## **Online Appendix**

The Effect of Access to College Assessments on Enrollment and Attainment

## By George Bulman

#### APPENDIX A. POPULATION AND REDUCED FORM ESTIMATES

This paper uses administrative records from the College Board linked to a large sample of National Student Clearinghouse (NSC) records. College Board records include students' test taking and college score report outcomes. NSC records contain information on college attendance, semesters completed, and graduation with national coverage. The results presented in Section IV and V do not use the universe of NSC data due to the per-student cost of each record. However, I do have access to the universe of College Board records, so this section presents population estimates for the available outcomes. Specifically, SAT taking and college score report outcomes are presented for three treatments: centers opening, centers closing, and neighboring centers. The analysis of district policies in the paper is already based on population data. Additionally, I present reduced form second-stage estimates for the sample used in the paper in order to facilitate a comparison of magnitudes across treatments.

Table A1 presents the population estimates for 654,252 students at schools where centers opened. Four specifications are shown for each outcome. The first specification omits matched control schools as well as school and demographic controls. The second specification adds matched controls, the third specification adds student demographics, and the fourth specification adds school characteristics. In the preferred specification, SAT taking increases by 7.8 percent on a baseline rate of 50.5 percent, or 3.9 percentage points. The results are quite robust, ranging from 7.8 to 8.1 percent, to each specification indicating that the estimates are driven by within-school variation over time. The second stage estimates indicate that between 53.5 and 55.3 percent of students induced to take the SAT send a score report to a college. This estimate is robust to the choice of specification. Table A2 presents the population estimates for 385,508 students affected by test center closures. Estimates on the rate of SAT taking range from 4.6 to 4.9 percent. The fraction of takers who would have sent score reports is estimated to be 44 percent in the preferred specification. Thus the results for the population indicate that test center closures deter some takers and that nearly half of these deterred takers would have sent a score report to a four-year college. The estimates do not appear to vary significantly with the choice of specification.

Table A3 presents estimates of the effect of test centers on students at neighboring schools. The estimates in columns 1 and 5 are based on the population of all students at all schools in SAT dominant states. A majority of schools in the U.S. experience a change in the number of centers within 15 miles during the period for which I have test center data. Columns 2 to 4 and 6 to 8 are based on the population of students at schools with a center that opened within 5 miles and their matched controls. The estimates suggest that the rate of SAT taking increases between 2.1 and 2.8 percent when a center opens within 5 miles of a high school. There is no indication of significant effects when centers open or close farther away. The fraction of new takers sending a score report to a college ranges from 42.7 and 49.7 percent. Thus the population estimates, both for all schools and all matched schools, support the hypothesis that access to local testing centers increases the rate of SAT taking and sending score reports to colleges.

Table A4 presents the reduced form estimates for the matched CB-NSC sample that correspond to Tables 3 to 6 in the paper. These indicate the percentage point effects of each of the four types of treatment. The instrumental variables estimates in the paper are scaled by the first stage effect and thus allow a comparison of the effects of being induced to take the SAT across treatments. The reduced form estimates facilitate a comparison of the magnitudes of the policies. Specifically, district policies appear to compel approximately twice as many students to attend college as a center opening, three times as many students as a center closing, and five times as many as a center opening at a neighboring school. This is likely due to the fact that district policies increase the number of SAT takers by a factor of 8, 12, and 19 relative to the other three forms of treatment. However, caution should be exercised when comparing policies that treated schools that are not similar in observable characteristics.

		ln(Too	ln(Took SAT)		01	Second Stage: Score Report	Score Repo	t
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)
Center Open	0.080***	0.081*** (0.013)	0.078***	0.078*** (0.013)				
Took SAT	(010.0)	(010.0)	(010.0)	(010.0)	$0.553^{***}$	$0.548^{***}$	$0.535^{***}$	$0.535^{***}$
					(0.073)	(0.090)	(0.093)	(0.090)
Female			$0.164^{***}$	$0.164^{***}$			$0.027^{***}$	$0.028^{***}$
			(0.004)	(0.004)			(0.008)	(0.008)
American Indian			-0.036	-0.035			-0.020***	$-0.019^{***}$
			(0.029)	(0.028)			(0.005)	(0.005)
Asian			$0.313^{***}$	$0.314^{***}$			$0.086^{***}$	$0.086^{***}$
			(0.016)	(0.016)			(0.015)	(0.015)
Black			$-0.199^{***}$	$-0.198^{***}$			$-0.019^{*}$	$-0.018^{*}$
			(0.016)	(0.016)			(0.010)	(0.009)
Hispanic			-0.276***	-0.276***			-0.036***	-0.036***
			(0.016)	(0.016)			(0.013)	(0.013)
School Characteristics				Yes				Yes
Student Demographics			Yes	Yes			$\gamma_{es}$	$Y_{es}$
Matched Schools		Yes	Yes	Yes		Yes	$\mathbf{Yes}$	Yes
School and Cohort FEs	$\mathbf{Yes}$	$\mathbf{Yes}$	Yes	Yes	Yes	$\mathbf{Yes}$	Yes	$\mathbf{Yes}$
Mean Dep Var	0.497	0.505	0.505	0.505	0.387	0.387	0.387	0.387
R-Squared	0.118	0.126	0.151	0.151	0.518	0.5168	0.515	0.515
Students	654, 252	1.297.407	1297,407	1,297,407	654, 252	1,297,407	1,297,407	1,297,407

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*Note:* Estimates in the first four columns reflect the effect of a new test center opening on SAT taking as a percent change relative to the mean prior to the center opening. The next four columns present the instrumental variables estimates of the effect of taking the SAT on sending a score report to a college. Testing center locations and openings are identified using a data set constructed by the author. SAT taking and score reports are based on the universe of College Board testing records. Each specification includes school and cohort fixed effects. The second specification adds in-state matched controls, the third adds student demographic characteristics, and the fourth adds school resources. Standard errors are clustered at the school level. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

