some concerns about pre-trends. Second, positive effects on highly-selective public four-year transfer and completion started for students graduating in 2008 onwards and continued through 2014. Observing transfer rates increasing as early as one year after policy implementation suggests that results were not driven by diversion from the four-year institutions and selection.

Even if this event study provides support for satisfying the parallel trends assumption, there may still be concerns about unobserved shocks that would have differentially affected high-GPA students even in absence of the GAA. Using Rambachan and Roth's (2022) relative magnitudes restrictions approach to test the sensitivity of the effects to violations of the parallel trends assumption, one can impose that the violation of parallel trends between a pre-treatment and a post-treatment cohort can be no more than some constant *M* times larger than the worst pre-treatment violation of parallel trends. This makes it possible to bound the treatment effects and ask how different the counterfactual trend would have to be from the pre-trends to rule out a positive effect. Appendix Figure 2A and 2B show the robust confidence intervals under different conditions for the first graduating cohort after the GAAs became available (2008) and the third cohort (2010), respectively. The first confidence interval in each figure is the original treatment effect, ruling out a null effect for each of those years. To the right, I plot the confidence interval under conditions of *M* from 0 to 1. Appendix Figure 2A-B show that the confidence intervals continue to exclude 0 up until an *M* of about 0.6 for the 2008 cohort and even beyond an *M* of 1

for the 2010 cohort. In other words, we can rule out a null effect even larger than the maximal pre-treatment violation of parallel trends for 2010. The magnitudes of these violations would be 130 percent of roughly 3 percentage points (3.9 percentage points) for the 2010 cohort and 60 percent of roughly 3 percentage points for the 2008 cohort (1.8 percentage points). This sensitivity analysis lends support for the robustness of the main estimates.

Another concern to check for is the existence of secular trends that differentially affect high-GPA students, such as confounding changes in financial aid. Given concerns about long-run trends that evolve smoothly over time, we can ask how non-linear the difference in trends would have to be between consecutive periods before we cannot reject a null effect (Rambachan and Roth 2022). Appendix figure 2C shows the 95% confidence intervals for the treatment effect estimates under different values of parameter, *M*, the largest slope change allowed between two consecutive time periods. This figure shows that the deviation from linearity required to "break down" the main transfer result would require an *M* of at least 0.01 percentage points.[7] Overall, we can continue to reject a null effect given that non-linearities of this size across consecutive periods were unlikely.

The total number of transfers increased over time, as did the ratio of transfer to non-transfer students, which altogether implies expanded access to four-year colleges (Appendix Figures 3-4). Specifically, Appendix Figure 4 shows that in 2004, transfer students in our sample

[7] If violations of parallel trends were driven by confounding changes in merit-based financial aid, *M* can inform the necessary evolution of those confounds to reject the null. For a rough comparison to interpret magnitudes, Cohodes and Goodman (2014) estimate that the intent-to-treat effect of a $6,856 scholarship targeting regional colleges on highly competitive four-year college enrollment was -0.033 p.p. A value of M = 0.01 p.p. would correspond with allowing the slope of the differential trend to change by roughly $2,078 for high-GPA students at highly competitive four-year colleges across consecutive periods. Such awards this large were rare for this sample and therefore unlikely driving transfer rates during this period.

represented less than 5 percent of each institution's junior class; one decade later, the share of each junior class comprised of transfer students roughly doubled at each four-year college. The policy increased transfers to highly-selective publics by 3 percentage points, which translated to over 10 percent of the junior class. While this may appear to be a large shock for the receiving colleges, absorbing more upperclassmen may be more feasible because there were no requirements to provide on-campus housing for upperclassmen and class size constraints were more pressing for underclassmen. Between 2004 and 2014, the share of transfer students who were on Pell grants increased by more than five times at highly-selective publics and non-white transfer students more than quadrupled there. While these effects are positive and large, most potentially eligible students did not transfer to more selective institutions, pointing to the potential to improve take-up by raising awareness or facilitating transfer through other policies. Overall, these results are consistent with Mulhern's (2020) finding that salient signals of academic qualifications like GPA, which students can readily compare to their own performance, can affect enrollment decisions.

5.2 Debt

Changes in students' college choices may also affect college costs, due to differences in financial aid availability at highly-selective public four-year, regional, and private four-year institutions. Virginia's detailed administrative data on financial aid information made it possible to evaluate differences in total student borrowing during college, and by different college types.[8]

[8] The detailed Virginia administrative data files reflect information that the students submits through the Free Application for Federal Student Aid (FAFSA) and awards disbursed to the student each year they are enrolled. Total debt aggregates the total amount of student borrowing from Perkins loans, Stafford loans, PLUS loans, Title VII loans, Stafford loans, institutional

Given the higher concentration of low-income students at community colleges, I also explore whether the shift in high-GPA transfer students' enrollment from private and regional colleges to highly selective public four-year colleges affected the total debt load that students borrowed.

Table 5 columns 1-6 displays the effects of GAAs on total student debt and aid at the four-year institution in both logs and levels.[9] Comparing Table 5's columns 1 and 2 show that the vast majority of students' total college borrowing occurs at the four-year institution, rather than community college. Panel A column 2 shows that becoming eligible for a highly selective public four-year is associated with a reduced debt load of $1,740 (23.6 percent).

This decrease in debt at highly-selective publics may be in part explained by lower net tuition costs and increased access to institutional aid[10] (as shown in columns 5-6) relative to regional and private colleges, rather than paying fewer semesters' worth of tuition at the four-year institution. For example, most transfer students received no institutional aid at regional and private colleges. Column 5 shows that highly-selective public four-year-eligible students may have gained more access to institutional aid than at private or regional colleges. It is also possible that the debt decreases can also partly be explained by slightly more advantaged students being induced to transfer, as we see non-Pell students transferring at slightly higher rates. Still, the increase in access to institutional aid helps explain, in part, the decrease in debt.

Many states' transfer policies and practices aim to improve the affordability of a four-year college degree by clearly mapping out the courses needed to fulfill four-year course

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loans, private loans, and loans from endowment funds and gifts. The debt variable does not capture other borrowing sources that are unreported through the state or institution.

[9] I transform debt values of zero using the inverse hyperbolic sine including 0 in the domain: $\ln\left(x + \sqrt{x^2 + 1}\right)$. Results remain unchanged when adding 1 before logging or dropping 0's.

[10] Institutional aid includes grants and scholarships from the four-year college and its endowments and gifts.

requirements. Providing students with a clear checklist of community college courses has the potential to reduce redundant course-taking once students arrive at the four-year institution, which may reduce tuition. Although one feature of the GAAs included outlining the community college courses needed to satisfy the general education requirements at the four-year college, and therefore provide a clearer roadmap of courses to reduce any redundancy or delays in graduation at the four-year institution, there was little evidence that community college transfer students became more efficient in terms of time in college or number of credits. In section 6, I show that it was unlikely that GAAs decreased four-year credits or the number of years it took to earn a bachelor's degree, providing additional support that decreased borrowing at highly selective publics was unlikely explained by decreased time or increased efficiency.

5.3 Heterogeneous Treatment Effects

Table 6 shows transfers to and completion at highly selective public four-years increased more for male students (panel A) and graduates from community colleges with low track records of transfers to highly selective public four-years (panel E). Although the differences are not statistically different, GAAs also significantly increased transfer rates to highly selective public four-year colleges for non-U.S. citizens, whose parents likely had very little experience with, and therefore might provide less informal advice about, the American college admissions system. Together, this evidence suggests that clear standards and guaranteed acceptance benefited students who have historically lower rates of transfer and may have less access to informal college advising networks.

Heterogeneous treatment effects also show that the decreases in debt from attending a highly-selective public four-year college were not driven by admitting more higher-income

students into highly-selective public four-years. GAA-eligible Pell grant recipients experienced the largest decrease in four-year debt, reducing their four-year borrowing by over $4,000. The reduction in borrowing, particularly for Pell students who are often the lowest income students, may in part be explained by increased access to more institutional aid, which was more commonly available at highly-selective public four-years. Students who were female, citizens, or attended community colleges with historically high rates of transfer to highly-selective public four-years also decreased their debt at higher rates. This is finding adds to the other studies that also find that credit-constrained students may access more financial support from highly-selective public four-years, which often have more resources, larger subsidies, and larger endowments (Hill, Winston, and Boyd 2005; Hill and Winston 2006).

6 MECHANISMS

Overall, the evidence suggests that clearer admissions standards using GPA, which was most predictive of academic performance and graduation (Appendix Figure 5), increased transfer rates to highly-selective colleges because it reduced uncertainty in admissions and made the ability to transfer salient.

6.1 College Preparation Unlikely to Be the Main Driver of Increased Transfers

If GAAs' checklist of course requirements helped students improve their course-selection and planning, then students may increase transfer rates due to better preparation. However, Table 7 shows that preparation was not the main driver. Students neither reduced the number of credits accumulated at the four-year institution (column 1) nor the time to earn a bachelor's degree (column 2). Columns 3 and 4 also show that students did not decrease math or English course

credits at the four-years even though GAAs outlined these general education pre-requisites. Furthermore, GPA distributions remain relatively stable over time and students did not appear to increase their GPAs for eligibility post-policy (Appendix Figures 6 and 7).

GAAs' role in college preparation was likely weak for two main reasons. First, course requirements were less salient and accessible than GPA thresholds. Although GAAs outlined course requirements, the exact pre-requisites by school were less accessible and not publicized as much as the GPA information. Second, highly-selective public four-years' GAAs required several courses *on top of* the standard requirements for an associate degree, unlike other guarantees based on transfer-specific degrees, which one study showed can improve efficiency in bachelor's degree attainment (Baker, Friedmann, and Kurlaender 2021). Unlike course requirements, which required students to plan ahead, the GPA cut-offs could be immediately used for decision-making. Once students learned that they were academically qualified based on grades, then completing additional elective courses may seem less crucial for their admissions probability.

6.2 Salient Transfer GPA Standards Likely Expanded College Choice Sets

An alternative explanation is that students transferred at higher rates because the highly selective public four-year admitted more students through the guarantee. Admissions behavior is unlikely the primary explanation, as aggregate data from at least one highly selective public four-year shows that the percent of community college students offered admissions did not significantly change post-GAA. Furthermore, several community college administrators and leaders have shared their impressions that students generally fail to complete all the courses

required for a guaranteed acceptance, particularly at highly-selective public four-years[11]. Even the University of Virginia admissions website states that "most of the [Virginia community college] students enrolling at UVA each year are missing something in the agreement and are therefore not coming in under the guarantee plan." Using student-level course enrollment data, I examine the prevalence of transfer students meeting the criteria for a guaranteed acceptance.

Figure 3 shows that even before factoring in course requirements, nearly half of the graduates would have been ineligible for the guaranteed admissions agreements because they did not meet the in-state credit requirements, or they scored less than a B in a core Math or English course. While it is possible that more students fulfilled all requirements for colleges' GAAs and colleges had to admit them, there was a sizable group of transfer students who remained ineligible for a guaranteed acceptance. It is more likely that high-GPA students responded to the transparent and relevant admissions standards, which they could immediately compare against their own GPAs. Furthermore, the event studies show an immediate "effect," suggesting students responded to the transparent and salient admissions standards.

