Title: A Better Path to Opportunity? The Value of Four-Year Public Colleges for Disadvantaged Students

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Background/Context

Historically, state and federal support for four-year public colleges has been driven by the goal of making an accessible path to college for the non-wealthy. Although state educational appropriations for colleges have fallen on a per-student basis over the last twenty years, these institutions still provide the only affordable four-year option to many students (SHEEO, 2019). At the same time, the college wage premium has been rising steadily since the 1980s, as the supply of college graduates has not kept pace with demand (Goldin & Katz, 2008). Today, a bachelor's degree is increasingly viewed as a gatekeeper to a higher quality of life and a path to mobility for those coming from disadvantaged backgrounds.

A nationwide study of colleges' effects on intergenerational income mobility found that colleges with the highest bottom-to-top income quintile mobility rates were mid-tier public institutions (Chetty, Friedman, Saez, Turner, & Yagan, 2017). These institutions enroll larger shares of students in the bottom quintile of the family income distribution and help elevate them to the top quintile at a high rate. More affordable than four-year private colleges but better resourced than two-year public colleges, four-year public colleges may provide a unique value to students with the academic qualifications to attend them.

Research Objective & Design

In this study, I estimate the causal effect of access to the four-year public college sector on earnings and costs for students on the margin of qualifying for admission. While Chetty, et al (2017) provide descriptive evidence suggesting four-year public colleges are important for mobility, identifying the causal effect of four-year public colleges on students' long-run earnings is more challenging. Because there are large differences in the types of students attending four-year public colleges in terms of academic preparation and financial resources, separating the causal effect from the effects of non-random student sorting across colleges requires identifying an exogenous source of variation in where students enroll.

I use a regression discontinuity design that leverages the sliding admission scale for four-year public colleges in a midsize state, which is based on high school grade point average (GPA) and SAT scores. Since the thresholds are public information, one concern is that students might behave strategically to move above the admissions threshold by retaking the SAT or lobbying a teacher for a higher grade to raise their GPA. Students from advantaged backgrounds appear to engage in this behavior, while students from historically disadvantaged backgrounds do not, likely because of differences in resources and information available to these students.[1] Because the regression discontinuity design relies on students being unable to manipulate the running variable, I focus on disadvantaged students.

Data and Sample

I use student-level administrative data from a midsize state on all applicants to the four-year public college who applied to enroll for the 2004-05 to 2010-11 academic years. In addition to applicant's demographics, SAT scores, and high school GPAs, I also use data from the National

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[1] Disadvantaged students are defined as those students who ever qualified for free-and-reduced price lunch (FRPL) in high school and those who belong to racial or ethnic groups that are traditionally underserved minorities (non-white and non-Asian students).

Student Clearinghouse to identify where students enroll in the fall term following their spring application (e.g. four-year public, four-year private, two-year college, or no college), whether and when they earn a degree and from what type of institution they earn a degree (e.g. four-year private, four-year public, or two-year public). I combine this with student-level administrative data on students' costs of college and earnings up to 14 years following their initial application. The main regression discontinuity analysis sample consists of 9,602 applicants.

Results
Regression discontinuity estimates show that a student's probability of admission to a four-year public college increases by 25 percentage points at the threshold (Figure 2). Enrollment in a four-year public college increases by 15 percentage points for students who would have otherwise enrolled with almost an equal probability in a two-year college, four-year private college, or no college at all. Admission to a four-year public college increases bachelor's degree attainment by 15 percentage points, in part by shifting students away from associate or certificate degrees (Table 1). Eight to fourteen years following their application to college, admission raises students' average annual earnings by $7,950 (as measured in 2018 dollars), a 26% increase in earnings relative to the comparison group. The large gains for disadvantaged students are concentrated among males and students with persistently low family income.

Although admission to a four-year public college causes students to enroll in any four-year college for an additional year, there is no increase in the private costs of college on average, which appears to be driven by the large cost savings from some students switching from four-year private colleges to four-year public colleges. The additional investment the state makes in admitting students to four-year public college pays for itself in increased tax revenues within twenty years. Together, these results suggest that expanding access to four-year public colleges for disadvantaged students at the admissions threshold provides a way to substantially improve students' welfare at no additional cost to the state.

Conclusions
This study has important implications for state policy. First, states are currently limiting access to four-year public colleges through the admissions thresholds they set. Nationwide, one-fifth of four-year institutions report using test scores to define an admissions threshold (Briggs, 2009), and in the public sector, many states including Georgia, Florida, and Texas set minimum thresholds based on test scores, grade point average (GPA), or class rank to determine admission to public four-year colleges. In this paper, I find substantial welfare gains for disadvantaged students and even a modest gain to the state of expanding access at these admissions thresholds. This study also clarifies the important role that the four-year public college sector plays in promoting mobility.