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		ln(Too	ln(Took SAT)		Ň	scond Stage	Second Stage: Score Report	ort
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)
Center Closure	$-0.049^{***}$ (0.015)	$-0.047^{***}$ (0.012)	$-0.046^{***}$ (0.011)	$-0.048^{***}$ (0.011)				
Took SAT					$0.355^{*}$	$0.393^{**}$	$0.392^{**}$	$0.437^{***}$
					(0.197)	(0.169)	(0.167)	(0.153)
Female			$0.154^{***}$	$0.154^{***}$			$0.041^{***}$	$0.037^{***}$
			(0.004)	(0.004)			(0.013)	(0.012)
American Indian			-0.049*	-0.048			-0.034***	$-0.032^{***}$
			(0.029)	(0.030)			(0.008)	(0.008)
Asian			$0.264^{***}$	$0.264^{***}$			$0.094^{***}$	$0.088^{***}$
			(0.021)	(0.020)			(0.023)	(0.022)
Black			$-0.214^{***}$	$-0.210^{***}$			-0.044**	-0.039**
			(0.018)	(0.018)			(0.019)	(0.017)
Hispanic			$-0.319^{***}$	$-0.318^{***}$			-0.072***	-0.065**
			(0.018)	(0.018)			(0.028)	(0.026)
School Characteristics				$\mathbf{Y}_{\mathbf{es}}$				$\mathbf{Yes}$
Student Demographics			$\mathbf{Yes}$	$\mathbf{Y}_{\mathbf{es}}$			$\mathbf{Yes}$	$\mathbf{Y}_{\mathbf{es}}$
Matched Schools		$\mathbf{Y}_{\mathbf{es}}$	$\mathbf{Yes}$	$\mathbf{Yes}$		$\mathbf{Yes}$	$\mathbf{Yes}$	$\mathbf{Y}_{\mathbf{es}}$
School and Cohort FEs	$\mathbf{Yes}$	Yes	$\mathbf{Y}_{\mathbf{es}}$	$\mathbf{Y}_{\mathbf{es}}$	$\mathbf{Y}_{\mathbf{es}}$	$\mathbf{Yes}$	$\mathbf{Yes}$	$\mathbf{Y}_{\mathbf{es}}$
Mean Dep Var	0.472	0.516	0.516	0.516	0.411	0.411	0.411	0.411
R-Squared	0.145	0.135	0.162	0.163	0.428	0.461	0.469	0.501
Students	385.508	769,525	769.525	769.525	385.508	769.525	769.525	769.525

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		ln(Took SAT)	k SAT)		Ň	Second Stage: Score Report	Score Repo.	ť
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)
Centers Within 5 miles	$0.021^{***}$	$0.028^{***}$	$0.026^{***}$	$0.026^{***}$				
	(0.005)	(0.006)	(0.006)	(0.006)				
Centers Within 10 miles	0.003	-0.003	-0.004	-0.003				
	(0.003)	(0.006)	(0.006)	(0.006)				
Centers Within 15 miles	0.007*	0.006	0.006	0.008				
	(0.004)	(0.00)	(0.00)	(0.00)				
Took SAT	r.		r.	e.	$0.466^{***}$	$0.497^{***}$	$0.463^{***}$	$0.427^{**}$
					(0.167)	(0.162)	(0.174)	(0.177)
Female			$0.138^{***}$	$0.138^{***}$			$0.033^{**}$	$0.036^{***}$
			(0.003)	(0.003)			(0.014)	(0.014)
American Indian			$-0.056^{**}$	$-0.053^{**}$			-0.033***	-0.033***
			(0.022)	(0.022)			(0.007)	(0.008)
Asian			$0.168^{***}$	$0.169^{***}$			$0.076^{***}$	$0.079^{***}$
			(0.015)	(0.015)			(0.017)	(0.017)
Black			$-0.176^{***}$	$-0.174^{***}$			-0.026	-0.030
			(0.012)	(0.012)			(0.018)	(0.018)
Hispanic			-0.300***	-0.299***			-0.068**	-0.073**
			(0.015)	(0.015)			(0.030)	(0.030)
School Characteristics				Yes				Yes
Student Demographics			$\mathbf{Y}_{\mathbf{es}}$	$\mathbf{Y}_{\mathbf{es}}$			Yes	$\mathbf{Yes}$
Matched Schools		$\mathbf{Yes}$	$\mathbf{Yes}$	Yes		Yes	Yes	Yes
School and Cohort FEs	$Y_{es}$	$\mathbf{Yes}$	$\mathbf{Yes}$	$Y_{es}$	$Y_{es}$	$Y_{es}$	Yes	$\mathbf{Yes}$
Mean Dep Var	0.507	0.564	0.564	0.564	0.392	0.439	0.439	0.439
R-Squared	0.134	0.141	0.162	0.162	0.253	0.505	0.488	0.466
Students	5,276,563	1,152,913	1,152,913	1,152,913	5,276,563	1,152,913	1,152,913	1,152,913

four columns present the instrumental variables estimates of the effect of taking the SAT on sending as a percent change relative to the mean. The next four columns present the instrumental variables estimates of the effect of taking the SAT on sending a score report to a college. Testing center locations are identified using a data set constructed by the author. SAT taking and score reports are based on the universe of College Board testing records. Each specification includes school and cohort fixed effects. The second specification adds in-state matched controls, the third adds student demographic characteristics, and the fourth adds school resources. Standard errors are clustered at the school level. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

