

Ready or Not?
California's Early Assessment Program
and the Transition to College

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Context: The Basic Problem

- Many students are under-prepared for college
 - Students are uninformed about what it takes to succeed in college
 - High rates of remedial course-taking on college campuses
- Despite rising college enrollment rates, baccalaureate degree completion has been stagnant.
 - Significantly lower completion rates for minorities and those who come from poor/modest economic backgrounds than for white and relatively advantaged students

Stagnant Degree Completion: Possible Explanations

- Compositional changes in college going population
- Lack of interest in continuing college
- Financial constraints
- Institutional practices
- Academic preparedness and K-12 / postsecondary alignment

Academic Preparation and Degree Completion

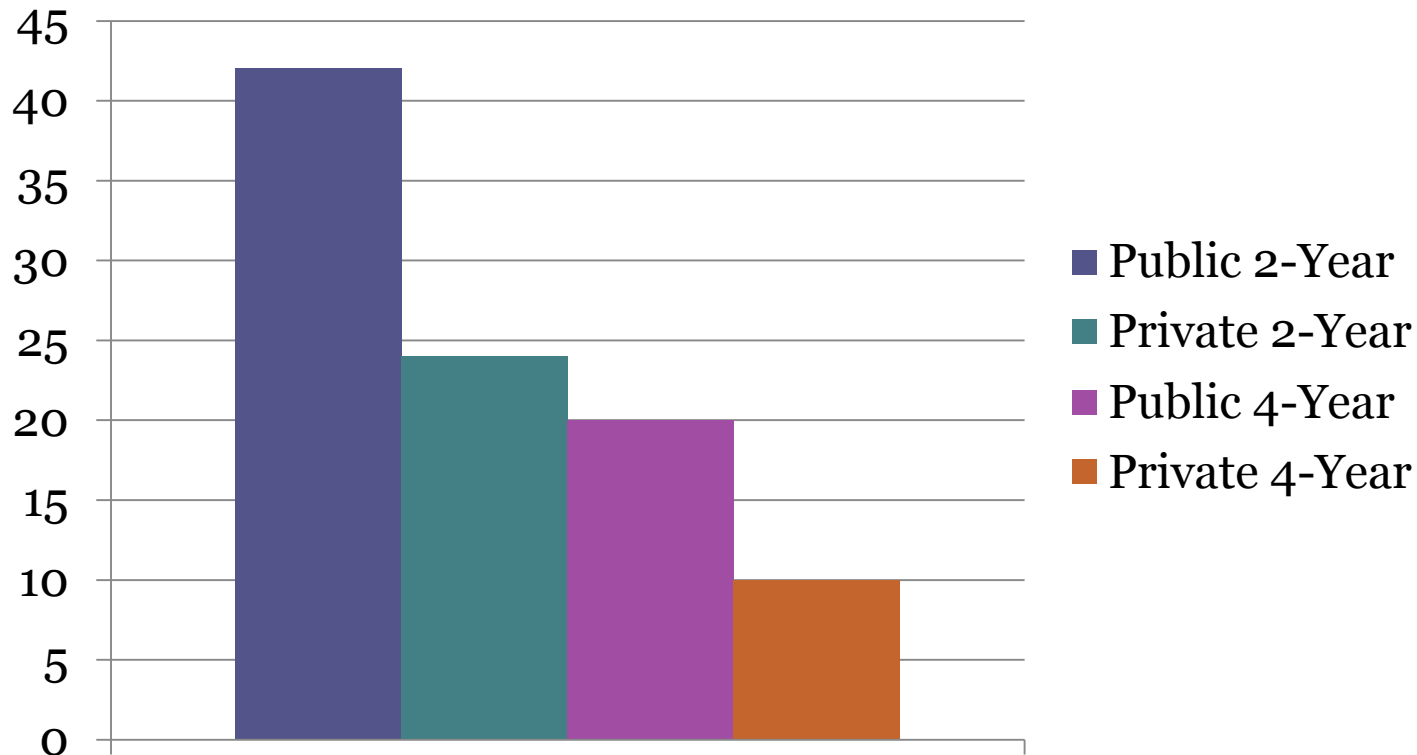
- The intensity of a student's high school curriculum is the single best predictor of college success and college graduation.
 - Adelman (1999, 2006)
 - Horn & Kojaku (2001)
 - Kirst & Venezia (2004)
- Progress on college readiness improves student success and likely leads to higher degree completion.

Effect of Receiving Remediation in College

- Evidence on the effect of remediation is mixed:
 - **Ohio** (Bettinger & Long, 2008)
 - Positive effects on transfer to more selective institution and on degree completion.
 - **Florida** (Calcagno & Long, 2008)
 - Slight positive effects on persistence and no effect on transfer to four-year institution or on degree completion.
 - **Texas** (Martorell & McFarlin, 2008)
 - No effects (and even modest negative effects) on transfer, persistence, degree completion, and earnings.
 - **California** (Howell, Kurlaender & Grodsky, coming soon)
- Why not also look at ways of keeping students out of remediation in the first place?