7 ROBUSTNESS CHECKS

7.1 Triple-Differences Design (DDD)

The identifying assumption that eligible and ineligible graduates' outcomes would have evolved similarly over time in absence of GAAs would be violated if, for example, there were increased recruitment efforts at community colleges with more academically prepared eligible

[11] The University of Virginia, for example, lists at least 36-credits worth of requirements in English, foreign language, social sciences, humanities, historical studies, a non-western perspective, science, and math while William and Mary lists at least 21-credits worth of course requirements. Some colleges required a letter of intent a year in advance to transfer through GAAs.

students or better economic opportunities that boosted transfer rates near certain community colleges. To check the robustness of the results, I evaluated the change in transfer for eligible and ineligible students in a context where transferring to highly-selective public four-years was unlikely affected. I incorporate distance to four-year institutions, which played a significant role in transfer decisions. The Virginia community college master plan established colleges to be within 35 miles of most students. At the community colleges farthest from highly selective public four-years, highly selective public four-year transfer rates did not change based on eligibility over time (-0.2 percentage points). I therefore include distance as an additional control in the triple-differences model.[12]

A triple-differences design may offer a more conservative approach because it differences out potentially confounding time-trends within close community colleges and among only eligible students. The identifying assumption for the DDD is that there were no contemporaneous shocks that differentially affected transfer only among eligible students in close schools. Considering that the highly selective public four-years made no intentional change in new recruitment strategies personalized to specific students following GAAs and that all information was publicized state-wide, we should not expect eligible students at close schools to be selectively affected and this identifying assumption is likely satisfied. The triple-differences model is:

$$Y_{ist} = c_1 + \beta_1(GAA_t * Eligible_i * Closeschool_s) + \beta_2(GAA_t * Eligible_i) + \beta_3 Eligible_i + \beta_4 Closeschool_s * Eligible_i + \beta_5 Closeschool_s * GAA_t + \delta_{1s} + \gamma_{1t} + \boldsymbol{X}_i + \epsilon_{ist} \quad (3)$$

[12] Treated community colleges are located within 35 miles of at least one of the three highly selective publics (but no more than 200 miles from any of one the three highly-selective publics). Control colleges are located at least 200 miles away from one of the three highly selective publics (but no less than 35 miles from any of one the three highly-selective publics).

The primary coefficient of interest is β_1, which gives the triple-difference estimate of the effect of GAAs on transfer and other outcomes. This specification captures changes in the eligible group over time (β_2), time-invariant differences between eligible and ineligible students (β_3), time-invariant characteristics of eligible students in close schools (β_4), and changes in the close schools over time (β_5). Like the main difference-in-difference specification, community college fixed effects, graduating year fixed effects, and other student-level controls are included. The DDD design now controls for changes in eligible students' transfer and completion in nearby schools unrelated to GAAs and changes for all students in the nearby schools.

Table 8 shows that eligibility for highly selective public four-years had an even larger effect when comparing students from community colleges within 35 miles of any highly-selective public four-year to those located over 200 miles away (the 90th percentile) from any highly-selective public four-year. The DDD relies on a smaller sample, comparing the difference between eligible and ineligible students within a sample of seven community colleges closest to and farthest from highly-selective public four-years, before and after 2007. The DDD yields estimates that are larger than the DD estimates, with the policy increasing transfer to highly-selective public four-years by 7.1 percentage points and completion at highly-selective public four-year by 4.6 percentage points in columns 1 and 2, respectively. Although there was no effect on bachelor's degree attainment within 3 years of earning the associate degree (column 3), ever graduating from a public four-year increased by 1.5 percentage points (column 4). Debt decreased by over 674 dollars (column 5). The completion and debt coefficients are in the same direction as the DD estimates, but are imprecisely estimated.

There may be a couple explanations why estimates from the DDD for transferring to, and graduating on-time from, highly-selective four-year publics were slightly larger than the DD

estimates. Since the DDD estimates incorporate distance to highly-selective colleges as an additional control, the larger point estimates may be driven by factors associated with fewer barriers to transfer due to the proximity between community colleges and highly-selective publics. For instance, local community college students may not have to physically move (far) before enrolling in the four-year; this minimal change in major living conditions and expenses may help explain why debt effects from the DDD are also smaller. Another possibility is that there may have been better information flow between the four-year institutions and local community colleges, particularly through pre-existing admissions resources (including already established campus information sessions), peers, or faculty.

Appendix Table 3 displays coefficients from three alternative DDD approaches that replace the close school indicators with pre-GAA transfer rates at the community college and log distance to highly-selective public four-years as the interaction terms. Under all three alternative approaches, the transfer rates to highly selective public colleges (column 1) and earning a bachelor's degree from any public four-year college on-time increased (column 3), while debt decreased (column 4). However, the degree completion at highly selective public colleges on-time shows a positive effect only in the triple-differences approach that uses the distance to the closest highly-selective public four-year as an interaction term.

7.2 Regression Discontinuity Design

Since the 3.4 GPA cut-off determined eligibility for guaranteed admissions to highly selective public four-years, a regression discontinuity design (RDD) can offer another robustness check. It should be noted that the RDD model primarily serves as a lower-bound estimate that can confirm the direction of the effects because the GPA running variable used during the

application and admissions process is not observed. A more detailed description is included in the Appendix. The RDD shows highly selective public four-year transfer may have increased (by 1.2 percentage points) in the post-period, similar to the difference-in-differences estimates, though the post-2007 estimates alone are imprecisely estimated and smaller in magnitude. The regression discontinuity plots are shown in Figure 4 and point estimates are shown in Appendix Table 5. Online Appendix Figures 7 and Table 4 show results from the McCrary and covariate balance tests, respectively, to measure the validity of the discontinuity design.

7.3 Robustness to Samples of Entering and Exiting Cohorts

This study relies on a sample of community college graduates, but we may be concerned that limiting the sample to graduates would bias the results (i.e. if the policy also increased community college graduation) or limit external validity (i.e. since nearly half of transfer students enrolled in four-years without graduating from community college). I show that transfer rates to highly selective publics hold up when using samples of entering and exiting cohorts.

I construct exiting cohorts based on the last year of student enrollment in the community college. There is no difference in exiting rates by eligibility group in any year. Appendix Table 6 shows that the highly selective public transfer and completion results using exiting students do not substantively differ from the main findings. Panel A column 2 shows that transfers to highly selective public four-year increased by 0.9 percentage points (32.3 percent increase), and results are similar in column 3 when restricting the sample to the first three cohorts pre- and post-policy. On-time graduation from highly selective public four-years increased by 0.8 percentage points (a 31.5 percent increase). The remaining transfer and completion estimates are imprecisely estimated. Like the main results, transfer rates to regional colleges decreased. Estimates for

private four-year and public four-years, however, are imprecise and show the opposite direction from the main results.

Then, I test whether the results are robust to entering samples. Appendix Table 7 shows that the main findings are similar when using a sample of students who entered community colleges between 2004-2011. Panel A column 2 shows that transfers to highly-selective public four-year increased by 1.6 percentage points (49.4 percent increase), and results are similar when restricting the sample to students who have entered before the Great Recession in column 3 (1.3 percentage points, a 40.7 percent increase). Panel A columns 5-6 show that on-time graduation from highly-selective public four-years increased by 1.4 percentage points (a 59.2 percent increase) and 1.1 percentage points (48 percent increase) for the cohorts who entered before the Great Recession. As with the main results, transferring to any public four-year and on-time completion at any four-year increased. For the entering cohorts, unlike for the graduating cohorts, there were no substitutions away from private and regional four-years; overall transfers and completions increased for all these four-year destinations.

Across the three samples, GAAs increased transfers to highly-selective four-year universities. Transfers increased for graduates by 2.9 percentage points (30 percent), for entering students by 1.6 percentage points (49 percent), and for exiting students by .9 percentage points (32 percent). While the direction of the effects is similar and the percent changes are comparable across samples, there are a couple reasons why the samples produced slightly different effect sizes.

One possible explanation for the different effect sizes is the different composition of students in each of the samples. The graduates are entirely comprised of the small share of students who have satisfied all the degree requirements; these students have navigated the

complex academic system and can enroll as juniors once they transfer to four-year colleges. Even at baseline, they had the highest rates of transfer to every destination measured in this paper: any public four-year, highly selective four-year, to regional four-year, and to private four-years. Guaranteed admissions increased transfers to highly selective colleges the most for graduates, who, in addition to being the primary target for guaranteed admissions, were also the group with the highest GPAs: two key eligibility features of the policy. While the percentage point effect is largest for the graduating sample, the percent change is smallest in magnitude given the high rates of transfer at baseline.

The exiting sample, on the other hand, consists of these graduates, transfer students who did not graduate, and students who have dropped out or stopped enrollment. Given low rates of completion at community colleges, graduates make up a minority of the exiting sample. Unlike the graduating sample, they have the lowest average transfers to every destination of the three samples. While the advantage of including the exiting sample is that it captures students who transferred without graduating, this sample is mostly comprised of students who dropped out or paused enrollment, and therefore are least likely to transfer.

Finally, the entering sample consists of first-time students who are future graduates, drop/stop-out students, and those who continue to enroll. The larger percent increase in transfers to highly-selective publics relative to the graduating sample may be explained by more students becoming informed about and interested in transfers earlier in their education. Cohorts of entering students in this sample did not substitute away from four-year regional colleges to highly-selective publics, in contrast to the graduating sample, particularly the first three cohorts. This may be because of the different types of students who enter versus complete a degree, as described above, and because of earlier awareness. The graduating cohorts, particularly the first

three cohorts, may have had more students who always intended to transfer but primarily changed their choice about where to enroll; when including the full sample of later graduating cohorts, overall public four-year transfers increased. This would be consistent with explanations that increased and earlier awareness induced more transfers, hence the entering cohorts show increased transfers overall and no substitutions. Another related explanation is that there was an increase in transfer rates to private and regional colleges among students who entered but did not complete; the vast majority of the entering sample consists of these students, so we would expect to see an increase among those who decide to transfer directly without graduating first and satisfying all the requirements for guaranteed admissions.

8 DISCUSSION & CONCLUSION

Each year, potentially millions of students with high potential rule out selective colleges because they are uncertain about being accepted or doing well academically. This paper evaluates the impact of reducing admissions uncertainty through clear GPA-based admissions standards on access and outcomes. I study this question for community college students, who often have less access to meaningful information and advising while navigating the opaque college applications and admissions process. This study takes place in Virginia, where 90 percent of community college transfer students at highly selective public four-year institutions graduated, yet only 6 percent transferred there at baseline.

Leveraging a new college admissions policy in 2007, I use a difference-in-differences design exploiting variation in eligibility for guaranteed admissions and timing of community college graduation. I find that clearing up transfer admissions standards and introducing admissions guarantees increased high-performing students' transfer rates to more selective

highly-selective public four-years by over 30 percent, in part due to substitutions away from less selective regional and private colleges. High-GPA graduates' shift from enrolling in regional and private colleges to highly selective public four-years accompanied increased graduation from public four-year institutions by 1.1 percentage points and decreased debt load by $1,740. This no-cost admissions policy was more effective at increasing students' enrollment at selective institutions than personalized college information and tools like Navience, and comparable to another state's Percent Plans (Hoxby and Turner 2014; Cortes and Lincove 2019; Mulhern 2020). GAAs also increased the net share and number of community college graduates earning a bachelor's degree from public four-years.

One possible mechanism for increased transfer is that the transparent admissions guarantee using GPA reduced students' uncertainty about their academic qualifications and increased salience about the ability to transfer. Another possible mechanism is that more selective four-year colleges admitted more students who met the conditions for a guaranteed acceptance. A minority of students met every criteria for the guarantee, suggesting student responsiveness to guaranteed admissions and salient signals of academic qualifications was likely the main mechanism. Positive effects started the first year after the policy introduction, lending additional support for students' responsiveness to the new transparent information rather than changes in guaranteed admissions. Still, both explanations are consistent with the finding that increased transfers to highly selective public four-years were concentrated among students who may have less support to navigate the complex college application process.

Policies that clarify standards for admissions, eliminate consideration of financial need, and provide more certainty about admissions can make it possible for students to assess the immediate payoffs of applying and enrolling. GAAs may have been especially useful to

community college students weighing their four-year options because transfer-specific information is typically unavailable through formal channels (like advisors and free college search tools) and informal channels (like college-educated peers and family members). Making admissions decisions based on transparent standards also streamlines admissions counselors' work and college counselors' advising.