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	Took SAT	Send Score Report	Attend Four-Yr College	Semesters Completed	Graduated
	(T)	(7)	(0)	(4) 0.10m*	(0)
Open Center	$0.040^{***}$	$0.025^{***}$	$0.016^{***}$	$0.127^{*}$	0.010*
	(0.009)	(0.008)	(0.006)	(0.070)	(0.006)
Mean Dep Var	0.457	0.355	0.284	2.3	0.188
R-Squared	0.177	0.142	0.148	0.144	0.149
Students	323,110	323,110	323,110	323,110	213,876
Center Closure	$0.025^{***}$	$0.011^{**}$	0.010**	0.088*	$0.010^{**}$
	(0.006)	(0.006)	(0.005)	(0.047)	(0.004)
Mean Dep Var	0.516	0.399	0.328	1.977	0.201
R-Squared	0.163	0.134	0.149	0.163	0.132
Students	192,417	192,417	192,417	192,417	181,931
Center Within 5	$0.016^{***}$	$0.010^{**}$	0.006*	0.033*	0.005*
	(0.003)	(0.004)	(0.003)	(0.019)	(0.002)
Center Within 10	-0.001	0.001	-0.002	-0.008	-0.002
	(0.004)	(0.004)	(0.003)	(0.020)	(0.003)
Center Within 15	0.003	0.003	0.001	-0.006	-0.002
	(0.005)	(0.006)	(0.004)	(0.026)	(0.003)
Mean Dep Var	0.565	0.437	0.363	2.205	0.221
R-Squared	0.141	0.104	0.121	0.130	0.110
Students	228,762	228,762	228,762	228,762	182, 121
	Took SAT	Send Score Report	Attend Four-Yr College	Semesters (1 Year)	Complete First Year
<b>Opt-Out District Policy</b>	$0.309^{***}$	$0.171^{***}$	$0.033^{***}$	0.077**	$0.025^{***}$
	(0.032)	(0.042)	(0.009)	(0.029)	(0.007)
Mean Dep Var	0.423	0.305	0.208	0.515	0.144
R-Squared	0.226	0.137	0.159	0.158	0.145
Students	60,845	60,845	60,845	60,845	60,845

locations and openings are identified using a data set constructed by the author. SAT taking and score reports are based on the universe of College Board testing records. College outcomes are derived from linked individual records from the NSC. Each specification includes school and cohort fixed effects, and controls for student demographic characteristics. Standard errors are clustered at the school level for test center treatments and at the district level for district policies. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively. l to nter *Note:* student

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#### Appendix B. College Quality and the Host School Advantage

This section examines the types of colleges attend by newly induced SAT takers and whether or not there is an advantage to taking the SAT at one's own school. The Carnegie Foundation's Undergraduate Profile classifies colleges as being more selective, selective, or inclusive.<sup>58</sup> Tables B1 and B2 present the instrumental variables estimates of the effect of taking the SAT on college score reports and attendance by college selectivity. While students induced to take the SAT by a testing center seem to send score reports quite broadly, they are most likely to attend a college or university that is selective, and not more selective. A statistically insignificant 6.8 percent of compelled takers are estimated to attend a more selective college, while 28.2 percent matriculate at a selective college. By comparison, among always-takers, approximately 27.0 and 28.0 percent attend a more selective or selective college respectively. A similar pattern emerges among those who are compelled to take the SAT by a district policy. Though they are more likely to send a score report to a more selective college than a selective college, almost none ultimately attends a more selective college, while a statistically significant 4.6 percent attend a selective college. This is consistent with the distribution of scores for newly compelled takers.

An assumption of the instrumental variables strategy is that the rate of college attendance changes as a result of new students taking the SAT and not as a result of improved outcomes for always-takers. One mechanism by which access to a testing center could cause inframarginal students to realize better college outcomes is through higher test scores due to a host school advantage. This could occur if student performance on the SAT improves when students are familiar with the test taking environment or if they benefit from having a shorter distance to travel on test day. Likewise, if schools that host SAT centers offer special preparation for the exam that is not offered at other schools, it could result in higher average scores. This section examines this issue in two ways. First, I explicitly estimate the effect of test center access on SAT scores while controlling for each student's PSAT score (a potentially useful measure of expected performance). Higher than expected scores where a center opens would be evidence of a host school advantage. The PSAT is almost always taken by students at their own school and thus should be not be biased by a host school advantage. Of course, the composition of takers changes, which I discuss. Second, I examine if the PSAT scores of newly induced takers is similar to the SAT scores presented in the paper. Specifically, if the average performance of new takers on the PSAT is similar to that estimated for the SAT, it supports the finding that college-caliber students are induced to take the exam by centers.

I estimate the effect of center access on SAT scores while controlling for a student's baseline ability using his or her PSAT score. If taking the SAT at one's

 $<sup>^{58} {\</sup>rm For}$  more information see http://classifications.carnegiefoundation.org. Worth noting is that some inclusive four-year college do not require a college entrance exam.

own high school does not generate an advantage, then there should be no effect when conditioning on a true measure of ability. Note that if students induced to take the SAT by access to a center perform less well on the exam, conditional on their PSAT scores, then this may obscure a host school advantage. However, because new takers comprise only 8 percent of all takers, I can nonetheless rule out large effects for always-takers who comprise the majority of the population. Columns 3 and 6 present the effect of having a host center on a student's SAT score while controlling for PSAT score. Attention is restricted to students who take both the PSAT and the SAT. The specification is analogous to the one used to estimate college outcomes in Section IV, with school fixed effects, cohort fixed effects, and demographic controls. The estimates indicate there is no host school advantage in terms of test scores. At schools where centers open, the average SAT score is estimated to decrease by 0.135 points, out of 1600, and at schools where center close the average score is estimated to decrease by 0.001points. That is, after conditioning on a measure of baseline aptitude, there is no estimated increase in SAT scores associated with taking the exam at one's own high school. Note that the PSAT is almost always taken at one's own high school so there should be no host school variation in the measure of baseline performance. Because 92 percent of all takers are inframarginal, even modest positive benefits of taking the exam at one's own school would likely generate a positive average effect. Thus the changes in college outcomes identified in the paper are likely to stem from inducing additional SAT takers rather than improving the outcomes of inframarginal takers through higher scores.

