

The Effects of Institutional Practices on Postsecondary Trajectories

Matriculation, Persistence and Time to Degree

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Introduction

In today's labor market a bachelor's degree is considered to be the minimum qualification to gain access to the middle class. Because of this perception there is strong pressure from the current administration to see that all students continue on to college. However, with increasing rates of admission, new college students may be increasingly less academically prepared for college level coursework.

This portion of the study, *The Effects of Institutional Practices on Postsecondary Trajectories – Matriculation, Persistence and Time to Degree*, seeks to assess the effectiveness of college remediation programs on persistence and time to degree completion. Data from California State University – Sacramento, which bases requirements for remedial coursework on an assessment with a strict cutoff, are used. Employing a regression discontinuity design, outcomes of students on either side of the threshold are observed and analyzed.

These students have been assigned to remedial work solely on the basis of test scores. Under the assumption of the method used in the analysis, students on either side of the threshold are observationally equivalent. This type of analysis allows the outcomes of students to be attributed to the effect of remediation. By looking closely at these students just on either side of the pass/fail threshold we are able to see how remedial coursework affects persistence and degree completion.

Data and Methods

California State University Data

- Administrative data on 22,000 students
- Includes demographic information, high school GPA and institutional information, SAT/ACT scores, CSU courses and grades by semester, scores on remedial placement assessments, degree information
- CSU utilizes Entry Level Math (ELM) assessment and English Placement Test (EPT) to determine whether or not students must take remedial courses before enrolling in college level classes in these subjects. Students may be exempt from the tests based on SAT/ACT Early Assessment Program or AP achievement.

Regression Discontinuity Design (RDD)

- Comparable to randomized experimental methods by allowing for treatment and control groups
- Assignment to treatment is based solely on assessment cutoff score – if a student scores above the cutoff she is not required to take remedial classes before enrolling in college-level classes. A student who scores below the cutoff is assigned to the treatment (remediation).

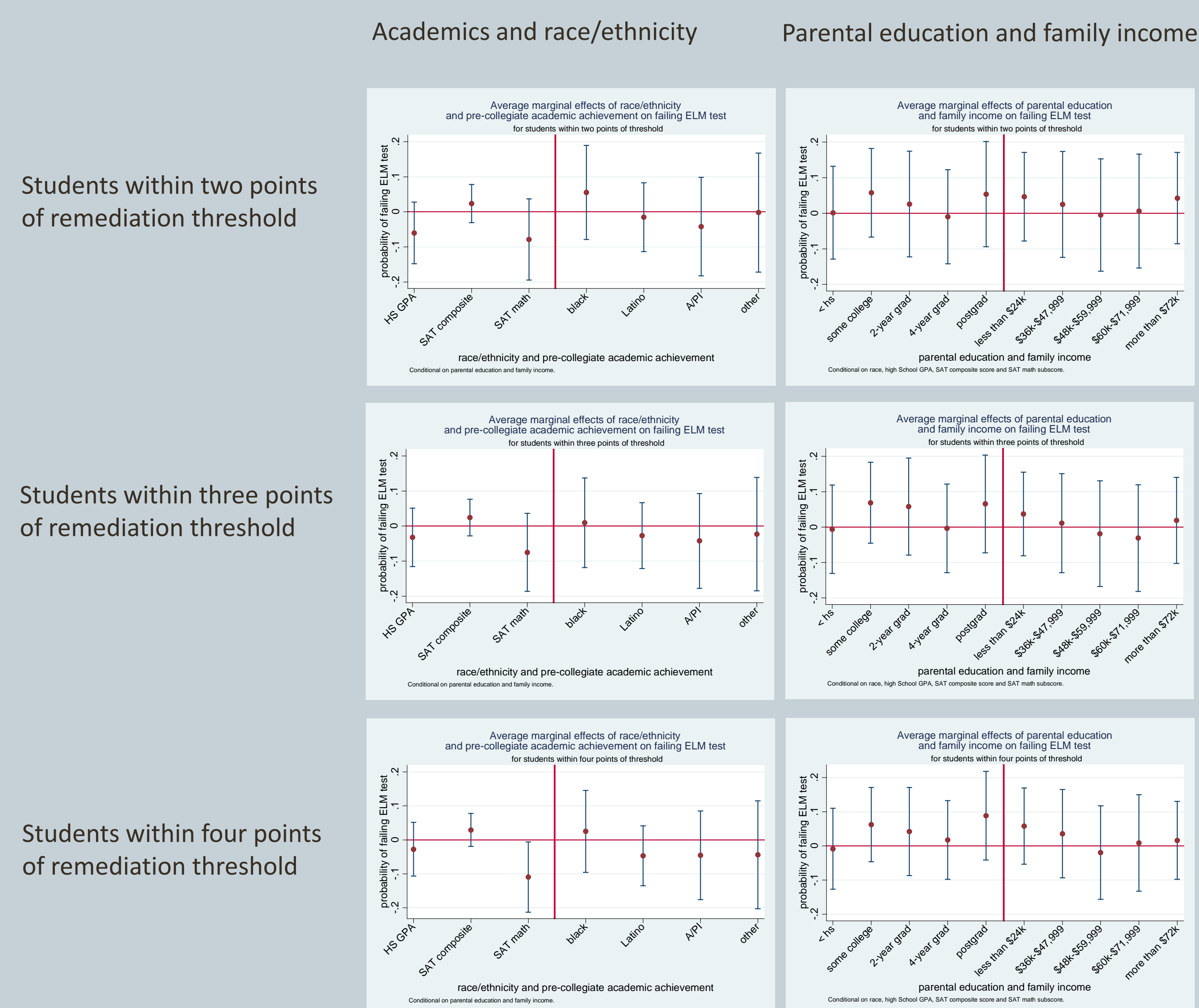
Research Question

Do college students compelled to take remedial coursework have the same patterns of college persistence and time to degree completion as observationally equivalent non-remedial college students?