The vast majority of transfer students graduated, particularly at highly-selective public four-years, adding to the large body of work challenging the notion that some students are mis-matched at more selective institutions (Carrell and Sacerdote 2017; Chetty et al. 2017; Cortes and Lincove 2019; Dillon and Smith 2018). Furthermore, a transparent transfer admissions pathway can increase college access for students who may otherwise have a low probability of being accepted through the competitive freshman admissions process because of their high school grades and SAT scores. Consistent with Goodman (2016), this paper shows that more students would attend more selective institutions if they knew they were academically qualified.

Despite the positive impact of guaranteed admissions, most potentially eligible students did not transfer to more selective institutions, even though they may have had a higher chance of graduating and borrowing less. It is possible that effects would be larger if more students were aware of the admissions standards and that they could apply—even if they were not eligible for the guaranteed acceptance. Virginia, unlike other states with guaranteed aid or admissions, did not provide students with any personalized recruitment or letter about the policy and their eligibility. Another possibility is that community college students still face financial, social, or physical barriers to transferring to more selective institutions. Future work that identifies and distinguishes these possible explanations may be informative for expanding college access to historically underrepresented students at more selective institutions.

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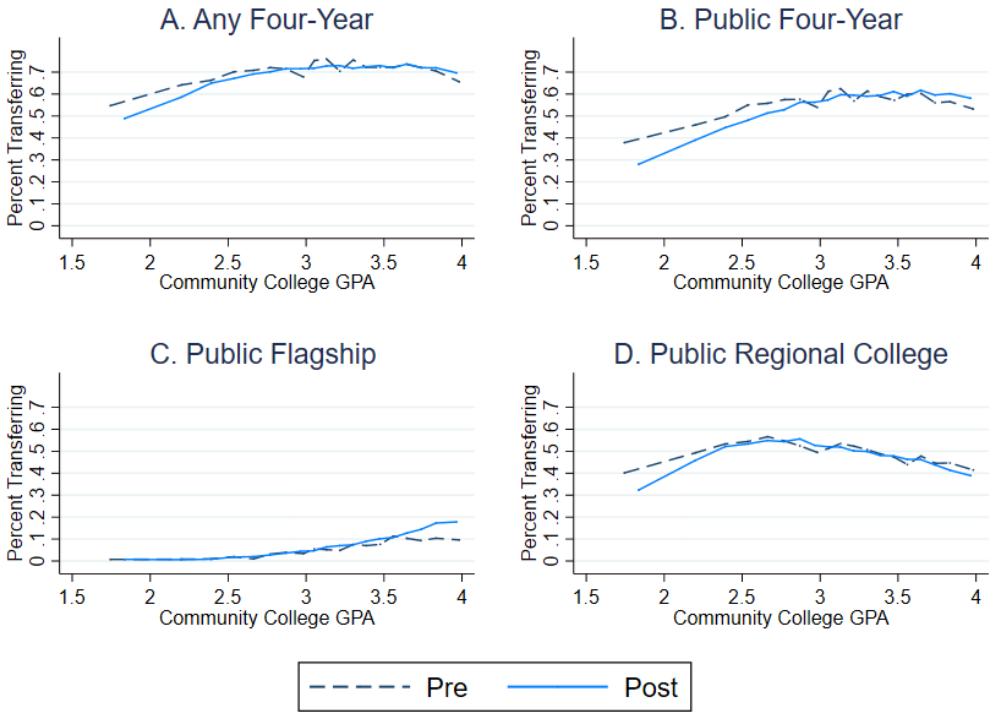
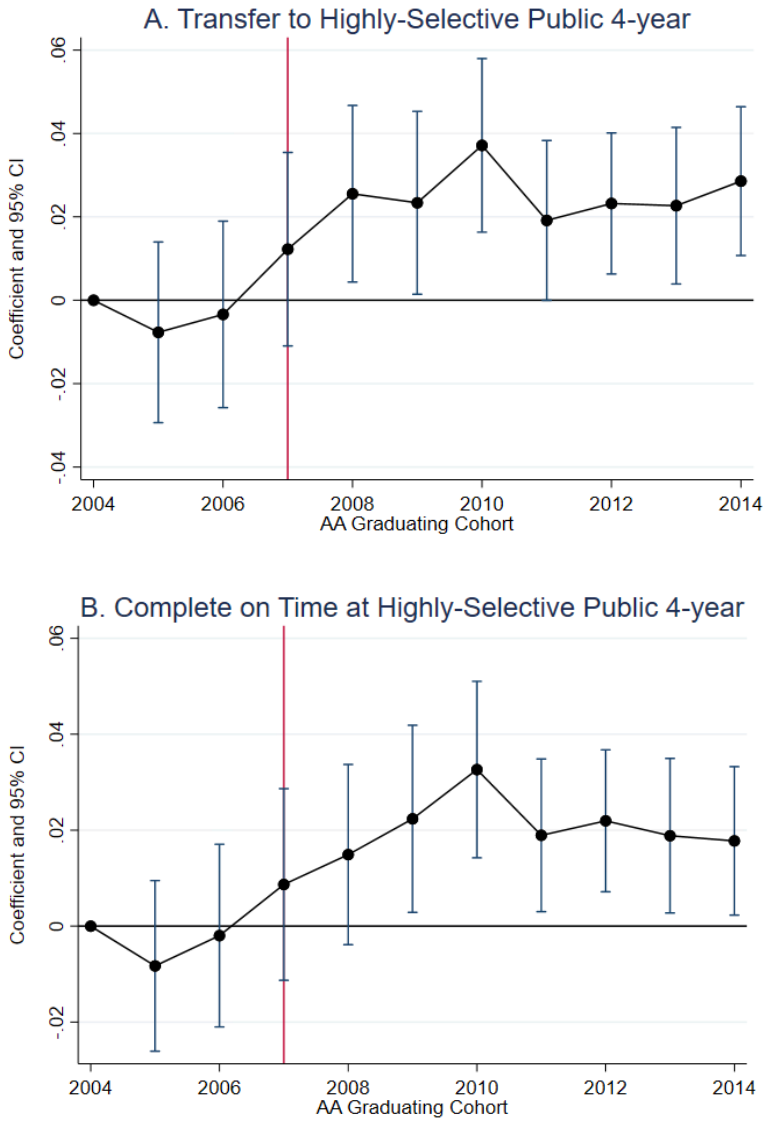
FIGURES AND TABLES

FIGURE 1: CHANGES IN TRANSFER PRE AND POST GAA POLICIES, BY FOUR-YEAR TYPE



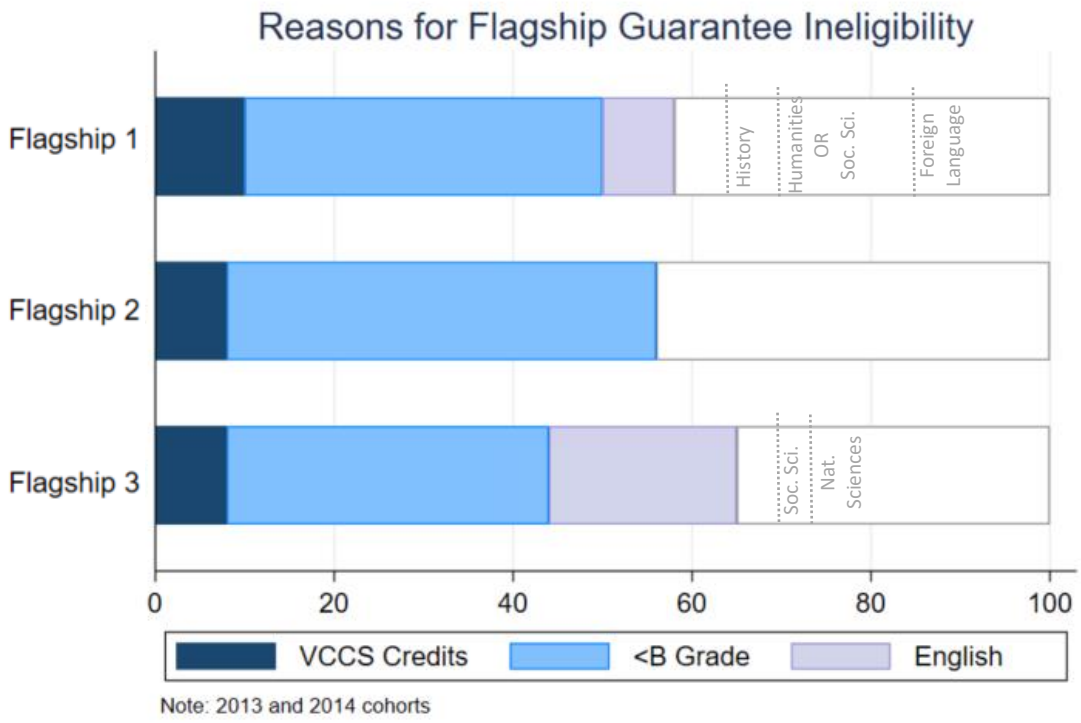
Note: Figures 1A-D display unadjusted plots showing the fraction of community college graduates that have ever transferred to a four-year institution by their cumulative GPA by the time they graduated from a community college. Figure 1A shows the percent of community college graduates that transferred to any four-year institutions by GPA. Figure 1B shows the percent of community college graduates that transferred to any public four-year institutions by GPA. Figure 1C shows the percent of community college graduates that transferred to any highly-selective public four-year institutions, and 1D shows the percent of community college graduates that transferred to a regional four-year institution.

FIGURES 2A-B: EFFECTS ON TRANSFER AND COMPLETION WITHIN 3 YEARS OF AA, BY COHORT



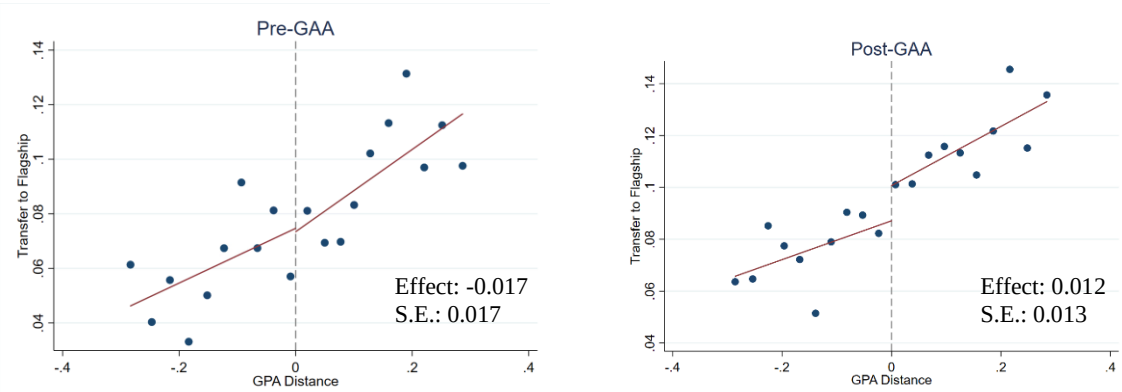
Note: Figures 2A-B display coefficients and their corresponding 95% confidence intervals for the effect of transferring from community college to a highly-selective selective public four-year college and completing a bachelor's degree there within three years of earning an associate degree, respectively. The coefficients result from regression of dependent variables on an interaction of an eligibility indicator and indicator for whether the student graduates after the GAAs are available (2007), the treatment variable, a post-policy indicator, school fixed effects, graduating cohort fixed effects, and a vector of controls for student characteristics: race, Pell status, gender, age, age-squared, citizenship, and grade point average. The treatment variable is the share of highly-selective public colleges that the student is eligible for based on their GPA (0, 2/3, or 1) and the post indicator is graduating on or after 2007. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA by the year of graduation are in parentheses. The red line at 2007 signifies the year GAAs when into effect.

