

Postsecondary Preparation and Remediation:

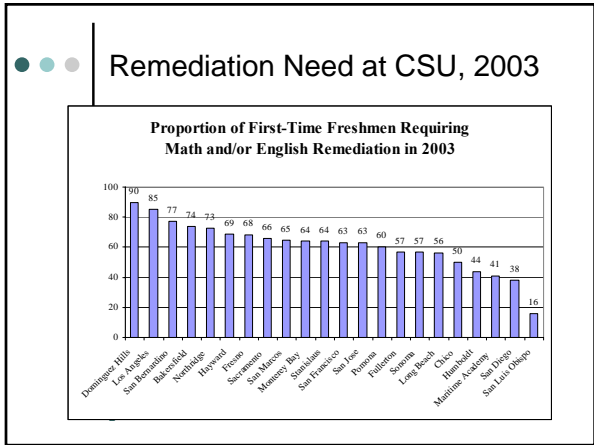
Examining the Effect of the Early Assessment Program at California State University

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Early Assessment Simple Program Overview

- Goals of EAP:
 - Provide an early signal to students about their college readiness
 - Collaborate with HS community
 - Provide 12th grade interventions
- Components of EAP:
 1. 11th grade testing (early assessment)
 2. Professional development for teachers
 3. Supplemental preparation for students

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● ● ● | **Early Assessment Program:
Testing Component Detail**

- 15 extra questions added to the 11th grade CST (math and English)
 - English EAP also requires an essay
- Although CST is mandatory, EAP participation is completely voluntary
- Composite scores computed based on subset of CST questions and augmented EAP items
- Scores translated into outcomes: exempt or not exempt from CSU placement exam(s)

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● ● ● | **Research Question**

- How does participation in the Early Assessment Program affect the probability of requiring remedial coursework in college?
 - Examine this question separately for mathematics and English.
- Quantify the **size** of the effect.
 - By **how much** is a student's probability of needing remediation lowered by participating in EAP?

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● ● ● | **Academic Preparation Literature**

- Better academic preparation → higher rates of persistence and degree completion
- Student information and expectations
 - Person, Rosenbaum, & Deil-Amen (2006); Rosenbaum (2001); Venezia, Kirst, & Antonio (2003)
- K-12 alignment with higher education
 - Venezia et al. (2005); Martinez & Klopott (2005)
- Effect of college remediation
 - Bettinger & Long (2004)

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Theoretical Model

- Economic model is human capital
 - **Production Function**
 - One of the inputs is academic preparation
 - The output examined here is success in college
- Theory predicts that better information about your college readiness improves academic preparation and thereby increases the probability of success in college (lower probability of remediation)

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Data

- CSUS Office of Institutional Research: four cohorts of first-time freshman applicants (2003 – 2006)
- California Department of Education: matched CSUS applicants to CST scores and EAP participation and outcomes
- Additionally, data on EAP participation by all HS juniors in the state since program inception

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CSUS Enrollees by Year

Proportion	Pre-EAP		Post-EAP	
	2003	2004	2005	2006
Male	0.400	0.396	0.396	0.399
White	0.406	0.393	0.375	0.347
Black	0.087	0.085	0.098	0.119
Hispanic	0.181	0.187	0.182	0.183
Asian	0.222	0.231	0.246	0.250
Other race/ethnicity	0.104	0.104	0.099	0.102
Parental Education:				
Mom - HS Grad	0.811	0.813	0.794	0.810
Mom - College Grad	0.271	0.267	0.261	0.249
Dad - HS Grad	0.814	0.805	0.798	0.904
Dad - College Grad	0.309	0.325	0.296	0.286
Math Proficient	0.516	0.541	0.494	0.513
English Proficient	0.423	0.430	0.436	0.444
⁹ N	2426	2329	2495	2629