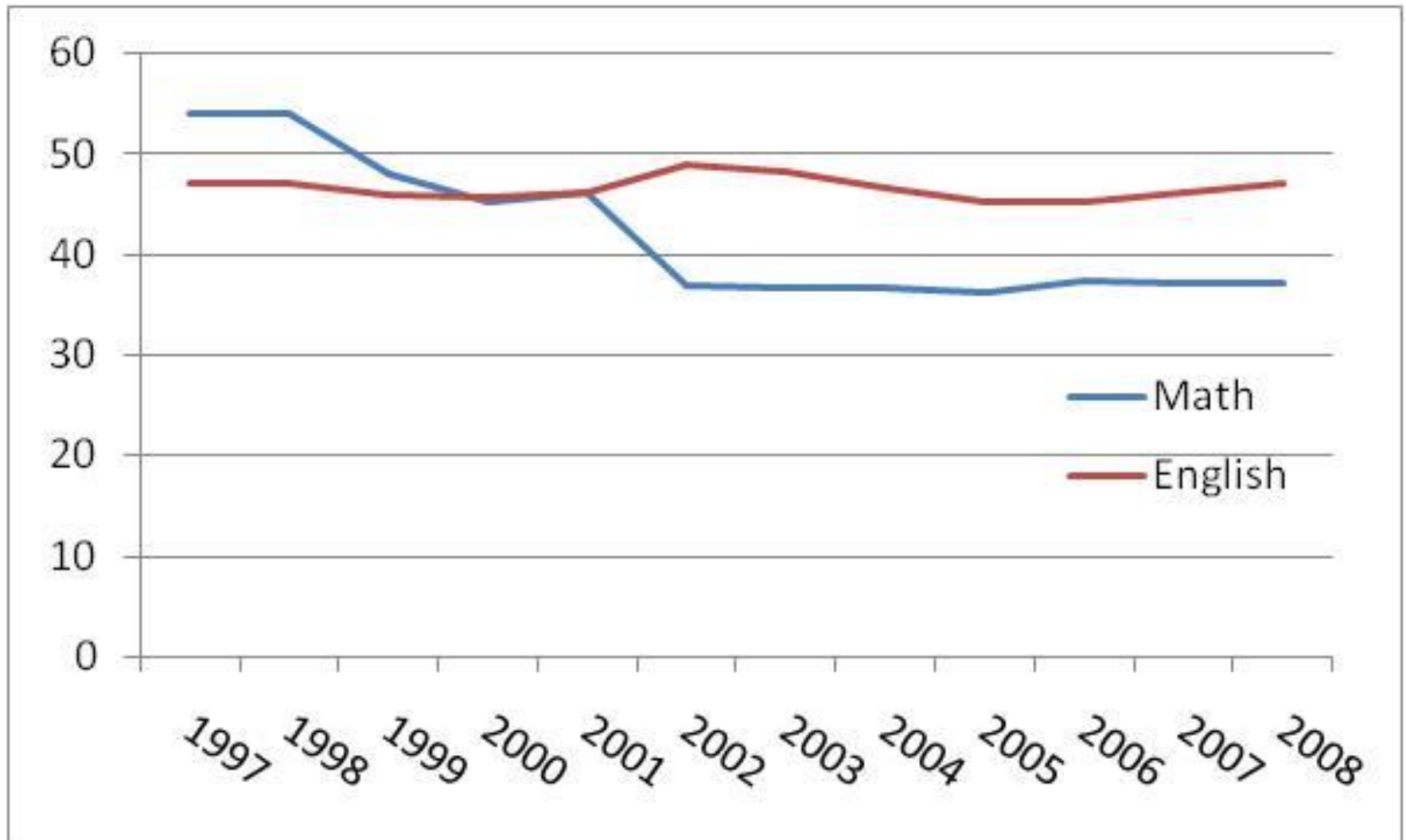
Context: Remediation Rates Across U.S. Higher Education Institutions

Percent of entering freshmen enrolled in remedial coursework by type of institution (Fall 2000)



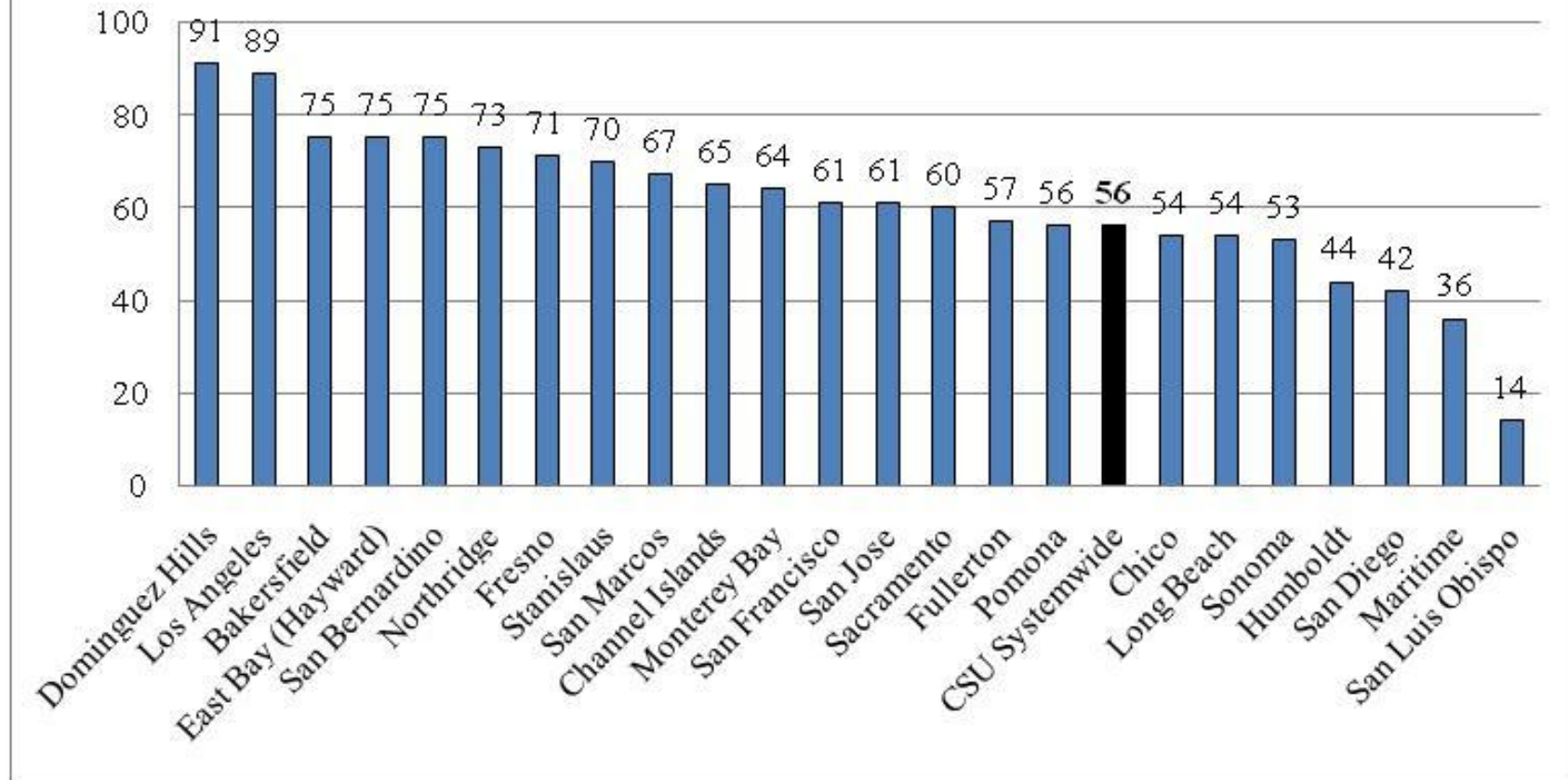
Source: NCES, U.S. Department of Education, Postsecondary Education Quick Information System (PEQIS).