References

Briggs, D. (2009). Preparation for College Admission Exams. National Association for College Admission Counseling. Arlington, VA.

Chetty, R., Friedman, J., Saez, E., Turner, N., and Yagan, D. (2017). Mobility Report Cards: The Role of Colleges in Intergenerational Mobility. NBER Working Paper, No. 23618.

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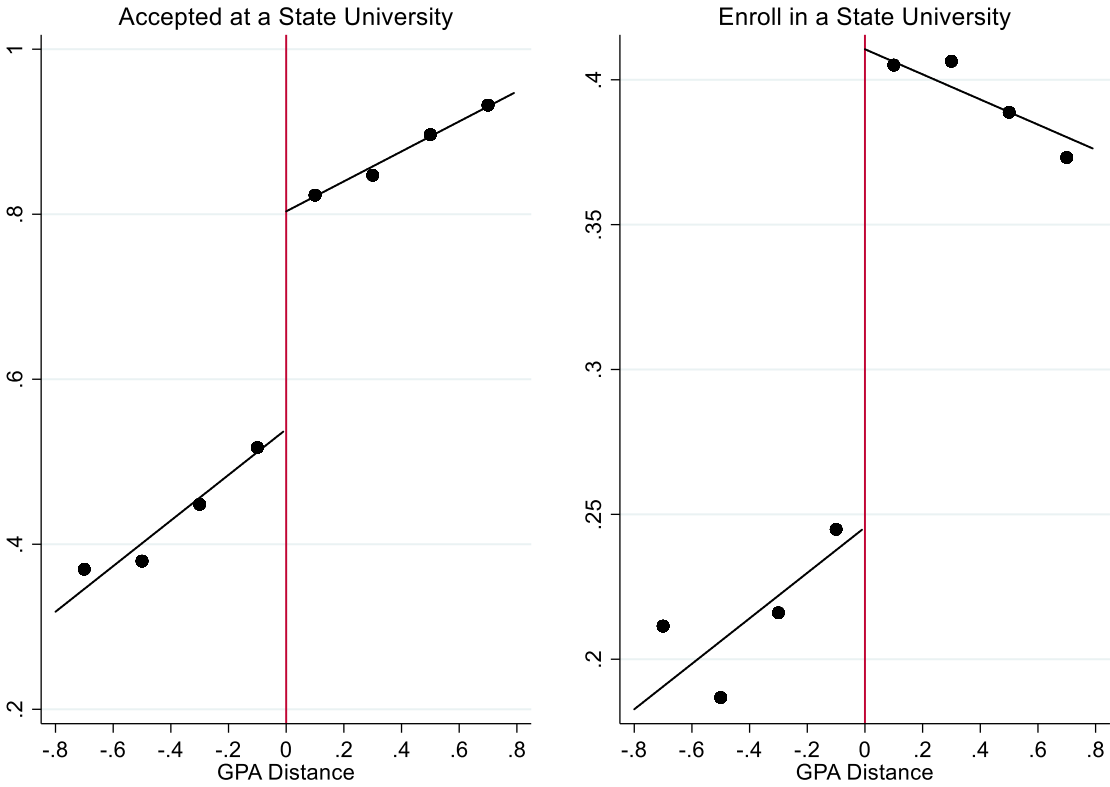**Figure 1. Admission and Enrollment in Four-Year Public Colleges**

Table 1. Effects on BA Attainment and Earnings 8-14 Years After Application

	RF	IV					Control Means
	Main	Main	Controls	Donut	BW: 0.4	BW: 0.6	
Earn BA from State Univ.	0.038**	0.159*	0.159*	0.200**	0.103	0.129*	0.24
	(0.019)	(0.081)	(0.083)	(0.081)	(0.087)	(0.074)	
Mean Earnings 8-14 Years After App.	1953**	7986**	8391**	8112*	7852*	6021*	30,838
	(971)	(3931)	(3969)	(4186)	(4415)	(3452)	
Observations	9,602	9,602	9,602	9,474	8,129	10,992	

Notes: This table presents estimates of the discontinuity at the admissions threshold. The first column reports the reduced form estimates. All other columns report instrumental variable (IV) estimates using admission to a state university as the instrument. The main specification uses a bandwidth of 0.6 GPA points. Controls include indicators for gender, race, SAT scores, FRPL status in high school, LEP status in high school, years of FRPL status in high school, and age at entry. The donut specification is the same as the main specification but drops observations that are exactly at the cutoff. BW5 and BW7 use the main specification with a bandwidth of 0.5 and 0.7 GPA points respectively. Standard errors are shown in parentheses and are clustered by distance to the admissions threshold. Significance levels are the following: *p<0.1, **p<0.05, ***p<0.01.