Columns 1 and 4 of Table B3 present estimates of the change in the average PSAT score of students who ultimately take the SAT at schools that do and do not host a testing center (exploiting variation due to centers that open and close respectively). The results support the hypothesis that students induced to take the SAT by testing centers score lower than always-takers. New takers reduce the mean PSAT score by approximately 5.3 to 5.4 points. As shown in columns 2 and 5, new takers reduce the average SAT score by a nearly identical 4.8 and 4.7 points respectively. These estimates suggest that the distribution of PSAT and SAT scores of new takers is very similar, so the SAT scores presented in the paper are likely to be an accurate reflection of the aptitude of students induced to take the exam. That is, measuring aptitude using PSAT scores, which is not subject to a host school bias, indicate that some college-caliber students are induced to take the SAT.

				Secon	Second Stage			
		Score	Score Reports			Atte	Attendance	
	(1) All	(2) Inclusive	(3) Select	(4) More Select	(5) All	(6) Inclusive	(7) Select	(8) More Select
Took SAT	$0.637^{***}$ (0.124)	$0.281^{***}$ (0.097)	$0.589^{***}$ (0.143)	$0.528^{***}$ (0.129)	$0.370^{***}$ (0.104)	0.102 (0.063)	$0.282^{***}$ (0.095)	0.068 (0.075)
Female	$0.017^{*}$	0.007	0.019	-0.004	$0.033^{***}$	0.008	$0.020^{**}$	0.00
	(0.010)	(0.008)	(0.012)	(0.011)	(0.00)	(0.005)	(0.008)	(0.006)
American Indian	-0.001	$0.031^{***}$	0.005	-0.004	-0.052***	0.006	$-0.025^{***}$	-0.035***
	(0.007)	(0.007)	(0.00)	(0.00)	(0.00)	(0.004)	(0.008)	(0.006)
Asian	$0.080^{***}$	-0.014	-0.000	$0.108^{***}$	$0.038^{*}$	-0.011	-0.048**	$0.087^{***}$
	(0.024)	(0.018)	(0.026)	(0.026)	(0.022)	(0.011)	(0.019)	(0.019)
Black	-0.002	$0.109^{***}$	0.019	-0.037***	$-0.042^{***}$	$0.061^{***}$	$-0.024^{**}$	-0.078***
	(0.012)	(0.016)	(0.015)	(0.014)	(0.013)	(0.010)	(0.011)	(0.011)
Hispanic	-0.018	$0.034^{**}$	0.000	-0.017	-0.063***	$0.015^{*}$	$-0.031^{**}$	-0.048***
	(0.017)	(0.014)	(0.020)	(0.017)	(0.014)	(0.008)	(0.013)	(0.011)
School Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School and Cohort FEs	$Y_{es}$	Yes	Yes	$Y_{es}$	Yes	Yes	$\mathbf{Yes}$	Yes
Mean Dep Var	0.356	0.108	0.280	0.270	0.284	0.056	0.158	0.108
R-Squared	0.573	0.123	0.409	0.361	0.345	0.064	0.180	0.069
Students	323,110	323,110	323,110	323,110	323,110	323,110	323,110	323,110

TABLE B1—TESTING CENTERS: COLLEGE SELECTIVITY

Note: This tables presents second stage estimates of the effect of being induced to take the SAT by a test center opening. Estimates reflect the percentage point change in college score reports and attendance by college selectivity. Columns 1-4 present estimates of where induced SAT takers sent their college score reports. Columns 5-8 present estimates of which college induced SAT takers attended. Colleges are categorized as inclusive, selective, and more selective as indicated in the Carnegie Classification of Institutions of Higher Education. In the case of inclusive colleges, attention is restricted to colleges that require a college entrance exam score for admission. Testing center locations and openings are identified using a data set constructed by the author. SAT taking is based on the universe of College Board testing records. College outcomes are derived from linked individual records from the NSC. Each specification includes school and cohort fixed effects. Results are presented with and without controls for student demographic characteristics (the gender and race of each student) and school characteristics (fraction of students receiving a free or reduced lunch, pupil-teacher ratio). Standard errors are clustered at the school level. The symbols \*, \*\*, \* and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

		c	-	Second Stage	Stage		-	
		Score	Score Keports			Atte	Attendance	
	(1) All	(2) Inclusive	(3) Select	(4) More Select	(5) All	(6) Inclusive	(7) Select	(8) More Select
Took SAT	$0.553^{***}$ (0.084)	$0.262^{***}$ (0.041)	$0.297^{***}$ (0.034)	$0.451^{***}$ (0.054)	$0.108^{***}$ (0.032)	$0.034^{***}$ (0.011)	$0.046^{**}$ (0.019)	0.019 (0.024)
Female	0.030***	-0.008	$0.032^{***}$	$0.020^{***}$	$0.032^{***}$	-0.002	$0.012^{**}$	$0.023^{***}$
	(0.008)	(0.007)	(0.001)	(0.005)	(0.005)	(0.001)	(0.006)	(0.003)
American Indian	$-0.142^{*}$	$0.169^{***}$	0.019	0.104	0.020	$0.023^{**}$	0.007	-0.019
	(0.069)	(0.031)	(0.040)	(0.066)	(0.042)	(0.008)	(0.018)	(0.032)
Asian	-0.020	$0.113^{***}$	$0.076^{**}$	$0.178^{***}$	$0.101^{***}$	$0.014^{***}$	$0.024^{*}$	0.060**
	(0.035)	(0.022)	(0.033)	(0.046)	(0.034)	(0.004)	(0.012)	(0.024)
Black	-0.073	$0.171^{***}$	0.065	$0.119^{**}$	0.049	$0.028^{***}$	0.025	-0.010
	(0.056)	(0.025)	(0.043)	(0.055)	(0.040)	(0.00)	(0.018)	(0.030)
Hispanic	-0.092	$0.146^{***}$	0.027	$0.117^{*}$	0.029	$0.021^{***}$	0.003	-0.002
	(0.059)	(0.026)	(0.040)	(0.060)	(0.049)	(0.007)	(0.023)	(0.033)
School Characteristics	Yes	Yes						
School and Cohort FEs	$Y_{es}$	Yes	Yes	Yes	Yes	$\mathbf{Yes}$	$\mathbf{Y}_{\mathbf{es}}$	Yes
Mean Dep Var	0.722	0.233	0.553	0.517	0.492	0.092	0.224	0.202
Students	60,845	60,845	60,845	60,845	60,845	60,845	60,845	60,845
R-squared	0.554	0.166	0.323	0.358	0.246	0.081	0.09	0.108