FIGURE 3 – SHARE OF TRANSFERS WHO WERE INELIGIBLE FOR THE GUARANTEE



Notes: The bar graph shows the cumulative proportion of recent transfer students who were ineligible for guaranteed admissions based on three criteria alone: they did not meet the 45 credit minimum in the VCCS system, earned grades below a B in core courses, and did not satisfy English or Literature course requirements. The dashed grey lines show the additional share of students who would be considered ineligible on top of these three criteria, if the additional criteria described in grey represented the fourth criteria.

FIGURE 4—TRANSFERS TO HIGHLY-SELECTIVE PUBLIC COLLEGES



Notes: Lines are fitted values based on equation (4), absorbing year fixed effects and controlling for hispanic, age, pell, age, and citizenship. The dots represent averages of values for each of the 20 GPA distance bins. The sample pre-GAA sample in figure A represents the cohorts graduating between 2004-2006. Figure B includes cohorts graduating between 2008-2011. In both figures, 0 is centered at a cumulative community college GPA of 3.4 by the year of graduation.

TABLE 1—FOUR-YEAR INSTITUTIONS' GUARANTEED ADMISSIONS AGREEMENTS

First Academic Year GAA is Active	Four-Year Institution Name	Qualifying Community College GPA	6-Year Graduation Rate (%)	Enrollment	Fall Admissions Rate (%)
(1)	(2)	(3)	(4)	(5)	(6)
2006	Longwood	2.50	65	3953	74
2007	William & Mary*	3.60	93	6209	37
2007	University of Virginia*	3.40	94	15476	30
2007	Virginia Tech*	3.40	84	25213	71
2007	Virginia Commonwealth Univ.	2.75	57	20264	81
2007	Virginia State University	2.00	44	4023	94
2008	UVA-Wise	2.50	44	1292	78
2008	Radford	2.80	58	8104	81
2009	Univ. of Mary Washington	3.25	72	3859	74
2010	Old Dominion	2.50	50	15003	87
2014	George Mason	2.85	70	19266	81

Notes: Table 1 lists the 4-year higher education institutions in Virginia that participate in Guaranteed Admissions Agreements, which allow community college students a guaranteed acceptance into their institution if they meet that institution's minimum GPA requirement ("Qualifying Community College GPA"). Columns 4-6 provide graduation rate, enrollment, and admissions data for all undergraduates starting in the fall 2006 cohort.
* denotes highly-selective public institution

TABLE 2—BASELINE CHARACTERISTICS IN 2004-2006

	All Community College Graduates (1)
Panel A: Student Characteristics	
Female	0.614
Black	0.135
Hispanic	0.050
Asian	0.079
White	0.728
Other Race	0.009
Average Age by Com. College Graduation	25.71
Citizen at the Start of College	0.978
Had Pell Grant during Community College	0.248
Dependent student	0.183
Maximum Expected Family Contribution	0.161
Cumulative college GPA	3.166
Panel B: Transfer Outcomes	
Ever Transferred to Public 4-yr	0.611
Ever Transferred to Regional 4-yr	0.551
Ever Transferred to Flagship 4-yr	0.060
Ever Transferred to Private 4-yr	0.113
Panel C: Four-Year Outcomes for Transfer Students	
Cumulative GPA at 4-yr	2.965
Ever earned BA from any 4-yr	0.558
Ever earned BA from Public 4-yr	0.478
BA from Public 4-yr within 3 Years of AA	0.341
BA from Private 4-yr within 3 Years of AA	0.052
BA from Flagship within 3 Years of AA	0.041
BA from Regional 4-yr within 3 Years AA	0.300
Years between AA and BA	3.215
Total College Debt ($)	7142
College Debt from Four-Year ($)	6480
College Debt from Four-Year (Log)	2.964
Aid Received from Four-Year (Log)	0.675
N	17164

Notes: Average values of independent and dependent variables are reported for the 2004-06 graduating cohorts.

TABLE 3—EFFECT OF GAA ON TRANSFERS: DIFFERENCE-IN-DIFFERENCES 2X2 FRAMEWORK

	Ever Transfer			BA within 3 Years of AA		
	GPA-Eligible (1)	GPA-Ineligible (2)	Difference (3)	GPA-Eligible (4)	GPA-Ineligible (5)	Difference (6)
Panel A: Transfer to Flagship colleges (3.4 GPA Cut-off)						
Cohorts <2007	0.096	0.048	0.047	0.070	0.028	0.042
	(0.004)	(0.003)	(0.005)	(0.004)	(0.002)	(0.004)
Cohorts ≥2007	0.129	0.053	0.076	0.095	0.032	0.063
	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)	(0.002)
Difference	0.033	0.005	**DD = 0.028**	0.025	0.004	**DD = 0.020**
	(0.005)	(0.004)	**(0.006)**	(0.005)	(0.003)	**(0.005)**

Notes: Each cell shows the mean of transfer and bachelor's degree attainment rates from community college to four-year. Standard errors are in parentheses. Panel A compares the means comparing for students eligible and ineligible for the 3 flagship institutions, which introduced their GAAs with a 3.4 or 3.6 cut-off for the cohorts in 2007. Using GPA bands of 0.5, the GPA-eligible students had a cumulative GPA by graduation between a 3.4-3.9 whereas GPA-ineligible students had a cumulative GPA of 2.8-3.3. Column 3 reports the difference-in-difference estimates for transfer rates to highly-selective public four-years and regional four-years while column 6 reports the estimates for bachelor's degree attainment at flagships and regionals. The sample consists of community college graduates 2004-2014, with 2007 as the start of the post period.

TABLE 4—EFFECT OF GAA ON TRANSFER AND COMPLETION

	Ever Transferred			Completed within 3 Years		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Highly-Selective Public Four-Year						
Eligible x Post	0.034***	0.029***	0.030***	0.026***	0.022***	0.023***
	(0.007)	(0.006)	(0.008)	(0.006)	(0.006)	(0.007)
R-squared	0.057	0.092	0.098	0.045	0.072	0.075
Baseline Mean	0.096	0.096	0.096	0.071	0.071	0.071
Percent Change	0.352	0.304	0.316	0.367	0.317	0.329
Panel B: Regional Four-Year						
Eligible x Post	-0.014	-0.017	-0.029**	-0.006	-0.011	-0.018
	(0.014)	(0.012)	(0.014)	(0.013)	(0.011)	(0.012)
R-squared	0.049	0.078	0.076	0.027	0.055	0.053
Baseline Mean	0.534	0.534	0.534	0.333	0.333	0.333
Percent Change	-0.027	-0.033	-0.054	-0.017	-0.032	-0.053
Panel C: Private Four-Year						
Eligible x Post	-0.022***	-0.020***	-0.020**	-0.005	-0.005	-0.005
	(0.007)	(0.007)	(0.008)	(0.006)	(0.006)	(0.006)
R-squared	0.065	0.072	0.075	0.042	0.046	0.047
Baseline Mean	0.117	0.117	0.117	0.062	0.062	0.062
Percent Change	-0.185	-0.168	-0.173	-0.088	-0.077	-0.079
Panel D: Any Public Four-Year						
Eligible x Post	0.019	0.011	0.001	0.020	0.012	0.006
	(0.016)	(0.012)	(0.012)	(0.014)	(0.011)	(0.012)
R-squared	0.028	0.100	0.095	0.026	0.082	0.078
Baseline Mean	0.631	0.631	0.631	0.403	0.403	0.403
Percent Change	0.030	0.018	0.001	0.050	0.029	0.014
Observations	58449	58448	29826	58449	58448	29826
Cohort FE	YES	YES	YES	YES	YES	YES
School FE	YES	YES	YES	YES	YES	YES
Controls	NO	YES	YES	NO	YES	YES
3 Cohorts Pre/Post	NO	NO	YES	NO	NO	YES

Notes: Columns 1-3 report the average effects of eligibility for guaranteed admissions at selective public four-year colleges on ever transferring while columns 4-6 report the effects on completing a bachelor's degree within three years of earning an associate degree. Each panel shows the effects for different four-year destinations; for example, columns 1-3 in Panel A shows the impact of ever transferring to a highly-selective public four-year. Dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is community college graduates with a 2.8-3.9 GPA. Note that Panel C's completion results show different percent changes despite the same coefficient; these percent change differences are due to rounding. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 5—EFFECT OF GAA ON DEBT AND INSTITUTIONAL AID

	Total College Debt (1)	Debt at Four-Year (2)	Total College Debt (log) (3)	Total Debt at Four-Year (log) (4)	Total Inst. Aid at Four-Year (5)	Total Inst. Aid at Four-Year (log) (6)
Eligible x Post	-1,740.257***	-1,445.916***	-0.641***	-0.584***	422.326***	0.135**
	(425.600)	(366.740)	(0.170)	(0.148)	(92.802)	(0.067)
Observations	58448	58448	58448	58448	58448	58448
R-squared	0.082	0.058	0.134	0.101	0.046	0.076
Baseline Mean	7369.571	6694.987	3.457	3.216	747.499	0.956
Percent Change	-0.236	-0.216	-0.185	-0.182	0.565	0.141

Notes: Columns 1-6 report the average effects of eligibility for flagship GAAs on dependent variables in the columns. Panel A shows results from equation (1) based on eligibility for a highly-selective public four-year. These dependent variables in columns 1-6 are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. The sample is community college graduates with a 2.8-3.9 GPA. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

TABLE 6—HETEROGENEOUS TREATMENT EFFECTS

	Transferred to Highly-Selective Public (1)	BA at Highly-Selective Public within 3 years of AA (2)	Debt accumulated at four-year college (3)
Panel A: By gender			
Female Eligible x Post	0.020***	0.018**	-2,093.820***
	(0.007)	(0.006)	(465.168)
Male Eligible x Post	0.044***	0.028***	-601.445
	(0.011)	(0.010)	(513.292)
P(Female = Male)	0.061	0.368	0.001
Panel B: By race			
White x Post	0.031***	0.023***	-1299.872***
	(0.007)	(0.005)	(454.380)
Non-White x Post	0.025**	0.020**	-1,576.039**
	(0.012)	(0.011)	(607.405)
P(White = Non-White)	0.661	0.744	0.626
Panel C: By citizenship			
Citizen x Post	0.029***	0.021***	-1,524.518***
	(0.007)	(0.006)	(440.217)
Non-Citizen x Post	0.058**	0.059***	1,865.838*
	(0.024)	(0.021)	(962.828)
P(Citizen = Non-Citizen)	0.229	0.076	0.000
Panel D: By Pell Status			
Pell x Post	0.016	0.016*	-4,902.034***
	(0.011)	(0.009)	(564.144)
Non-Pell x Post	0.035***	0.025***	-43.043
	(0.007)	(0.007)	(370.861)
P(Pell = Non-Pell)	0.103	0.375	0.000
Panel E: By Schools' Flagship Transfer Record			
High Flagship Record x Post	-0.002	0.008	-3,733.070***
	(0.017)	(0.015)	(711.927)
Low Flagship Record x Post	0.031***	0.023***	-871.590**
	(0.007)	(0.007)	(434.409)
P(High = Low)	0.092	0.337	0.000

Notes: Columns 1-4 report the average effects of GAA eligibility on transferring to a highly-selective public, completing there on-time, and the total debt accumulated at a four-year institution. In each panel, the dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Each panel interacts this specification with indicators for the panel categories. Panel A introduces an interaction by gender, panel B by race, panel C by citizenship, panel D by Pell Status, and panel E by community college transfer track record. Each panel also reports the p-value tests whether the two coefficients are statistically different. The sample is community college graduates with a 2.8-3.9 GPA. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 7—EFFECT OF GAA ON FOUR-YEAR CREDITS AND TIME-TO-COMPLETION