Remediation Need at California State University – Systemwide Rate



Remediation Need across CSU Campuses

Figure 1: Proportion of Regularly-Admitted First-Time Freshmen in the CSU Requiring Remediation in English and/or Math in 2007



Early Assessment Program Overview

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

Overview of EAP Testing Component

- **Assessment:**
 - Optional 15 questions on the mandatory 11th grade CST
 - Additional items developed by CSU faculty
 - Score based on CST augmented with EAP items
- **Signal:**
 1. Exempt
 2. Non-Exempt
 3. Conditional Exempt (in math only)

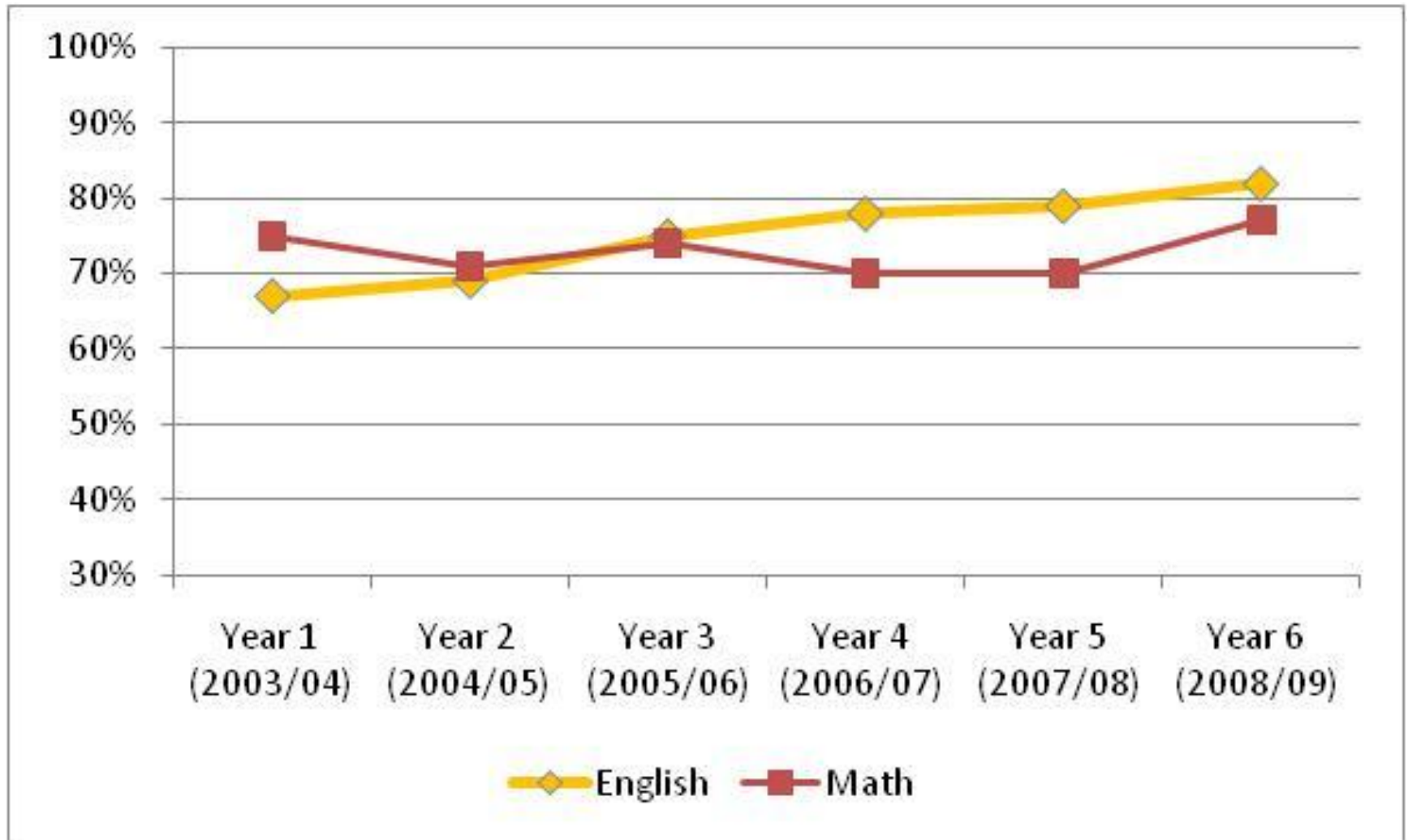
Research Questions

- How does participation in the Early Assessment Program affect the probability of needing remedial coursework in college?
- How does EAP participation vary with individual and school characteristics?
- How does EAP influence college-going behavior?

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
 - EAP participation by all HS juniors in the state since program inception

EAP Participation Rates



CSUS Enrollees by Year

<i>Proportion</i>	Pre-EAP		Post-EAP	
	2003	2004	2005	2006
Male	0.394	0.390	0.383	0.390
White	0.500	0.481	0.466	0.438
Black	0.084	0.093	0.098	0.113
Hispanic	0.166	0.167	0.174	0.163
Asian	0.155	0.158	0.170	0.186
Other race/ethnicity	0.093	0.099	0.091	0.100
Parental Education:				
Mom - HS Grad	0.552	0.551	0.547	0.565
Mom - College Grad	0.268	0.255	0.242	0.248
Dad - HS Grad	0.515	0.483	0.528	0.523
Dad - College Grad	0.305	0.324	0.272	0.282
Math Proficient	0.523	0.550	0.574	0.527
English Proficient	0.417	0.413	0.435	0.438
<i>N</i>	1796	1726	1872	1917

CSUS Enrollees by Year

	Pre-EAP		Post-EAP	
<i>Average</i>	2003	2004	2005	2006
ELM Test (math)	43.2	43.4	43.1	42.2
Proportion non-zero	0.699	0.696	0.652	0.682
EPT Test (English)	144.7	144.1	143.9	144.0
Proportion non-zero	0.792	0.790	0.730	0.737
SAT	966	961	969	955
Proportion non-zero	0.832	0.849	0.807	0.800
ACT	20	19	19	19
Proportion non-zero	0.220	0.219	0.218	0.181
High School GPA	3.2	3.2	3.2	3.2
<i>N</i>	1796	1726	1872	1917

Analytic Strategy

- Model remediation need for first-time freshman i in subject s (math and English) as a function of:
 - Individual characteristics (X_i)
 - Attributes of individual's high school (Z_i)
 - EAP availability based on cohort ($PostEAP_i$)
 - Participation in EAP ($EAPpartic_i$)