TABLE B2—DISTRICT POLICIES: COLLEGE SELECTIVITY

MONTH YEAR *Note:* This tables presents second stage estimates of the effect of being induced to take the SAT by a district policy. Estimates reflect the percentage point change in college score reports and attendance by college selectivity. Columns 1-4 present estimates of where induced SAT takers sent their college score reports. Columns 5-8 present estimates of which college induced SAT takers attended. Colleges are categorized as inclusive, selective, and more selective as indicated in the Carnegie Classification of Institutions of Higher Education. In the case of inclusive colleges, attention is restricted to colleges that require a college entrance exam score for admission. SAT taking is based on the universe of College Board testing records. College outcomes are derived from linked individual records from the NSC. Each specification includes school and cohort fixed effects. Results are presented with and without controls for student demographic characteristics (the gender and race of each student) and school characteristics (fraction of students receiving a free or reduced lunch, pupil-teacher ratio). Standard errors are clustered at the school level. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

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	Testi	Testing Centers: Open	pen	Testi	Testing Centers: Close	lose
	PSAT Score (1)	SAT Score (2)	SAT Score (3)	PSAT Score (4)	SAT Score (5)	SAT Score (6)
Center Open	$-5.344^{**}$ (2.441)	$-4.815^{**}$ (2.405)	-0.135 (1.138)	$-5.384^{**}$ (2.495)	$-4.718^{*}$ (2.520)	-0.001 (1.287)
PSAT Score			$0.876^{***}$ (0.002)			$0.876^{***}$ (0.003)
Female	$-27.661^{***}$	$-36.001^{***}$	-11.778*** (0.370)	-28.800*** (1.098)	$-36.840^{***}$	-11.608*** (0.496)
American Indian	$-47.949^{***}$	$-51.814^{***}$	-9.823***	-62.468***	-62.428***	-7.699***
Asian	$(3.470)$ $13.185^{**}$	(3.012) 17.257***	(1.909) 5.710***	(4.025)-2.849	$(\frac{4.73}{0.179})$	(2.209) $2.675^{**}$
Black	(5.331)-130.431***	(5.548) -140.660***	(1.162) -26.437***	(5.824)-140.797***	(5.917) -149.355***	(1.141) -26.002***
Hispanic	(3.798) -75.618*** (3.438)	(4.162) - $81.767^{***}$ (3.974)	(1.044) -15.546*** (1.159)	(5.353) -84.541*** (4.009)	(5.453) -89.568*** (4.296)	(1.200) -15.500*** (1.097)
School FEs Cohort FEs	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dep Var B-Sourced	1,019.2 0.235	1,019.2	1,019.2	1,034.5	1,034.5	1,034.5
Students	517,487	517,487	517,487	305,052	305.052	305,052

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TABLE	

*Note:* This table presents estimates the effect of testing centers that open and close on PSAT and SAT scores. Attention is restrict to students who take both the SAT and the PSAT. The estimates in columns 1 and 4 reflect the change in the average PSAT score of SAT takers when a center opens or closes. The estimates in columns 2 and 5 reflect the average change in SAT score for SAT takers when a center opens or closes. The estimates in columns 2 and 5 reflect the average change in SAT score for SAT takers when a center opens or closes. The estimates in columns 3 and 6 indicate the change in SAT score while controlling for each student's PSAT score. Each specification includes school and cohort fixed effects in order to exploit within-school variation over time and controls for student demographic characteristics. Standard errors are clustered at the school level. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

#### APPENDIX C. POLICY INTERACTIONS AND SPECIFICATION CHECKS

I test if the estimated effects of SAT centers and district policies is dependent on the ease of access to a center at high schools in the baseline period, whether there is evidence that the results are driven by students switching between the SAT and ACT, and whether the results are sensitive to controlling for trends at the school level. I also conduct falsification tests of the identification strategy by estimating the effect of treatment on student performance on the PSAT and AP exams, which should not be affected, as well as student characteristics. The relatively small number of clusters available when estimating district policy effects may violate the asymptotic assumptions necessary for valid inference. Thus I present the results of estimating the confidence intervals using a wild cluster bootstrap procedure and compare it to alternatives.

The effect of an SAT center on college outcomes may depend on baseline levels of access. Estimates could also be biased if students switch between the ACT and the SAT. Note that the analysis in the paper is restricted to states where the SAT is dominant, so this is unlikely to be an important concern. However, if the effects are larger for schools that are ACT centers at the time an SAT center opens, it might suggest that the results stem from students switching between exams. Conversely, if the effects are larger for schools that do not have ACT centers, it suggests that a lower level of baseline access increases the treatment effect. The specification presented in Table C1 controls for ACT center status and the interaction of ACT center status with a center opening. Columns 1 to 4 present estimates of the effect of a new test center analogous to those discussed in Section IV. The results indicate that the estimated change in the rate of SAT taking is slightly larger at schools where there is no ACT center (9.1 percent versus 8.5 percent). Likewise, 57 percent of SAT takers are estimated to send a score report, 36 percent attend a four-year college, and complete an average of 2.6 semesters, which is nearly identical to specifications that omit this interaction. The fact that the estimates are nearly unchanged by controlling for ACT center status is consistent with the results stemming from students taking the SAT who would not otherwise take any college entrance exam.