VARIABLES	Four-year Credits (1)	Years between AA and BA (2)	Math Credits at Four-Year (3)	English Credits at Four-Year (4)	Earn an AA (5)
Eligible x Post	0.952	0.151***	0.131	0.090	0.003
	(0.671)	(0.058)	(0.171)	(0.227)	(0.011)
Observations	38525	32705	38525	38525	226,976
R-squared	0.054	0.047	0.027	0.019	0.098
Baseline Mean	43.267	3.004	2.077	3.325	0.227
Percent Change	0.022	0.050	0.063	0.027	0.015

Notes: Columns 1-4 report the average effects of eligibility for flagship GAAs on dependent variables specified in each of the columns. These dependent variables in columns 1-5 are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. The first row of column 1 displays the impacts on credits that students accumulated at the four-year institution whereas column 2 displays the coefficient for the number of years between earning an associate degree and bachelor's degree. Columns 3 and 4 display the impacts on math and English credits, respectively, accumulated at the four-year institution. Column 5 displays the coefficient for the share of leaving community college students between 2004-2014 who earned an associate degree. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA by the year of graduation are in parentheses in columns 1-4. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

TABLE 8—TRIPLE-DIFFERENCES DESIGN RESULTS

	Transfer to Highly-Selective Public	BA at Highly-Selective Public within 3 years of AA	BA at Any Public Four-Year within 3 years of AA	Ever Earned BA from Public Four-Year	Debt at Four-Year
	(1)	(2)	(3)	(4)	(5)
Eligible x Post x Close School	0.071**	0.046*	0.000	0.015	-674.418
	(0.029)	(0.024)	(0.044)	(.044)	(1,269.691)
Observations	15983	15983	15983	15983	15983

Notes: Columns 1-5 report the average effects of eligibility for GAAs on dependent variables specified in each of the columns. These dependent variables are regressed on an interaction of attending a close school, a treatment variable, and indicator for whether the student graduates after the GAAs are available; an interaction of attending a close school and a treatment variable; a treatment variable, interaction of eligibility indicator and post; interaction of attending a close school and post, eligibility based on GPA, school fixed effects, graduating cohort fixed effects, and a vector of controls for student characteristics. The treatment variable is the share of highly-selective publics the student is eligible for based on GPA (0, 2/3, or 1) and the post indicator is graduating on or after 2007. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA by the year of graduation are in parentheses. The close school indicator is defined by whether the student lives within 35 miles of a highly-selective public and no more than 200 miles of any other highly-selective public. The indicator is a 0 for schools located 200 miles away from a highly-selective public and no less than 35 miles from another. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

APPENDIX A—REGRESSION DISCONTINUITY DESIGN

GAA eligibility is officially determined by the cumulative GPA at the time of graduation, but the application deadline for transfer students is in the spring.[13] This means that it is possible that the GPA that students use when deciding to apply, and therefore the GPA that universities use when deciding who to admit, may differ from the final GPA used for GAA eligibility. We might then expect the GAA effects to be strongest for students whose GPAs are farther from the cut-off. While this limits the accuracy of using cumulative GPA as the running variable in the RDD, this additional approach may provide an additional source of information to test the effects.

The RDD identifies the local average treatment effect of admissions standards clarity and guaranteed acceptance by comparing marginally eligible and ineligible students, following other higher education studies observing discontinuities at GPA cut-offs (Mulhern 2020; Andrews 2016; Zimmerman 2014). Using a local linear regression, I estimate the impact of GAA eligibility at highly-selective public four-years using:

$$Y_{ist} = c_1 + \beta_1 Eligible_{ist} + \beta_2 Distance_{ist} + \beta_3 (Eligible_{ist} * Distance_{ist}) + \epsilon_{ist} \quad (4)$$

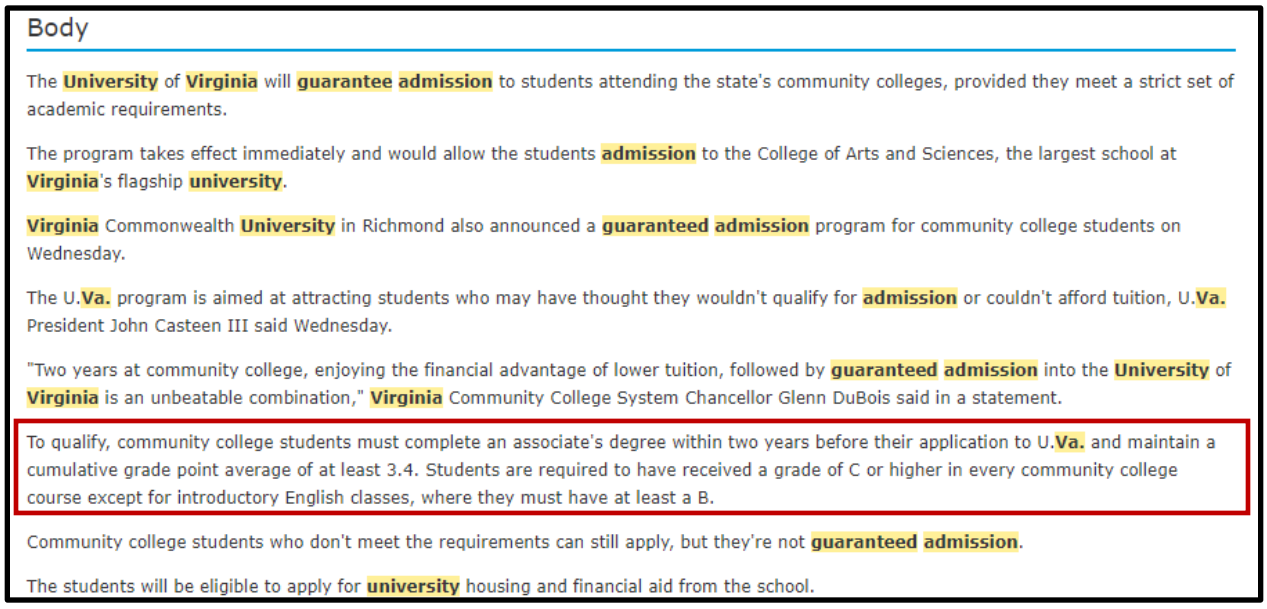
where $Eligible_{ist}$ is an indicator for whether the community college graduate meets the 3.4 GPA cut-off for guaranteed admissions at highly selective public four-years. The causal effect of GAA on the outcomes of interest in transferring to and completing at highly selective public four-years, Y_{ist}, can be estimated by β_1. $Distance_{ist}$ is the running variable, the points away from meeting the 3.4 GPA threshold. The model uses optimal bandwidths following Calonico et al. (2020). The covariate balance tests in Appendix Table 4 show that there are discontinuities at the cut-off associated with gender for regional transfer and Hispanic (positive) and Asian (negative) for probability of highly selective public four-year transfer, so the regression specification will control for student characteristics.

[13] There is also a Fall deadline, but only a minority of students apply and gain transfer admissions in the Fall.

APPENDIX B—ADDITIONAL FIGURES AND TABLES

APPENDIX FIGURE 1—SCREEN SHOT OF FLAGSHIPS' NEWSPAPER ANNOUNCEMENT EXCERPTS

A. UNIVERSITY OF VIRGINIA



Body

The **University** of **Virginia** will **guarantee admission** to students attending the state's community colleges, provided they meet a strict set of academic requirements.

The program takes effect immediately and would allow the students **admission** to the College of Arts and Sciences, the largest school at **Virginia**'s flagship **university**.

Virginia Commonwealth **University** in Richmond also announced a **guaranteed admission** program for community college students on Wednesday.

The U.**Va.** program is aimed at attracting students who may have thought they wouldn't qualify for **admission** or couldn't afford tuition, U.**Va.** President John Casteen III said Wednesday.

"Two years at community college, enjoying the financial advantage of lower tuition, followed by **guaranteed admission** into the **University** of **Virginia** is an unbeatable combination," **Virginia** Community College System Chancellor Glenn DuBois said in a statement.

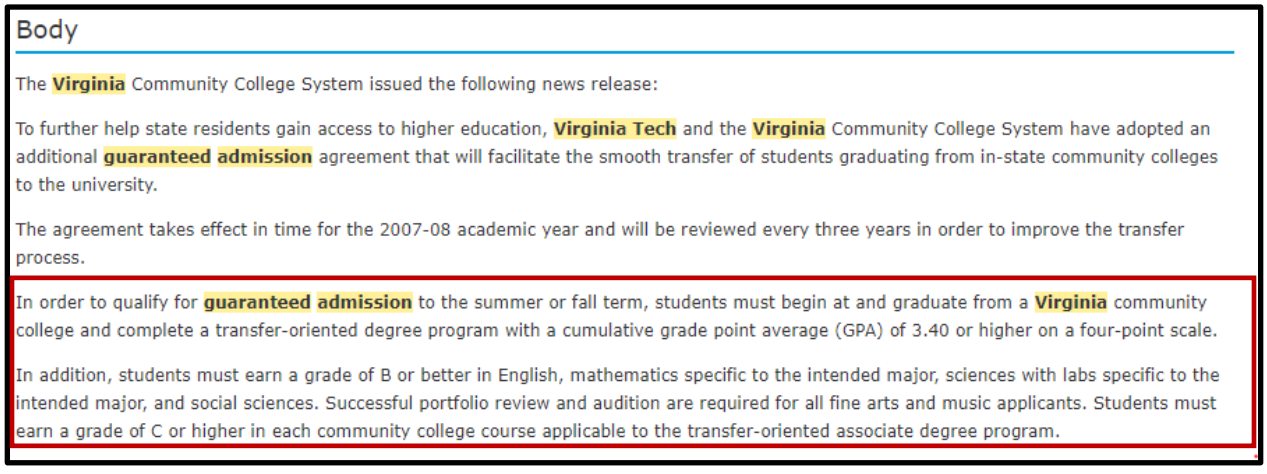
To qualify, community college students must complete an associate's degree within two years before their application to U.**Va.** and maintain a cumulative grade point average of at least 3.4. Students are required to have received a grade of C or higher in every community college course except for introductory English classes, where they must have at least a B.

Community college students who don't meet the requirements can still apply, but they're not **guaranteed admission**.

The students will be eligible to apply for **university** housing and financial aid from the school.

Source: US States News. (April 12, 2006 Wednesday). U.Va. to offer guaranteed admission program. The Associated Press State & Local Wire.

B. VIRGINIA TECH



Body

The **Virginia** Community College System issued the following news release:

To further help state residents gain access to higher education, **Virginia Tech** and the **Virginia** Community College System have adopted an additional **guaranteed admission** agreement that will facilitate the smooth transfer of students graduating from in-state community colleges to the university.