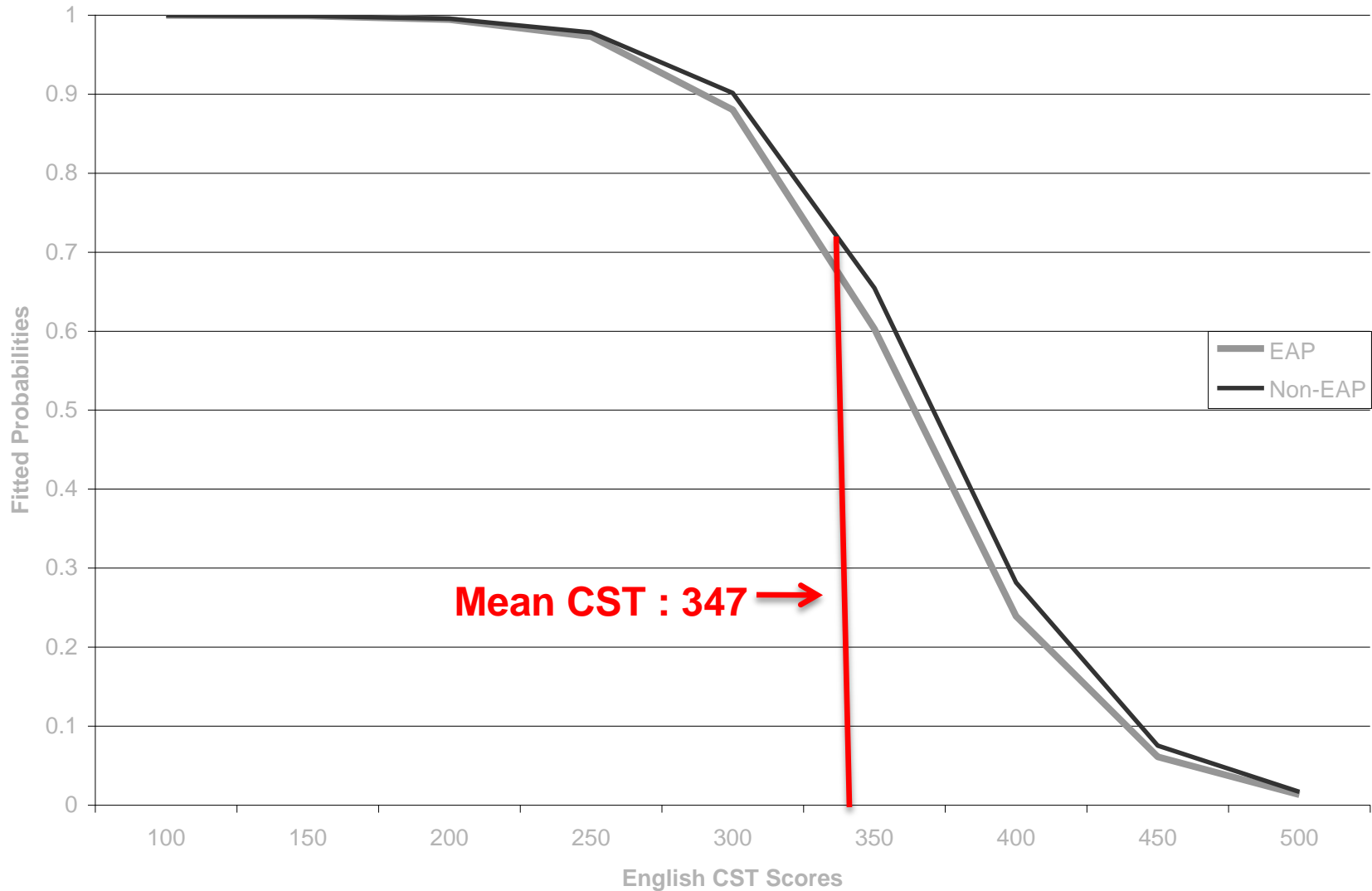
$$Y_{is}^* = \beta X_i + \gamma Z_i + \alpha_1 PostEAP_i + \alpha_2 (PostEAP_i * EAPpartic_{is}) + \varepsilon_{is}$$

- After estimating effect of EAP participation on remediation, we:
 - Investigate selection into EAP at individual and school levels
 - Investigate the mechanisms by which EAP may work

Marginal Effects on Probability of Remediation Need

Variable	English	z	Math	z
Male	-0.0181	-1.03	-0.1859	-12.27
Black	0.1558	5.96	0.1854	5.20
Hispanic	0.2054	10.14	0.0769	3.08
Asian	0.2417	12.04	0.0685	2.70
Other race	0.1862	7.92	0.0659	2.27
High school GPA	-0.0868	-4.05	-0.1786	-8.60
CST score (same subject)	0.0103	20.91	0.0057	8.42
CST score squared	-0.0000	-27.27	-0.0000	-15.73
Dad College Grad	-0.0358	-1.75	-0.0019	-0.10
Mom College Grad	-0.0500	-2.34	-0.0684	-3.75
Post EAP	0.0346	1.36	-0.0036	-0.14
EAP participation	-0.0610	-2.45	-0.0406	-1.68
<i>High School Characteristics</i>	✓		✓	
<i>N</i>	6,210		4,796	

Fitted Probabilities of Remediation Need in English: EAP Participation Effects by English CST Score



Selection into EAP

- Selection at the Individual Level
 - Propensity Score Matching
- Selection at the School Level
 - School Fixed Effects
 - Schools with Universal EAP Participation

Selection into EAP: Consistent Effects of EAP on Remediation Need Across Alternate Specifications

	English			Math		
	1	2	3	4	5	6
	Original model	Average Treatment Effect using Propensity Score	Subsample of schools w/ >90% EAP Participation	Original model	Average Treatment Effect using Propensity Score	Subsample of schools w/ >90% EAP Participation
EAP Participation	-0.061 (0.025)	-0.077 (0.023)	-0.055 (0.032)	-0.041 (0.024)	-0.043 (0.025)	-0.039 (0.030)
<i>N</i>	6,210	3, 251	4,330	4,796	2,592	3,418

What's driving the empirical EAP participation effect on remediation?