Columns 5 to 8 present the district policy effects while controlling for each high schools status as an SAT center. It is worth noting that schools that already have SAT centers may differ fundamentally from those that do not, so the effects are not expected to be identical. The estimates indicate that SAT taking increases somewhat less at high schools that already host an SAT center than at high schools that do not. The second stage estimate of the effect of taking the SAT on college outcomes does not change significantly. Thus the results suggest slightly smaller overall effects at schools that have centers prior to policy implementation, which is consistent with centers generating increased rates of SAT taking and college attendance.

The matching process used in the paper is based on school characteristics and trends in the years prior to treatment. The results will be biased upward if treated schools experience a steeper trend in college outcomes than control schools. Table C2 presents the results while controlling for separate time trends for each school. Note that if the effects of treatment increase during the after period (e.g. as the center adds more dates) it could spuriously attribute the treatment effect to a time trend and result in estimates of treatment that are too small. SAT taking is estimated to increase by 7.4 percent, which is slightly smaller than the 8.5 percent without school-level time trend controls. The second stage effects indicate that 54 percent of takers send a score report, 42 percent attend college, and complete an average of 2.55 semesters. These are similar to the estimates without separate school trend controls, which were 64 percent, 39 percent, and 2.86 semesters respectively. For district policies, the estimated increase in SAT taking is 68 percent, which is slightly smaller than the 73 percent estimated without school specific time trends. Among new takers, an estimated 60 percent send a score report, 8 percent attend, and 6 percent complete their first year. These are similar to the 55 percent, 10 percent, and 8 percent estimated without school-specific time controls. Overall, the results indicate that there is at most modest upward bias in the estimates due to differential trends across high schools.

As a falsification test, I replicate the primary specifications in the paper to examine if there are changes in average outcomes that are not expected to change. Specifically, I estimate the effect of each of the four treatments on racial composition, fraction of students receiving a free or reduced lunch, student-teacher ratio, and average scores earned on the PSAT and AP exams. The regression specification includes cohort fixed effects, and school fixed effects. Nearly all of the estimated changes in Table C3 are statistically insignificant and small in magnitude. Thus there is no evidence of a differential change in student aptitude or school quality between treated and untreated schools. This is consistent with the finding that adding control variables to the primary specifications does not significantly change the primary results.

Estimates of the effects of district policies are presented with standard errors clustered at the district level, which is the level at which treatment occurs. A potential concern with this approach is the modest number of districts affected. Specifically, Cameron, Gelbach and Miller (2008) find that inference based on asymptotic assumptions may not be valid when there are between "five to thirty" clusters and recommend a wild cluster bootstrap procedure. Table C4 presents the reduced form estimates for district policies for four different methods of computing standard errors. Specifically, the 95 percent confidence interval for each outcome of interest is presented with robust Huber-White standard errors, clustering at the school level, clustering at the district level, and a wild cluster bootstrap (with 100 resamples) at the district level. The confidence intervals are quite similar with and without the bootstrap procedure.

		Testing Centers	ters			District Policy	olicy	
	ln(Took SAT) (1)	Score Report (2)	Attend (3)	Semesters (4)	ln(Took SAT) (5)	Score Report (6)	Attend (7)	Complete Year (8)
Center Open / Policy	$0.091^{***}$ (0.019)				$0.814^{***}$ (0.070)			
Took SAT		$0.574^{***}$ (0.126)	$0.364^{***}$ (0.105)	$2.615^{***}$ (0.963)		$0.515^{*}$ (0.247)	$0.090^{**}$ (0.033)	$0.061^{***}$ (0.014)
ACT Center	-0.049	-0.006	$-0.012^{*}$	-0.173**				
	(0.036)	(0.009)	(0.007)	(0.080)				
AUI Center A Center Upen	-0.014 $(0.045)$	(800.0)	(0.007)	0.015 (0.081)				
SAT Center					-0.091	-0.077	-0.010	$-0.017^{**}$
					(0.111)	(0.053)	(0.012)	(0.006)
SAT Center X Policy					$-0.155^{***}$	0.041	-0.004	-0.002
					(0.015)	(0.073)	(0.011)	(0.005)
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School and Cohort FEs	Yes	$\mathbf{Yes}$	$\gamma_{es}$	Yes	Yes	Yes	$\mathbf{Yes}$	Yes
Mean Dep Var	0.457	0.355	0.284	1.91	0.423	0.722	0.492	0.437
R-Squared	0.178	0.555	0.343	0.332	0.224	0.541	0.233	0.202
Students	323,110	323,110	323,110	323,110	60.845	60.845	60.845	60,845

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*Note:* This table presents estimates that take into account each ingli sciencies this status as a resting center at the time of treatment. In columns 1 to 4, the specification includes each high school's status as an ACT center and interacts this status with the SAT center status. In columns 5 to 8, the specification includes each high school's status as an ACT center and interacts this with the timing of district policy adoption. Columns 1 and 5 are first stage estimates of SAT taking while columns 2 to 4 and 6 to 8 are the instrumental variables estimates. Each policy adoption. Columns 1 and 5 are first stage estimates of SAT taking while columns 2 to 4 and 6 to 8 are the instrumental variables estimates. Each oll specification includes school and cohort fixed effects and student demographic characteristics (gender, race). Standard errors are clustered at the school level for test center analysis and at the district level for district policies. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