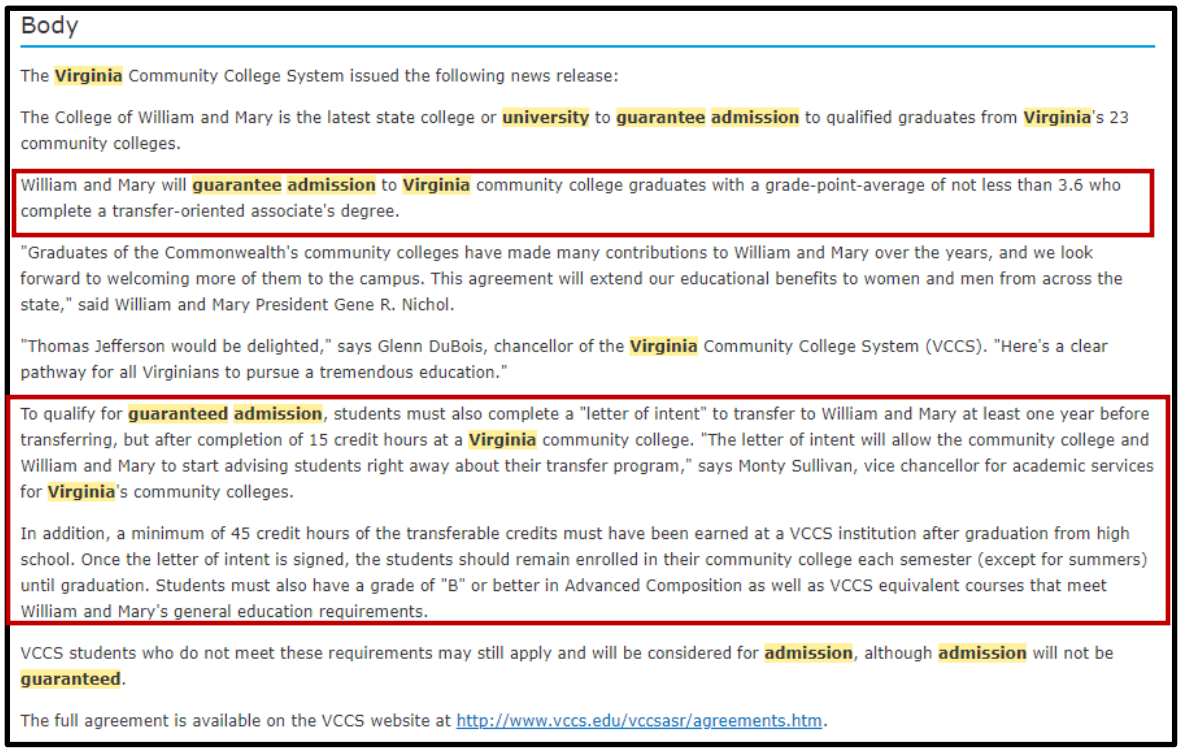
The agreement takes effect in time for the 2007-08 academic year and will be reviewed every three years in order to improve the transfer process.

In order to qualify for **guaranteed admission** to the summer or fall term, students must begin at and graduate from a **Virginia** community college and complete a transfer-oriented degree program with a cumulative grade point average (GPA) of 3.40 or higher on a four-point scale.

In addition, students must earn a grade of B or better in English, mathematics specific to the intended major, sciences with labs specific to the intended major, and social sciences. Successful portfolio review and audition are required for all fine arts and music applicants. Students must earn a grade of C or higher in each community college course applicable to the transfer-oriented associate degree program.

Source: Us Fed News. (July 24, 2007 Tuesday). Virginia's Community Colleges Announce Broader Guaranteed Admission Agreement With Virginia Tech. Us Fed News.

C. WILLIAM & MARY



Body

The **Virginia** Community College System issued the following news release:

The College of William and Mary is the latest state college or **university** to **guarantee admission** to qualified graduates from **Virginia**'s 23 community colleges.

William and Mary will **guarantee admission** to **Virginia** community college graduates with a grade-point-average of not less than 3.6 who complete a transfer-oriented associate's degree.

"Graduates of the Commonwealth's community colleges have made many contributions to William and Mary over the years, and we look forward to welcoming more of them to the campus. This agreement will extend our educational benefits to women and men from across the state," said William and Mary President Gene R. Nichol.

"Thomas Jefferson would be delighted," says Glenn DuBois, chancellor of the **Virginia** Community College System (VCCS). "Here's a clear pathway for all Virginians to pursue a tremendous education."

To qualify for **guaranteed admission**, students must also complete a "letter of intent" to transfer to William and Mary at least one year before transferring, but after completion of 15 credit hours at a **Virginia** community college. "The letter of intent will allow the community college and William and Mary to start advising students right away about their transfer program," says Monty Sullivan, vice chancellor for academic services for **Virginia**'s community colleges.

In addition, a minimum of 45 credit hours of the transferable credits must have been earned at a VCCS institution after graduation from high school. Once the letter of intent is signed, the students should remain enrolled in their community college each semester (except for summers) until graduation. Students must also have a grade of "B" or better in Advanced Composition as well as VCCS equivalent courses that meet William and Mary's general education requirements.

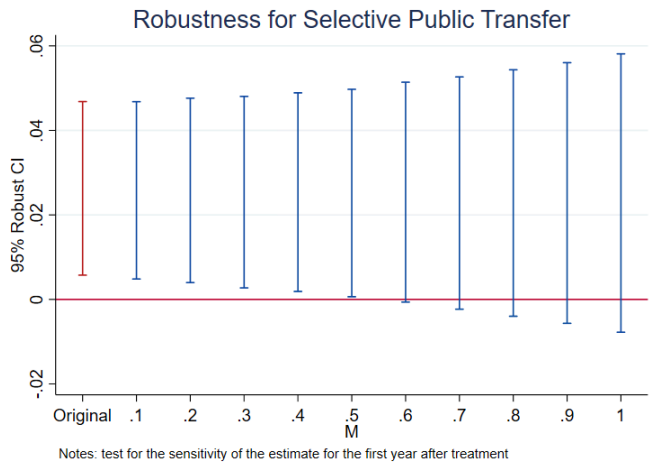
VCCS students who do not meet these requirements may still apply and will be considered for **admission**, although **admission** will not be **guaranteed**.

The full agreement is available on the VCCS website at http://www.vccs.edu/vccsasr/agreements.htm.

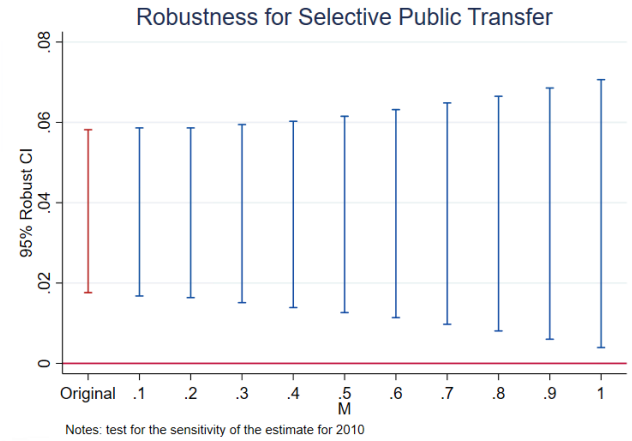
Source: US States News. (June 2, 2006 Friday). College Of William And Mary To Guarantee Admission To Virginia Community College Graduates.

APPENDIX FIGURE 2—SENSITIVITY ANALYSIS

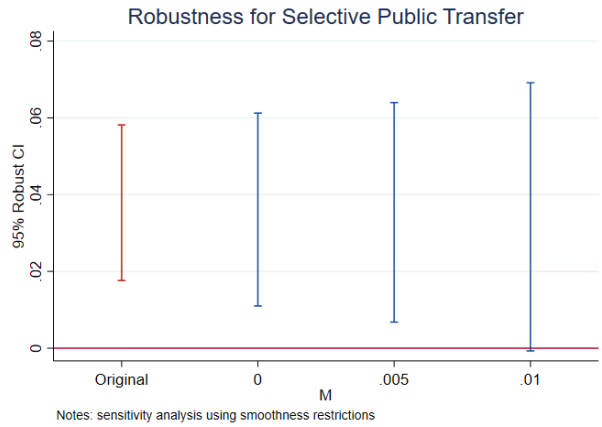
A.



B.

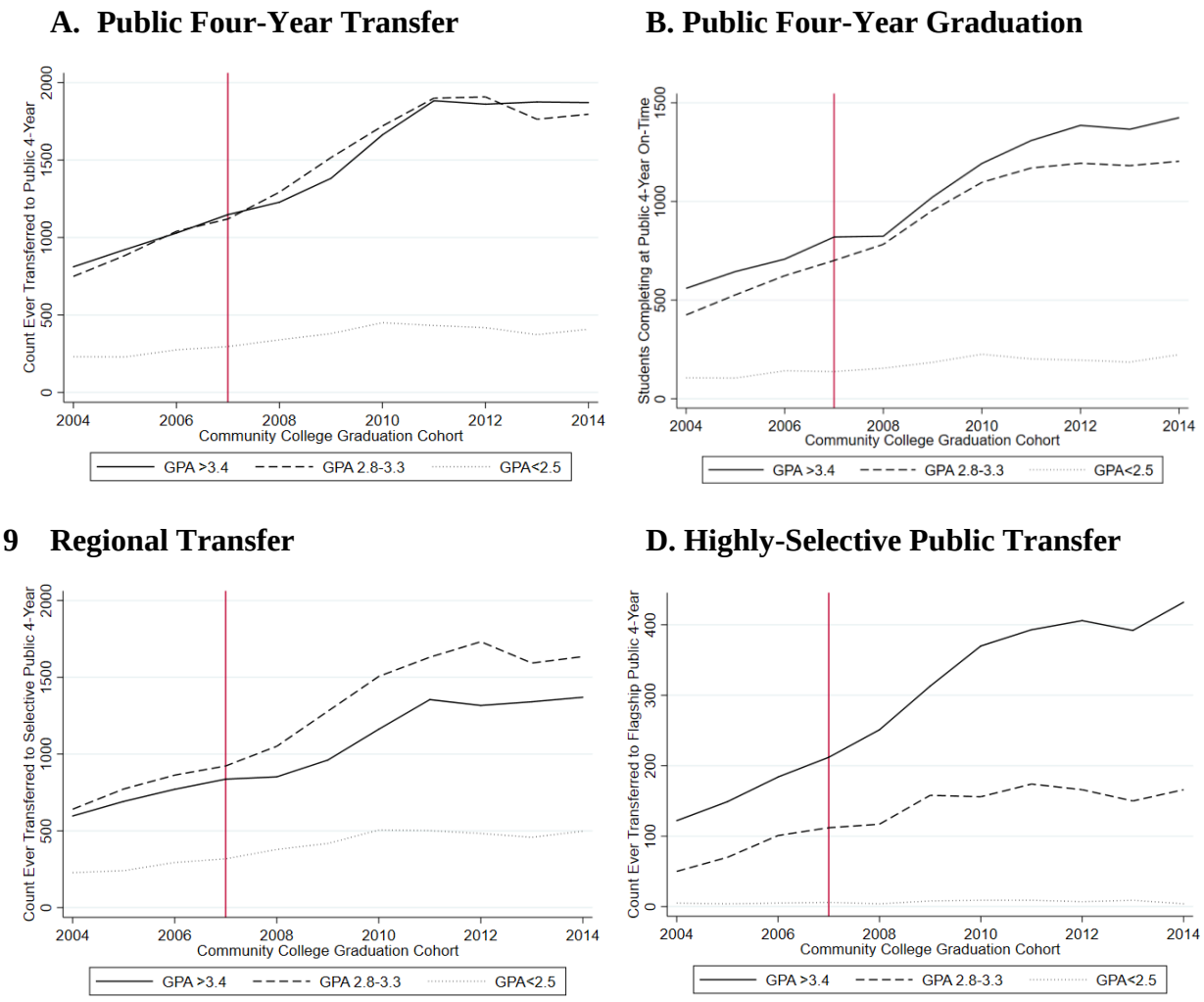


C.