- Does EAP participation encourage better academic preparation or better sorting into postsecondary study?
- Examine the effect of EAP on application to CSUS

$$\begin{aligned} \text{CSUS Applicant}_{is} &= \beta X_i + \gamma Z_i + \alpha_1 \text{Exempt}_{is} + \alpha_2 \text{ConditionallyExempt}_{i\text{math}} \\ &+ \alpha_3 \text{NotExempt}_{is} + \alpha_4 \text{Nonparticipant}_{is} + \varepsilon_{is} \end{aligned}$$

Investigating Application Behavior

- English
 - ‘Not Exempt’ signal recipients are actually more like to apply to CSUS than those who are ‘Exempt’

Fitted probability of applying to CSUS for the average student with different EAP signals (restricted to Sac County schools with 90% EAP participation)

Pre-EAP	Exempt	Not-Exempt	Non-Participant
.1570	.1433	.1698	.1015

Investigating Application Behavior

- Math

- No effect of EAP ‘Exempt’ or ‘Not Exempt’ signals, but modest positive effects of ‘Conditional Exempt’ signal on application to CSUS

Fitted probability of applying to CSUS for the average student with different EAP signals (restricted to Sac County schools with 90% EAP participation)

Pre-EAP	Exempt	Not-Exempt	Conditional Exempt	Non-Participant
.0787	.0860	.0814	.1039	.0687

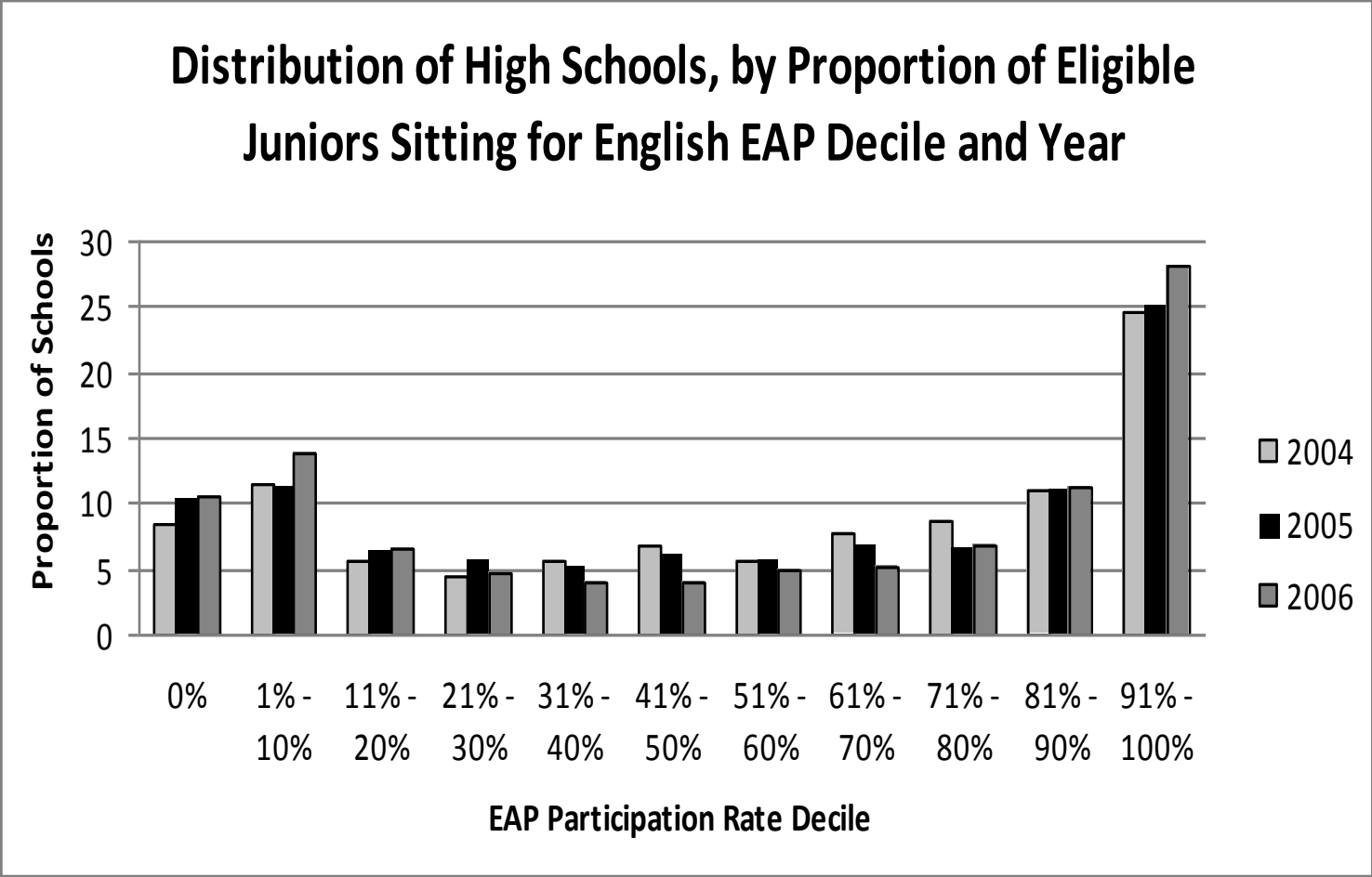
Conclusions & Future Directions

- EAP participation does appear to modestly reduce the probability that CSUS first-time freshmen require remediation
- Mechanism *appears* to be through better preparation rather than sorting
 - More evidence required on this issue
- Examine CSU systemwide data
- Continue to look for differential EAP effects by individual characteristics and attributes of high school attended