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		Testing Centers	ters			District Opt-Out Policy	<b>Dut Policy</b>	
	ln(Took SAT) (1)	Score Report (2)	Attend (3)	Semesters (4)	$\ln(\text{Took SAT})$ (5)	Score Report (6)	Attend (7)	Complete Year (8)
Center / Policy	$0.074^{***}$ (0.021)			~	$0.677^{***}$ (0.034)			
Took SAT		$0.540^{***}$ (0.152)	$0.416^{***}$ (0.141)	$2.548^{**}$ (1.066)		$0.603^{**}$ (0.111)	$0.081^{***}$ (0.023)	$0.062^{**}$ (0.027)
Female	$0.180^{***}$	$0.026^{**}$	$0.029^{**}$	$0.251^{***}$	$0.230^{***}$	$0.025^{**}$	$0.034^{***}$	$0.031^{***}$
	(0.007)	(0.013)	(0.012)	(0.091)	(0.015)	(0.011)	(0.005)	(0.005)
American Indian	-0.077*	-0.004	-0.050***	-0.469***	-1.788***	-0.102	0.001	-0.004
	(0.046)	(0.00)	(0.010)	(0.076)	(0.106)	(0.089)	(0.034)	(0.029)
Asian	$0.391^{***}$	$0.098^{***}$	0.031	0.306	$-0.919^{***}$	0.002	$0.091^{***}$	$0.076^{***}$
	(0.041)	(0.028)	(0.026)	(0.198)	(0.093)	(0.046)	(0.029)	(0.022)
Black	$-0.211^{***}$	-0.011	$-0.038^{**}$	$-0.303^{**}$	$-1.304^{***}$	-0.042	0.035	0.024
	(0.030)	(0.015)	(0.016)	(0.120)	(0.061)	(0.068)	(0.034)	(0.028)
Hispanic	-0.298***	-0.031	-0.057***	$-0.395^{**}$	$-1.429^{***}$	-0.058	0.014	0.009
	(0.024)	(0.021)	(0.020)	(0.155)	(0.062)	(0.073)	(0.043)	(0.036)
School Time Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	$\mathbf{Yes}$	Yes	Yes	$\mathbf{Y}_{\mathbf{es}}$	Yes
School and Cohort FEs	Yes	Yes	Yes	$Y_{es}$	$Y_{es}$	$Y_{es}$	$\mathbf{Y}_{\mathbf{es}}$	Yes
Mean Dep Var	0.457	0.777	0.621	4.175	0.423	0.722	0.492	0.437
R-Squared	0.178	0.544	0.365	0.332	0.228	0.570	0.226	0.203
Students	323.110	323.110	323.110	323.110	60.845	60.845	60.845	60.845

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4 present the estimates for the case of new test centers opening and columns 5 to 8 present the estimates for the case of district policies that provide free in-school administration and default registration. Columns 1 and 5 are first stage estimates of SAT taking while columns 2 to 4 and 6 to 8 are the instrumental variables estimates. Each specification includes school and cohort fixed effects and student demographic characteristics (gender, race). Standard errors are clustered at the school level for test center analysis and at the district level for district policies. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively.

	(1)	(6)	(3)	(V)		rree Luncn	11001 SAU	AVG AF (8)
Open Center	0.002	0.003	-0.003	-0.004	0.000	0.004	3.528	-0.046
ı	(0.002)	(0.002)	(0.004)	(0.004)	(0.005)	(0.008)	(2.874)	(0.036)
Mean Dep Var	0.51	0.05	0.16	0.155	0.596	0.25	896.494	2.581
R-Squared	0.526	0.977	0.980	0.984	0.984	0.917	0.933	0.804
School-Cohorts	4,486	4,486	4,486	4,486	4,486	4,476	4,478	4,217
Center Closure	0.002	-0.003	-0.000	-0.003	0.001	0.007	2.108	0.029
	(0.003)	(0.002)	(0.003)	(0.004)	(0.004)	(0.007)	(2.624)	(0.029)
Mean Dep Var	0.511	0.063	0.166	0.189	0.539	0.269	894.731	2.544
R-Squared	0.586	0.977	0.986	0.986	0.987	0.923	0.956	0.823
School-Cohorts	2,644	2,644	2,644	2,644	2,644	2,632	2,641	2,509
Centers Within 0-5	-0.001	0.003	-0.003	-0.002	-0.001	0.003	$2.637^{*}$	0.012
	(0.004)	(0.002)	(0.003)	(0.002)	(0.003)	(0.004)	(1.421)	(0.019)
Centers Within 5-10	-0.000	0.001	0.002	-0.004	0.000	0.003	-3.444	-0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(2.183)	(0.022)
Centers Within 10-15	-0.000	0.002	0.002	0.000	-0.006	0.001	-0.188	-0.047*
	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.005)	(2.330)	(0.025)
Mean Dep Var	0.523	0.066	0.232	0.163	0.493	0.286	883.823	2.493
R-Squared	0.361	0.923	0.958	0.950	0.964	0.906	0.945	0.798
School-Cohorts	4,311	4,311	4,311	4,311	4,311	4,311	4,311	4,027
Opt-Out District Policy	0.019	-0.032	-0.016	-0.047	-0.009	0.019	-12.117	-0.020
	(0.018)	(0.022)	(0.014)	(0.040)	(0.014)	(0.039)	(20.624)	(0.099)
Mean Dep Var	0.513	0.159	0.175	0.45	0.171	0.514	780.567	1.966
R-Squared	0.471	0.984	0.981	0.973	0.966	0.816	0.873	0.872
School-Cohorts	71	71	71	71	71	71	69	65

spuoc to one of the four treated groups: centers opening, centers closing, neighboring centers, and district policies. The range of cohorts included are the same as for the primary specifications in the paper. Student characteristics, free lunch status, and teacher-pupil ratio are from the National Center for Education Statistics Common Core Data. Average PSAT and AP scores at each school are based on College Board records. In some cases, no student in a school-cohort took an AP or PSAT exam, or data from the NCES CCD is not available. Each specification uses school averages, includes matched control schools, and includes school and cohort fixed effects. Standard errors are clustered at the school level for test center treatments and at the district level for district policies. The symbols \*, \*\*, and \*\*\* represent statistical significance at 10, 5, and 1 percent respectively. included are the to one of the Note: This