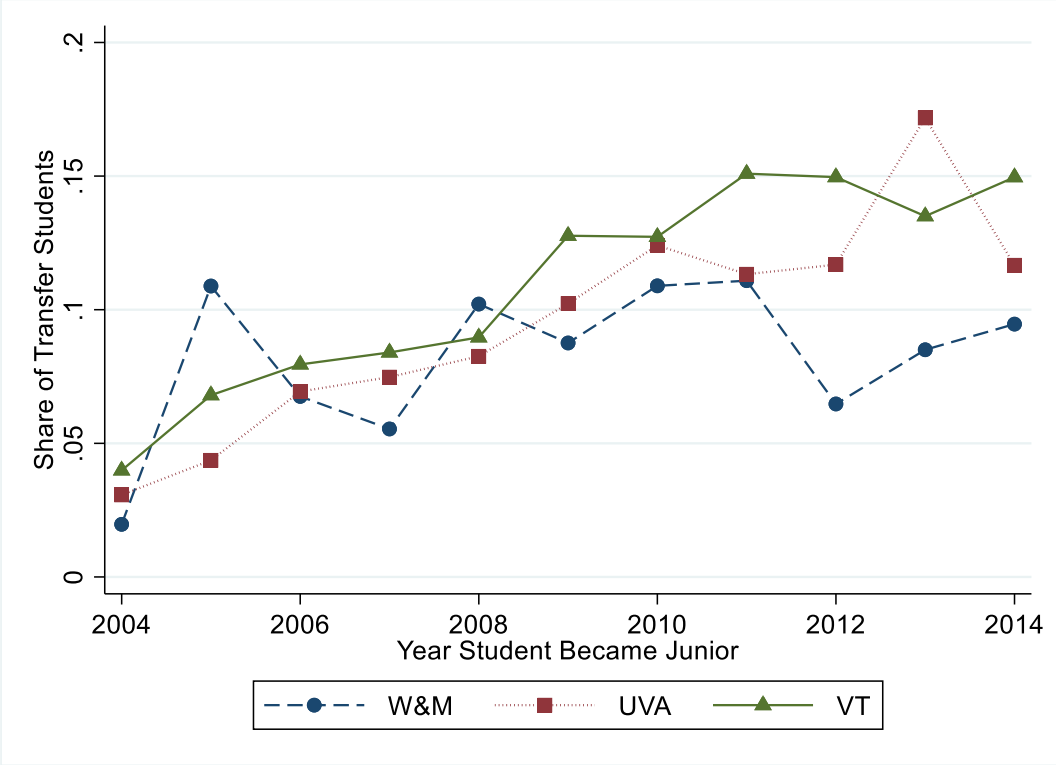
Figures A-C display the sensitivity analysis by constructing robust confidence sets under varying assumptions on the class of possible violations of parallel trends. The red confidence interval in A and B represent the event study coefficient for cohorts graduating in 2008 and 2010, respectively, after the GAA policy. The remaining blue confidence intervals represent potential different values of M.

APPENDIX FIGURE 3—TOTAL TRANSFER DESTINATIONS, BY ELIGIBILITY



Notes: These figures plot the total number of community college graduates who transferred to (or completed at) different institution types by college cohort and eligibility group. Figure A's dependent variable is all public 4-year institutions. Figure B's outcome is to regional public 4-year institutions. Figure C displays transfer totals for only the highly-selective public 4-year institutions.

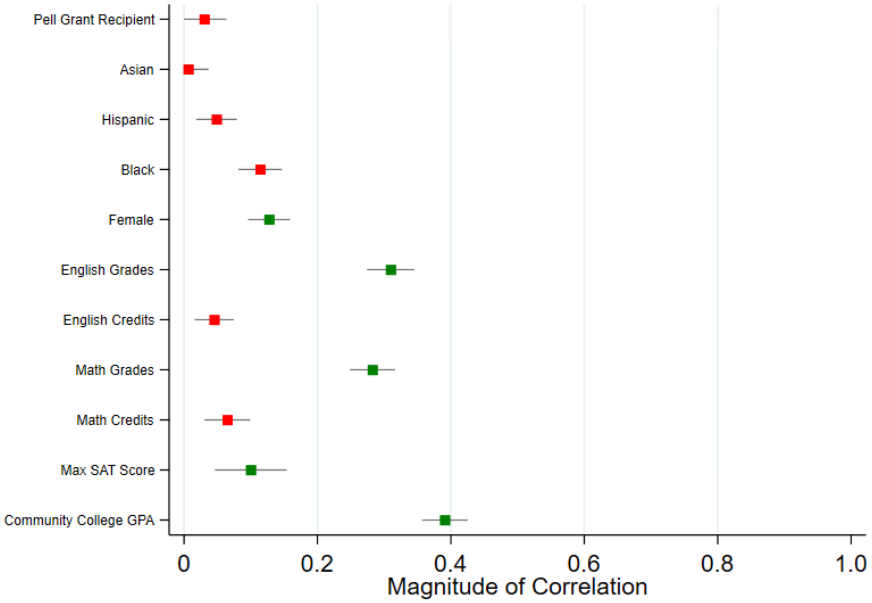
APPENDIX FIGURE 4—RATIO OF TRANSFER TO NON-TRANSFER STUDENTS PER COHORT



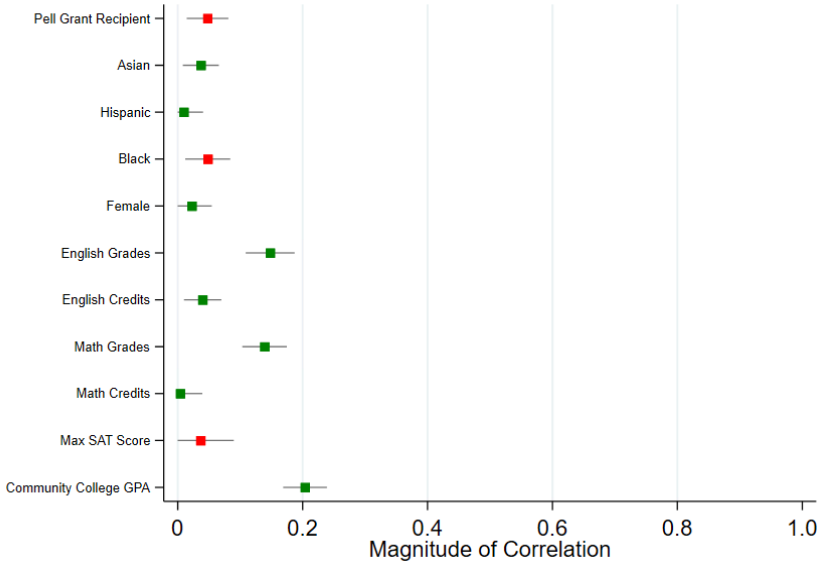
Notes: This figure plots the ratio of transfer to non-transfer junior students enrolling in each of the flagship institutions by cohort. For example, 2004 plots the ratio of community college graduates transferring to a flagship against those who became juniors in 2004 at the same institution.

APPENDIX FIGURE 5—PREDICTORS OF FLAGSHIP GPA AND COMPLETION

A: Predictors of GPA at a Highly-Selective Public Four-Year

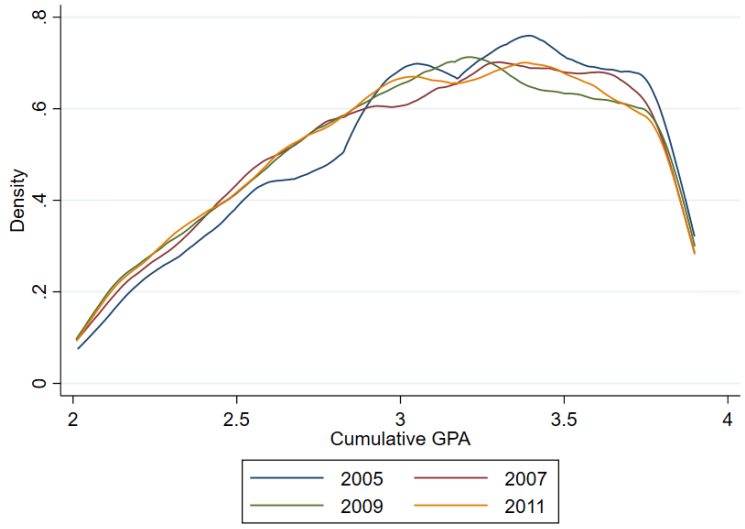


B: Predictors of BA Completion at a Highly-Selective Public Four-Year



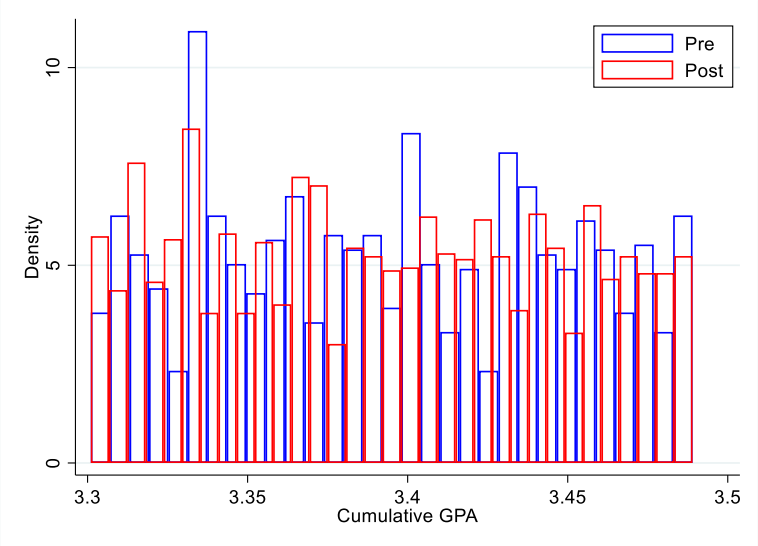
Notes: A and B show pairwise correlations between the variables on the Y axis and GPA at the highly-selective public institution (A) and ever completing a bachelor's degree there (B). The sample is restricted to community college graduates without missing SAT data.

APPENDIX FIGURE 6—GPA DISTRIBUTIONS BY COHORT



Notes: The distributions of GPA ranging from 2.0 to 4.0 are displayed for students in the graduating cohorts 2005, 2007, 2009, and 2011

APPENDIX FIGURE 7—MCCRARY TESTS FOR THE CUT-OFFS, PRE- AND POST-GAA



Notes: The density of observations along the cumulative GPA distribution between 3.3 to 3.5 are displayed for the pre-policy graduating cohorts (2004-2006) and post-policy graduating cohorts (after 2007)

APPENDIX TABLE 1—TRANSFER CHARACTERISTICS AT BASELINE (2004-2006)

	Transfer Anywhere (1)	Transfer to Public Four-year (2)	Transfer to Regional (3)	Transfer to H.S.P (4)	Transfer & Complete at H.S.P (5)
Panel A: Student Characteristics					
Female	0.601	0.576	0.606	0.453	0.448
Black	0.124	0.119	0.132	0.057	0.044
Hispanic	0.046	0.050	0.054	0.033	0.036
Asian	0.080	0.089	0.095	0.081	0.095
Other Race	0.008	0.008	0.010	0.003	0.001
Age by AA Graduation	24.63	24.32	24.95	22.99	22.49
Citizen by the Time Started College	0.992	0.992	0.992	0.988	0.987
Had a Pell Grant during CC	0.261	0.251	0.251	0.260	0.244
Dependent	0.213	0.213	0.190	0.277	0.291
Maximum Expected Family Contribution	0.167	0.155	0.154	0.175	0.155
Community College GPA by AA Graduation	3.201	3.207	3.145	3.513	3.578
College Debt from Four-Year	9562	9054	8579	10062	9058
Panel B: Transfer Outcomes					
Miles between Community College and Public 4-yr	43.57	43.23	37.29	95.55	95.49
Ever earned BA from any 4-yr	0.865	0.879	0.785	0.901	1
Earned BA from Public 4-yr within 3 Years of AA	0.529	0.620	0.537	0.696	1
Earned BA from Flagship 4-yr within 3 Years of AA	0.064	0.075	0.001	0.682	1
Earned BA from Regional 4-yr within 3 Years of AA	0.382	0.447	0.509	0.012	0
N	11080	9454	8269	1024	698

Notes: This table presents mean values for each of the samples labeled in columns 1-5. H.S.P. stands for highly-selective public four-year institution. The sample includes community college graduates from cohorts 2004-2006.