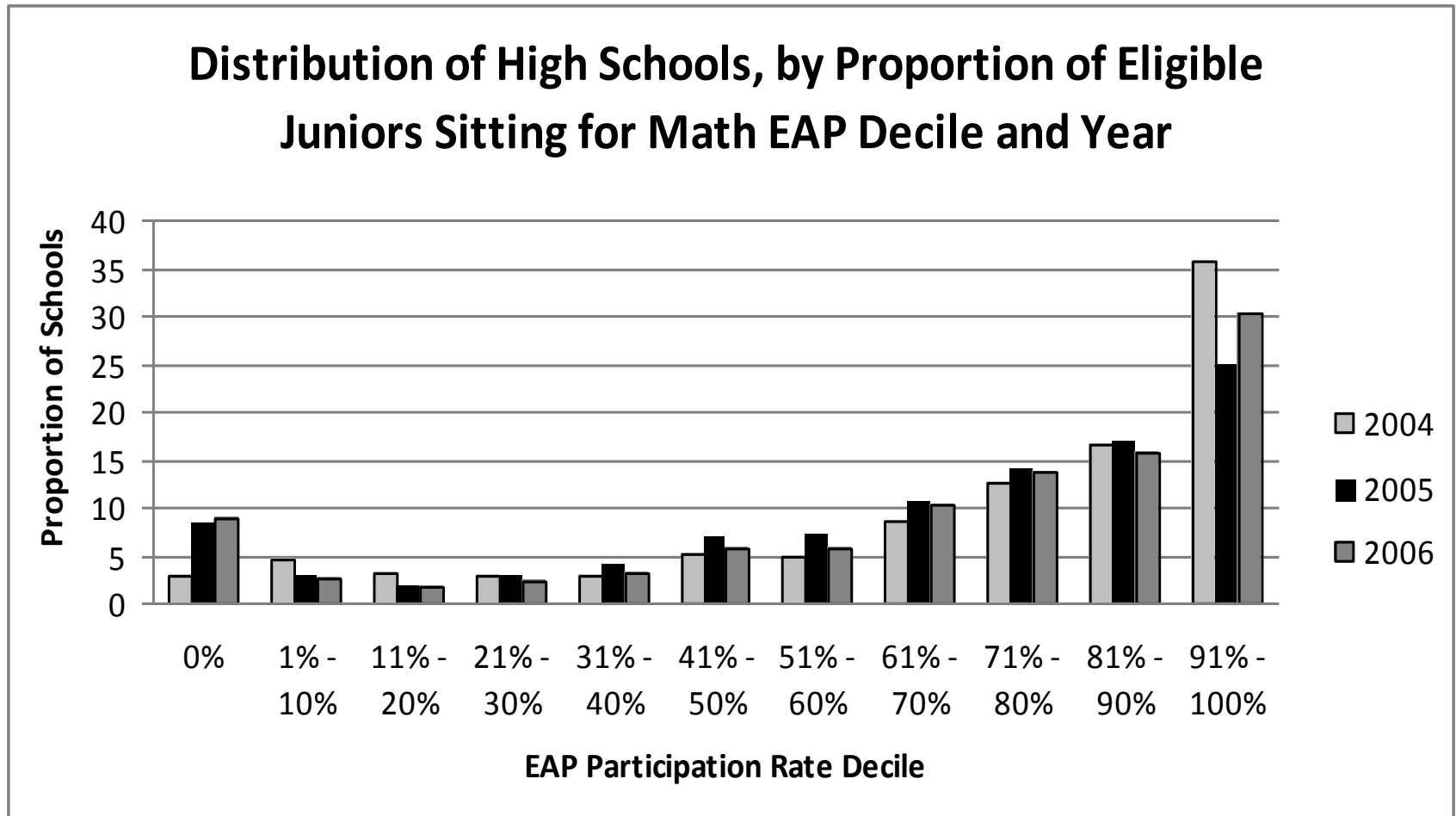
Closer Examination of School Differences

- Big differences in EAP participation rates across high schools
 - Broader goal of understanding the role of schools in program take-up
- What school attributes influence EAP participation rates?
 - Student demographics
 - Aggregate academic performance
 - Other school characteristics