Preliminary Results

ELM Assessment – Math Remediation

Figures 1-6. In order to successfully apply RDD, first we need to establish that the control and treatment groups are equivalent prior to treatment. We find that the characteristics of students who pass and fail the ELM assessment within two and three points are essentially identical with respect to other latent variables. The plots below show that students on either side of the remediation requirement threshold are observationally similar in race, high school academic achievement, parental education and family income. Extending this caliper to four points we see students on either side may not be equivalent with respect to SAT math scores.



EPT – English Remediation

Table 1. Results from significance tests comparing students on either side of the pass/fail threshold for English remediation

English Placement Test	2-point caliper			3-point caliper			4-point caliper		
	\bar{X}_0 (sd)	\bar{X}_1 (sd)	t-stat (df)	\bar{X}_0 (sd)	\bar{X}_1 (sd)	t-stat (df)	\bar{X}_0 (sd)	\bar{X}_1 (sd)	t-stat (df)
High school GPA	3.200 (0.447)	3.175 (0.439)	1.565 (3004)	3.206 (0.441)	3.175 (0.439)	2.070** (3775)	3.214 (0.450)	3.175 (0.439)	2.703*** (4385)
SAT score – composite	981.965 (92.855)	961.475 (91.567)	5.444*** (2399)	987.808 (89.233)	961.475 (91.567)	7.846*** (3009)	991.678 (88.272)	961.476 (91.567)	9.463*** (3468)
SAT score – verbal	478.418 (40.943)	467.892 (41.704)	6.241*** (2399)	481.343 (37.416)	467.892 (41.704)	8.964*** (3009)	438.714 (38.733)	467.892 (41.704)	11.142*** (3468)
Depend. family income	4.032 (1.877)	4.046 (1.931)	-0.190 (2421)	4.049 (1.887)	4.046 (1.932)	0.041 (3036)	4.048 (1.897)	4.046 (1.932)	0.024 (3524)
Mother's education	4.241 (1.640)	4.241 (1.594)	0.6275 (2717)	4.296 (1.580)	4.202 (1.640)	1.660* (3399)	4.305 (1.579)	4.202 (1.640)	1.908* (3947)
Father's education	4.400 (1.683)	4.363 (1.707)	0.557 (2644)	4.466 (1.676)	4.363 (1.707)	1.712* (3304)	4.458 (1.677)	4.363 (1.707)	1.656* (3835)

*** p<0.01, ** p<0.05, * p<0.1

Next Steps

- In comparing students on either side of the EPT cutoff for required remediation there appear to be significant differences in some measures. I plan to investigate further to see if there is a way to account for these differences.
- I will include a control for sex. Women tend to complete degrees at a higher rate and within a shorter amount of time. I expect that this will not effect the results comparing those above or below the threshold and that men and women are equally represented on either side of the threshold.
- After the task of establishing that students on either side of the pass/fail cutoff are equivalent on high school achievement, SAT scores, parental education, race/ethnicity, gender and family income, I will compare the outcomes on time to degree, probability of completing a degree, and probability of graduating within five years.
- Differences between the treatment and control groups on these measures will indicate a remedial affect. Preliminary tests show substantive point estimates in favor of remediation, although with little, if any, statistical significance.
- The issue of noncompliance needs to be addressed. I have not yet adjusted for students who score just above the cutoff for requiring remediation but still choose to enroll in remedial classes.

Discussion and Limitations

- Results from the ELM data show students on either side of the pass/fail threshold within two, three and four points to be observationally similar with respect to race/ethnicity, high school academic achievement, parental education and family income. This allows us to use RDD and to attribute significant differences in post-treatment outcomes to the effectiveness of remediation.
- Preliminary point estimates fail to show a negative remedial effect on persistence and time to degree.
- Although remediation may not significantly improve student outcomes on these measures, it does not appear to reduce their probability of graduating within five years or substantially increase the time it takes them to graduate.
- What does this mean for policy makers? Is a moderate positive return for expensive remediation programs enough to keep these programs funded?
- The dataset does not track students who transfer out of CSU. These students are considered as not having completed a degree even if they have done so at a different institution. This may lead to upwardly biased estimates of drop out.

Suggestions for Further Study

- Include interaction effects for different groups – Does the effect of remediation vary across race/ethnicity? Across levels of parental education? Family income?
- RD studies at other institutions with similar strict cutoff remediation assignment practices such as Texas or Ohio state universities