CSUS Enrollees by Year

	Pre-EAP		Post-EAP	
	2003	2004	2005	2006
<i>Average</i>				
ELM Test (math)	43.0	43.4	42.8	42.0
Proportion non-zero	0.707	0.710	0.660	0.694
EPT Test (English)	144.6	144.5	143.9	144.1
Proportion non-zero	0.784	0.782	0.732	0.739
SAT	967	964	973	958
Proportion non-zero	0.836	0.843	0.798	0.798
ACT	20	19	19	20
Proportion non-zero	0.224	0.225	0.220	0.195
High School GPA	3.2	3.2	3.2	3.2
Proportion non-zero	0.997	0.999	0.996	0.998
<i>N</i>	2426	2329	2495	2629

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- ### Empirical Strategy
- Could simply compare outcomes of those who participate in EAP to those who do not
 - English EAP participants have a 9 percentage point lower probability of needing English remediation at CSUS than non-participants.
 - Math EAP participants have a 6 percentage point lower probability of needing math remediation at CSUS than non-participants.
 - Better strategy utilizes **Logistic Regression** to control for differences between groups:
 - Logit used when dependent variable is binary.
 - Intuition: students in post-EAP years are the "treatment group", while students in pre-EAP years are the "control group".
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- ### Empirical Model
- Remediation need by first-time freshman i in subject s (binary variable Y_{is}) is a function of:
 - Individual characteristics, X_i : (race, gender, academic performance measures, parental education)
 - Subject-specific EAP participation indicator
 - Model:
$$Y_{is} = \beta X_i + \alpha EAP_{is} + \varepsilon_{is}$$
 - Null Hypothesis: $H_0: \alpha = 0$
 - Alternative Hypothesis: $H_A: \alpha < 0$
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Analysis & Interpreting Results

- Test our hypothesis by running a regression and examining the sign and statistical significance of the parameter α .
- Marginal effects also indicate the size of the effect associated with each variable.
- More specifically, marginal effects from logistic regression provide the percentage point change in the probability of remediation associated with a particular variable, holding all other variables constant.

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Marginal Effects on Probability of Remediation Need, by subject

Variable	English	z	Math	z
Male	-0.0151	-0.98	-0.1970	-12.63
Black	0.1926	9.81	0.2553	7.97
Hispanic	0.2196	13.95	0.1356	5.58
Asian	0.2627	17.44	0.1438	5.95
Other race	0.1967	10.98	0.1084	3.69
High school GPA	-0.0968	-5.19	-0.1806	-8.59
CST English score	-0.0074	-31.90		
CST math score			-0.0063	-20.96
Dad College Grad	-0.0598	-3.37	-0.2697	-1.41
Mom College Grad	-0.0662	-3.52	-0.0800	-4.22
Post EAP	0.0335	1.63	-0.0053	-0.22
English EAP participation	-0.0528	-2.42		
Math EAP participation			-0.0272	-1.11
Pseudo R-squared	0.2963		0.2702	
Predicted probability	0.6292		0.3335	

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Conclusions & Future Directions

- Analysis indicates that I can reject my null hypothesis.
 - Evidence that EAP participation **does** reduce the probability that CSUS first-time freshmen require remediation
- Policy makers should compare the benefit of modestly reduced remediation to the cost of the program.
- Future work examines how results change when attributes of students' high schools are added to the empirical analysis.

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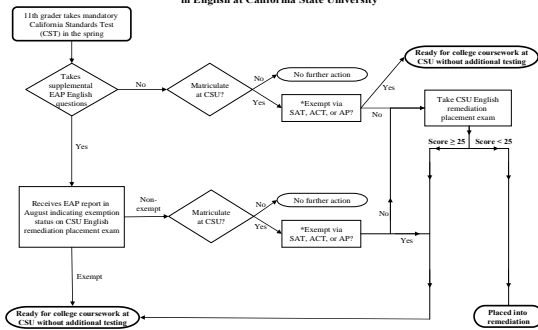
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Figure 3: Paths to College Readiness or Remediation in English at California State University



* Exemption requires a score of 550 or above on SAT1 verbal or a score of 680 on the SAT II writing test; a score of 24 or above on ACT English, or a score of 3, 4, or 5 on either the AP Language and Composition exam or the AP Literature and Composition exam.