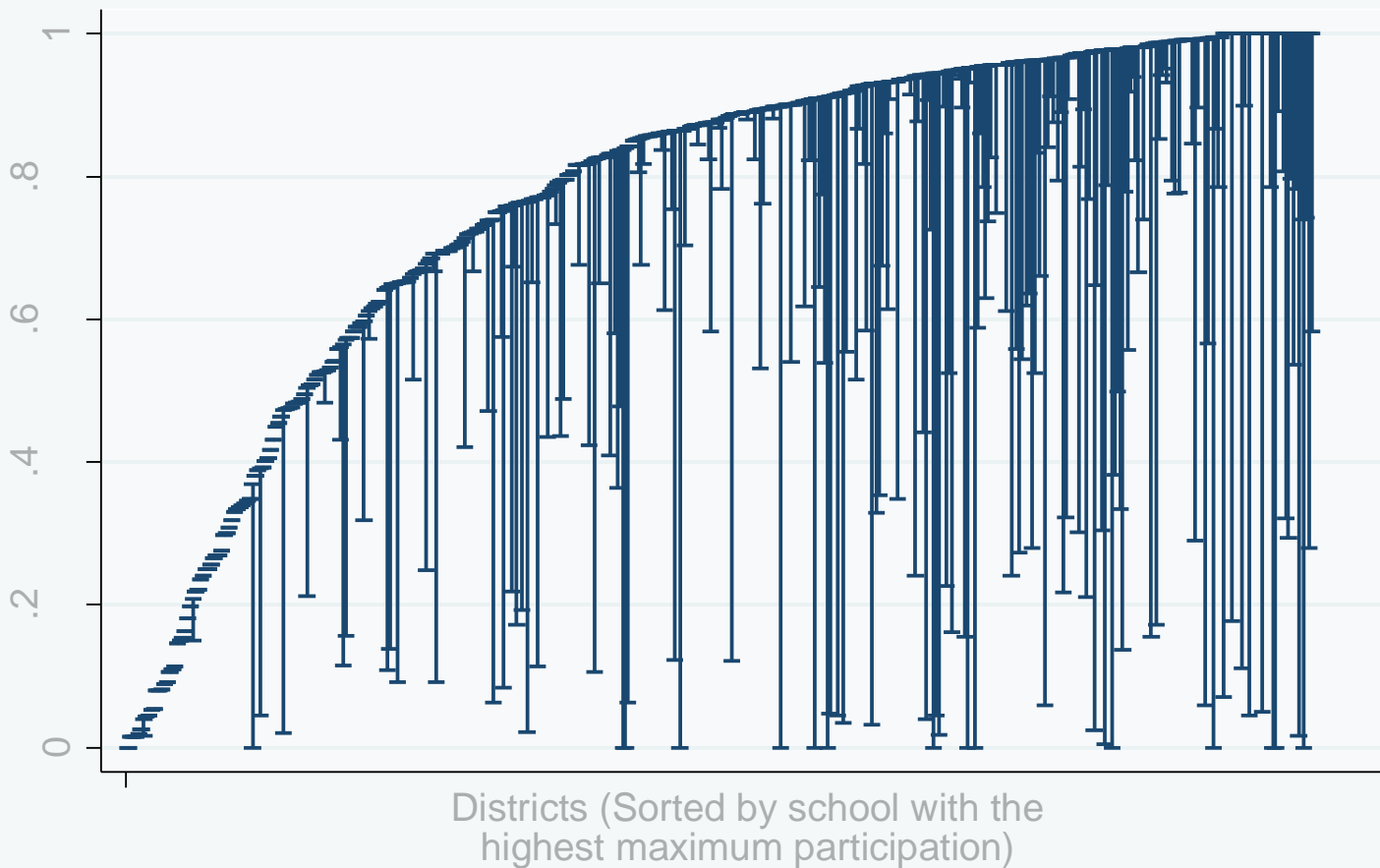
EAP Participation—School Differences



EAP Participation—School Differences

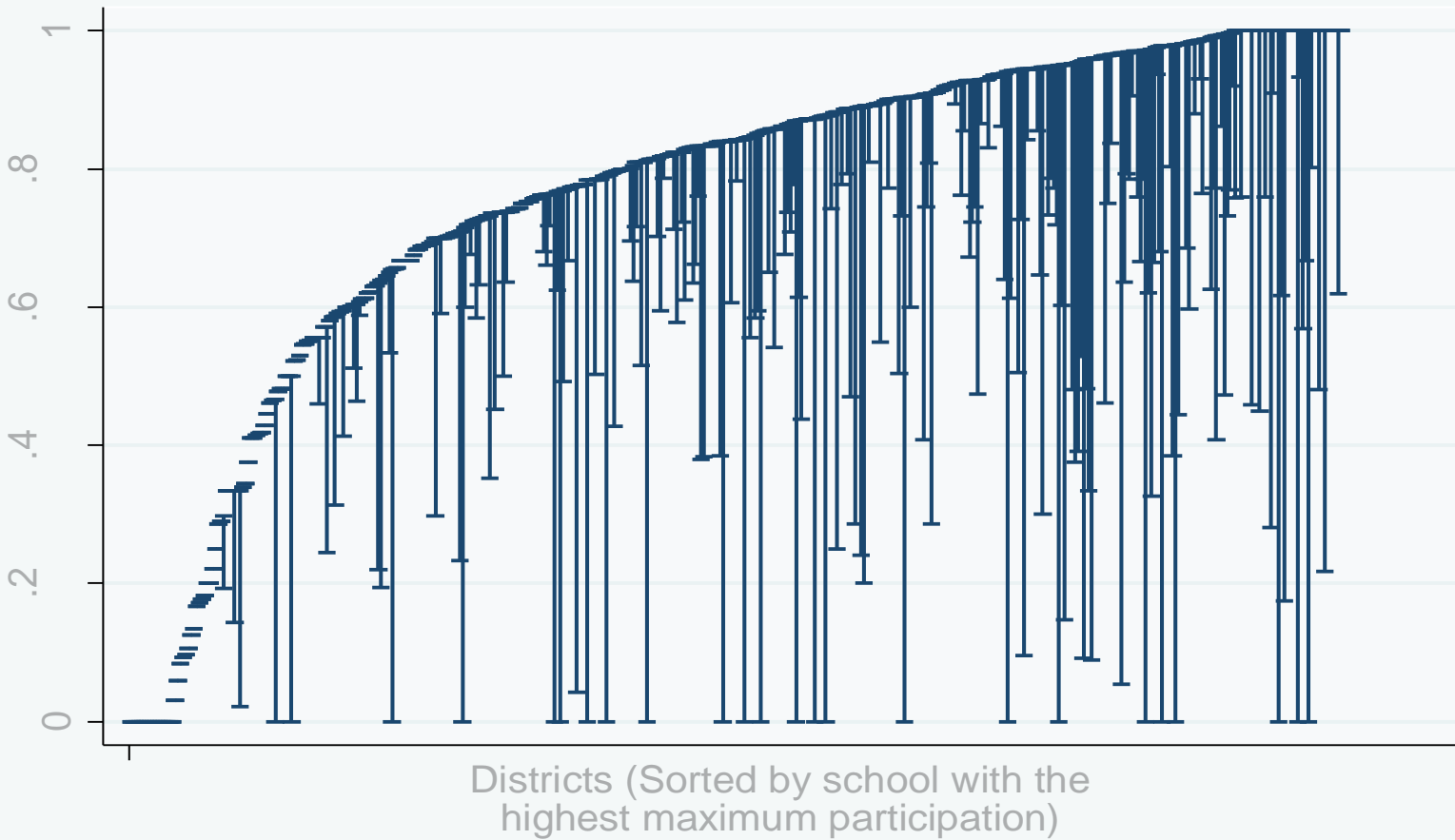


Variation in school ELA EAP participation rates within districts in 2006



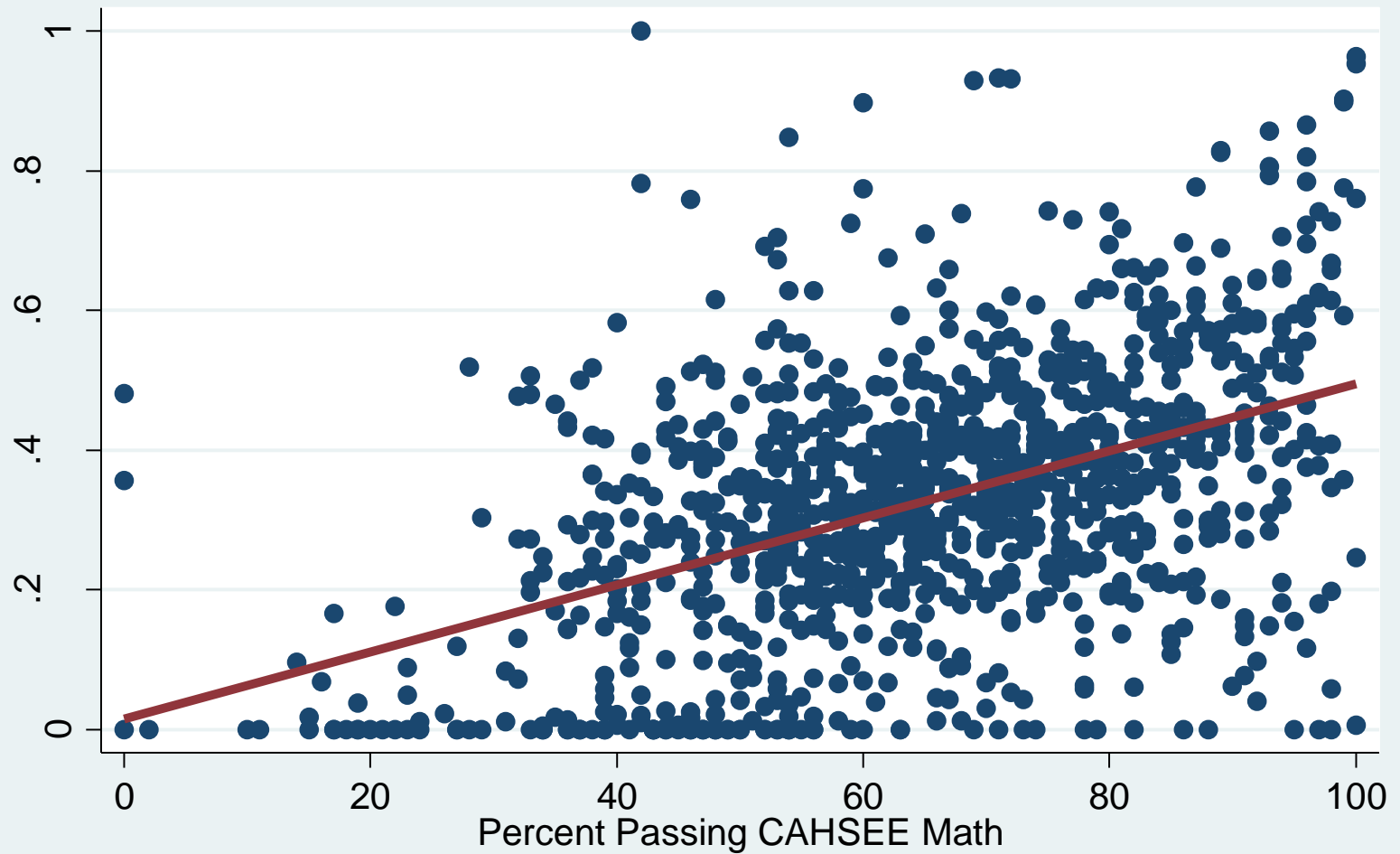
Number of districts = 458, number of schools = 1,016