APPENDIX TABLE 2—IMPACTS ON EVER COMPLETING A B.A. AT A PUBLIC FOUR-YEAR

	(1)	(2)	(3)
Eligible x Post	0.041**	0.031**	0.017
	(0.017)	(0.013)	(0.013)
Observations	58449	58448	29826
R-squared	0.034	0.100	0.089
Baseline Mean	0.522	0.522	0.522
Percent Change	0.078	0.060	0.033
Cohort FE	YES	YES	YES
School FE	YES	YES	YES
Controls	NO	YES	YES
3 Cohorts Pre/Post	NO	NO	YES

Notes: Columns 1-3 report the average effects of eligibility for guaranteed admissions at selective public four-year colleges on ever completing a bachelor's degree at a public four-year institution in Virginia. An indicator for whether the student earned a B.A. from a public four-year is regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is community college graduates with a 2.8-3.9 GPA. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX TABLE 3—TRIPLE-DIFFERENCES EFFECTS ON TRANSFER AND COMPLETION RATES

	Transfer to Highly-Selective Public (1)	BA at Highly-Selective Public within 3 years of AA (2)	BA at Any Public Four-Year within 3 years of AA (3)	Debt at Four-Year (4)
Panel A: Pre-GAA Transfer Rates				
Eligible x Post x Transfer	0.113	-0.018	0.290	-16,157.954**
	(0.200)	(0.168)	(0.234)	(7,322.534)
Panel B: Distance to Closest Highly-Selective Public				
Eligible x Post x Close	0.146	0.062	0.069	-4,716.299
	(0.099)	(0.081)	(0.106)	(3,147.171)
Panel C: Average Distance to All of the Highly-Selective Publics				
Eligible x Post x Distance	0.004	-0.001	0.028	-1,489.503*
	(0.020)	(0.017)	(0.026)	(774.635)
Observations	58448	58448	58448	58448

Notes: Columns 1-4 report the average effects of eligibility for GAAs on dependent variables specified in each of the columns. These dependent variables are regressed on an interaction of the variable specified in each panel, a treatment variable, and indicator for whether the student graduates after the GAAs are available; an interaction of the variable specified in each panel and a treatment variable; a treatment variable, interaction of eligibility indicator and post; an interaction of the variable specified in each panel and post, eligibility based on GPA, school fixed effects, graduating cohort fixed effects, and a vector of controls for student characteristics. The treatment variable is the share of highly-selective publics the student is eligible for based on GPA (0, 2/3, or 1) and the post indicator is graduating on or after 2007. Heteroskedasticity robust standard errors are clustered by cumulative community college GPA by the year of graduation are in parentheses. In Panel A, the third interaction term is the pre-2007 transfer rate at the community college. Panel B's third interaction term is the log distance to the closest highly-selective public college. Panel C's third interaction term is the average distance to all of the Highly-Selective Public colleges *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

APPENDIX TABLE 4—COVARIATE BALANCE TEST

VARIABLES	Female (1)	Black (2)	Hispanic (3)	Asian (4)	Age (5)	Pell (6)	Citizen (7)
GAA Eligible	-0.009	-0.008	0.026**	-0.020*	0.090	0.024	0.028**
	(0.022)	(0.015)	(0.011)	(0.012)	(0.412)	(0.022)	(0.012)
Observations	8568	8568	8568	8568	8568	8568	8568

Notes: The table above shows regression discontinuity coefficients for GAA eligibility based on GPA. Heteroskedasticity robust standard errors clustered at cumulative community college GPA are in parentheses. Each column reports these results by racial gender, racial group, age, pell grant recipient status, and U.S. citizenship status. The sample consists of the 2008-2011 community college cohorts. The dependent variable is defined as ever transfer to flagship college.

APPENDIX TABLE 5—REGRESSION DISCONTINUITY ESTIMATES

	Main	Controls	All Post Cohorts	BW=0.1	BW=0.3	Donut RD	Pre-Period
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GAA Eligible	0.012	0.012	0.010	0.009	0.014	0.042	-0.017
	(0.013)	(0.012)	(0.008)	(0.018)	(0.010)	(0.048)	(0.017)
Observations	8568	8568	18668	4320	12599	4248	3994
Cohort FE	YES	YES	YES	YES	YES	YES	YES
Controls		YES	YES	YES	YES	YES	YES
All cohorts			YES				

Notes: The table above shows regression discontinuity coefficients for GAA eligibility. Heteroskedasticity robust standard errors clustered at cumulative community college GPA are in parentheses. Each coefficient on transfer eligibility is generated by local linear regression using a bandwidth +/-0.2 GPA points from the GPA eligibility cutoff. The sample consists of the 2008-2011 community college cohorts, with the exception of column 7, which reports results for cohorts in 2004-2006. The dependent variable is defined as ever transfer to flagship college.

APPENDIX TABLE 6—EFFECT OF GAA ON TRANSFER AND COMPLETION FOR EXITING COHORTS

	Ever Transferred			Completed within 3 Years		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Selective Public Four-Year						
Eligible x Post	0.006***	0.009***	0.006**	0.006**	0.008***	0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R-squared	0.017	0.037	0.037	0.015	0.034	0.034
Baseline Mean	0.029	0.029	0.029	0.026	0.026	0.026
Percent Change	0.222	0.323	0.205	0.215	0.315	0.207
Panel B: Regional Public Four-Year						
Eligible x Post	-0.025*	-0.014	-0.015	-0.010*	-0.003	-0.004
	(0.014)	(0.012)	(0.009)	(0.006)	(0.004)	(0.004)
R-squared	0.039	0.087	0.081	0.026	0.059	0.052
Baseline Mean	0.137	0.137	0.137	0.072	0.072	0.072
Percent Change	-0.180	-0.099	-0.112	-0.144	-0.047	-0.062
Panel C: Private Four-Year						
Eligible x Post	-0.000	0.001	0.001	0.003	0.003*	0.004**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
R-squared	0.017	0.020	0.023	0.008	0.010	0.011
Baseline Mean	0.036	0.036	0.036	0.014	0.014	0.014
Percent Change	-0.006	0.019	0.030	0.186	0.237	0.273
Panel D: Any Public Four-Year						
Eligible x Post	-0.018	-0.004	-0.009	-0.005	0.004	-0.000
	(0.015)	(0.012)	(0.010)	(0.006)	(0.004)	(0.004)
R-squared	0.037	0.105	0.097	0.027	0.074	0.066
Baseline Mean	0.166	0.166	0.166	0.093	0.093	0.093
Percent Change	-0.110	-0.026	-0.057	-0.052	0.047	-0.000
Observations	226976	226976	124518	226976	226976	124518
Cohort FE	YES	YES	YES	YES	YES	YES
School FE	YES	YES	YES	YES	YES	YES
Controls	NO	YES	YES	NO	YES	YES
3 Cohorts Pre/Post	NO	NO	YES	NO	NO	YES

Notes: Columns 1-3 report the average effects of eligibility for guaranteed admissions at selective public four-year colleges on ever transferring, by different four-year destinations (specified by the panel). Columns 4-6 report the effects on completing a bachelor's degree within three years of earning an associate degree. Dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is students exiting the community college with a 2.8-3.9 GPA. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX TABLE 7—EFFECT OF GAA ON TRANSFER AND COMPLETION FOR ENTERING COHORTS

	Ever Transferred			Completed within 3 Years		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Selective Public Four-Year						
Eligible x Post	0.014***	0.016***	0.013***	0.012***	0.014***	0.011**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
R-squared	0.020	0.043	0.043	0.015	0.032	0.030
Baseline Mean	0.033	0.033	0.033	0.023	0.023	0.023
Percent Change	0.439	0.494	0.407	0.537	0.592	0.480
Panel B: Regional Four-Year						
Eligible x Post	0.004	0.012	0.013	0.008	0.012	0.014
	(0.015)	(0.013)	(0.015)	(0.009)	(0.008)	(0.009)
R-squared	0.028	0.099	0.091	0.020	0.056	0.050
Baseline Mean	0.231	0.231	0.231	0.108	0.108	0.108
Percent Change	0.017	0.052	0.056	0.071	0.108	0.130
Panel C: Private Four-Year						
Eligible x Post	0.005	0.005	0.005	0.005*	0.006**	0.006*
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
R-squared	0.031	0.035	0.038	0.014	0.017	0.018
Baseline Mean	0.074	0.074	0.074	0.036	0.036	0.036
Percent Change	0.068	0.068	0.062	0.150	0.156	0.162
Panel D: Any Public Four-Year						
Eligible x Post	0.018	0.028*	0.026	0.020	0.025**	0.025**
	(0.019)	(0.016)	(0.019)	(0.013)	(0.011)	(0.013)
R-squared	0.028	0.125	0.114	0.022	0.074	0.066
Baseline Mean	0.264	0.264	0.264	0.131	0.131	0.131
Percent Change	0.069	0.107	0.100	0.152	0.192	0.190
Observations	154490	154490	87877	154490	154490	87877
Cohort FE	YES	YES	YES	YES	YES	YES
School FE	YES	YES	YES	YES	YES	YES
Controls	NO	YES	YES	NO	YES	YES
Pre-Recession (Cohorts 2004-08)	NO	NO	YES	NO	NO	YES

Notes: Columns 1-3 report the average effects of eligibility for guaranteed admissions at selective public four-year colleges on ever transferring, by different four-year destinations (specified by the panel). Columns 4-6 report the effects on completing a bachelor's degree within three years of earning an associate degree. Dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2004), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is students entering the community college between 2004-2011 and who have earned GPAs between 2.8-3.9. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX TABLE 8—COMPOSITION CHANGES FOR THE GRADUATING SAMPLE

	female	Black	Hispanic	Asian	Race: other	age	Pell	citizen
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Main Graduates Sample								
Eligible x Post	-0.016	0.016**	-0.009*	0.001	0.000	-0.415	-0.028	-0.021***
	(0.012)	(0.008)	(0.005)	(0.007)	(0.002)	(0.356)	(0.018)	(0.004)
Panel B. Main Graduates Sample Cohorts until 2010								
Eligible x Post	-0.006	0.016*	0.000	0.001	0.001	-0.050	-0.026	-0.008
	(0.013)	(0.009)	(0.006)	(0.008)	(0.002)	(0.340)	(0.018)	(0.005)
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
School FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	NO	NO	NO	NO	NO	NO	NO	NO

Notes: Columns 1-8 report the effects of GAA eligibility on the composition of students using characteristics described in each header. These dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is community college graduates with a 2.8-3.9 GPA. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX TABLE 9—ROBUSTNESS TO INCLUDING THE FULL SAMPLE

	4-Year Transfer Destinations				Completing Within 3 Years of AA			
	Highly Selective Public	Regional	Any Public	Private	Highly Selective Public	Regional	Any Public	Private
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Eligible x Post	0.045***	0.002	0.046***	-0.025***	0.033***	0.017*	0.050***	-0.007*
	(0.009)	(0.009)	(0.012)	(0.005)	(0.007)	(0.009)	(0.013)	(0.004)
Observations	95024	95024	95024	95024	95024	95024	95024	95024
R-squared	0.102	0.074	0.103	0.071	0.083	0.058	0.096	0.040
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
School FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES
3 Cohorts Pre/Post	NO	NO	NO	NO	NO	NO	NO	NO

Notes: Columns 1-8 report the effects of GAA eligibility on the composition of students using characteristics described in each header. These dependent variables are regressed on an interaction of a treatment variable and indicator for pre- or post-GAA (2007), treatment (which is the share of highly-selective publics the student is eligible for based on GPA: 0, 2/3, or 1), school fixed effects, cohort fixed effects, and student characteristics: race, Pell, gender, age, age-squared, citizenship, and grade point average. Heteroskedasticity robust standard errors clustered by GPA are in parentheses. The sample is all community college graduates between 2004-2014. *** p<0.01, ** p<0.05, * p<0.1.