Variation in math EAP school participation rates within districts in 2006



Number of districts = 458, number of schools = 1,016

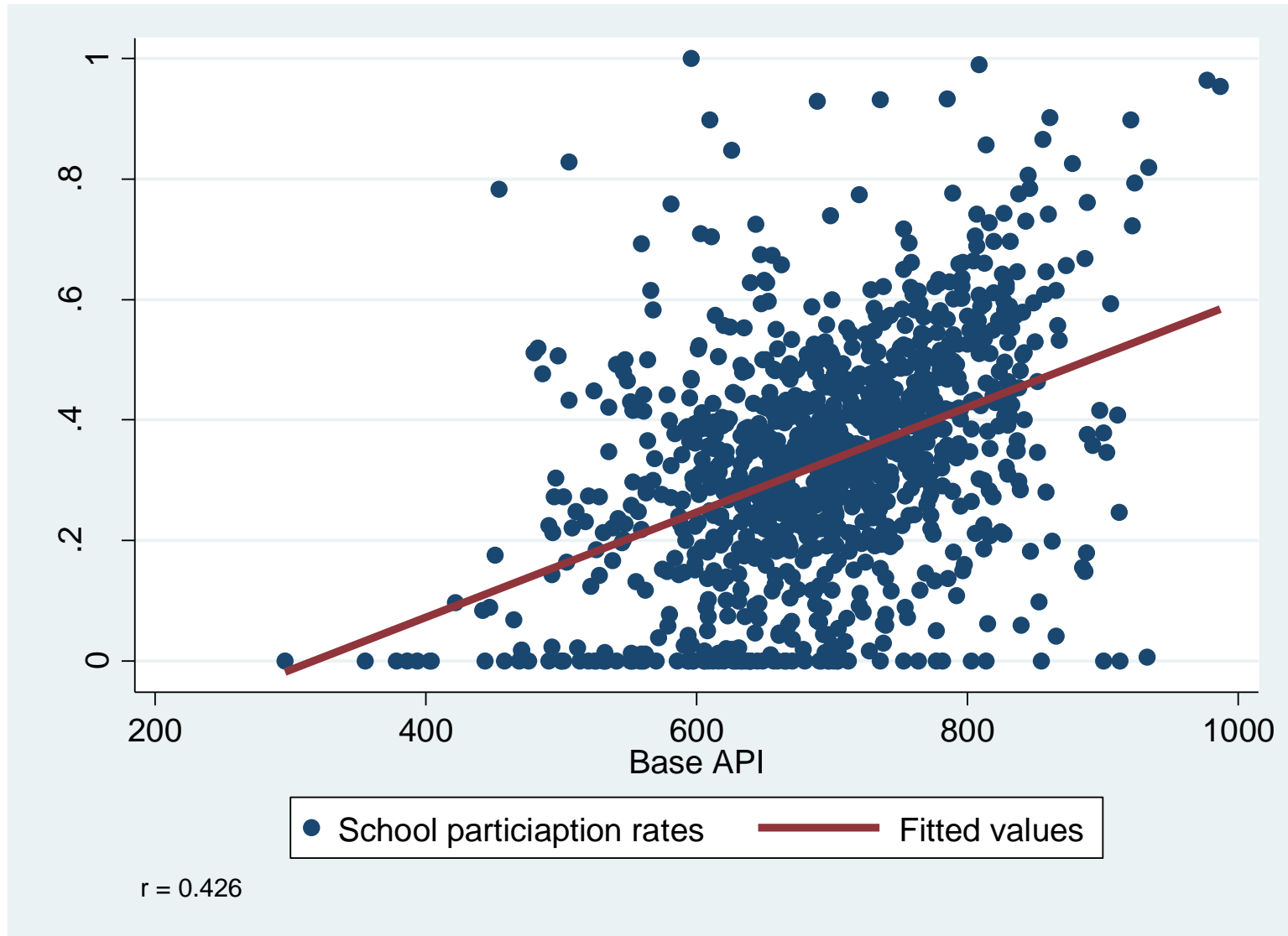
Exploring School Characteristics



● School participation rates — Fitted values

$r = 0.461$

Exploring School Characteristics



School Influences on EAP Participation

School Variables	English		Math	
% Minority	0.256	***	0.280	***
% Fully Credential Teachers	0.186	*	0.333	**
Average Number of Years Teaching	0.195		0.541	
% First Year Teachers	0.050		0.018	
% Pass Math CAHSEE	0.494	***	0.179	
School API	0.057	**	0.096	***
% Free/Reduced Lunch	0.186	***	0.140	**
Log Enrollment	4.018	***	3.105	**
% Grads UC/CSU Eligible	0.064		-0.041	
R ² (within district)	0.246		0.158	

N=1,083

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