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	Took SAT $(1)$	Send Score Report (2)	Attend Four-Yr College (3)	(4)	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \end{array} $
Robust (Huber-White)					
<b>Opt-Out</b> District Policy	$0.309^{***}$	$0.171^{***}$	$0.033^{***}$	0.077***	$0.025^{***}$
Confidence Interval (95 perc.)	[0.291, 0.327]	[0.152, 0.191]	[0.017, 0.050]	[0.035, 0.118]	[0.010, 0.041]
Students	60,825	60,825	60,825	60,825	60,825
R-squared	0.225	0.136	0.156	0.157	0.144
Cluster - School Level					
Opt-Out District Policy	$0.309^{***}$	$0.171^{***}$	$0.033^{***}$	0.077**	$0.025^{***}$
Confidence Interval (95 perc.)	[0.244, 0.374]	[0.085, 0.258]	[0.015, 0.052]	[0.019, 0.135]	[0.011, 0.039]
Students	60,825	60,825	60,825	60,825	60,825
R-squared	0.225	0.136	0.156	0.157	0.144
Cluster - District Level					
<b>Opt-Out District Policy</b>	$0.309^{***}$	$0.171^{***}$	$0.033^{***}$	0.077***	$0.025^{***}$
Confidence Interval (95 perc.)	[0.252, 0.366]	[0.132, 0.210]	[0.016, 0.051]	[0.031, 0.122]	[0.013, 0.038]
Students	60,825	60,825	60,825	60,825	60,825
R-squared	0.225	0.136	0.156	0.157	0.144
Wild Boostrap Cluster					
District Level (100 resamples)					
<b>Opt-Out District Policy</b>	$0.309^{***}$	$0.171^{***}$	$0.033^{***}$	$0.077^{***}$	$0.025^{***}$
Confidence Interval (95 perc.)	[0.255, 0.364]	[0.132, 0.203]	[0.021, 0.048]	[0.039, 0.105]	[0.015, 0.037]
Students	60,825	60,825	60,825	60,825	60,825
R-squared	0.225	0.136	0.156	0.157	0.144

resents four alternative confidence intervals for the reduced form estimates of the effects of district policies that provide free in-school	l default registration. The first section presents intervals based on robust, Huber-White, standard errors; the second based on standard	strors clustered at the school level; the third based on standard errors clustered at the district level; and the fourth using wild a wild bootstrap procedure	hat adjusts for the small number of clusters. Each specification includes cohort fixed effects, school fixed effects, and controls for student demographic	e symbols *, **, and *** represent statistical significance at 10, 5, and 1 percent respectively.
presents four al	nd default regist	t the school leve	the small numbe	*
<i>Note:</i> This table presents four $\varepsilon$	administration and default regis	errors clustered a	that adjusts for t	characteristics. The symbols

Appendix D. Propensity Score Matching Balance in Pre and Post Periods

This paper examines four types of treatment that affect access to the SAT: centers that open, centers that close, centers at neighboring schools, and district policies. Schools affected by each type of treatment are matched to control schools in the same state using a propensity scoring matching method. As shown in Tables A1 to A3, within school variation is the primary determinant of the estimated effects in this paper. However, three classes of potentially confounding factors suggest that using appropriately chosen matched control schools may reduce bias in the estimates. Matched control schools may account for year-to-year variation in college outcomes that is due to factors not associated with the treatment of interest. Specifically, centers may open or close in a way that is correlated with variation in college attendance due to economic factors (e.g. a recession), state policies that promote investment in education or college enrollment (e.g. changes in tuition or enrollment targets at state universities), or the comparability of data across years. For example, two of the three district policies examined in the paper were implemented in 2011. Assuming that college outcomes would be identical for the 2010 and 2011 cohorts is a very strong assumption. In terms of data limitations, it is not possible to observe the year in which score reports are sent, so the fraction of students sending a report is larger for older cohorts.

There are many propensity score algorithms that match each treated schools to a set of control schools, but these are not feasible given the constraint that data must be purchased from the National Student Clearinghouse for each control school.<sup>59</sup> Thus, a nearest-neighbor method that chooses the single best match is used. A high school is identified as treated if, respectively: a) a center opens at the school; b) a center closes at the school; c) a center opens within 5 miles of the school; d) a policy is adopted by the district. The pool of potential control schools are those high schools where a center did not open, where a center did not close, where a center did not open at a high school within 5 miles, or where a policy was not adopted.

For each type of treatment, a propensity score is computed for each cohort from each high school using a probit model. Specifically, the likelihood of being treated during the period of interest is estimated as a function of the demographic characteristics of the school, the fraction of students receiving a free or reduced lunch, the enrollment level (all from the NCES Common Core of Data), and the fraction of students who take the SAT (from College Board records).

(D1) 
$$T_{s} = \alpha + \sum_{j} \delta_{j} FracRace_{j,s,c} + \beta_{1} FreeLunch_{s,c} + \beta_{2} Enrol_{s,c} + \beta_{3} \Delta Enrol_{s,c} + \beta_{4} FracSAT_{s,c} + \beta_{5} \Delta FracSAT_{s,c} + \epsilon_{i,s,c}$$

 $^{59}$ Matching each treated school to multiple controls is feasible in the population College Board data. Nearest-neighbor performs nearly identically to alternative matching algorithms in this context. The propensity score equation also includes the average change in enrollment levels and the average rate of change in SAT taking over the five prior years, as these are potentially important predictors of changes in treatment status (e.g. if schools with increasing or decreasing enrollment are likely to have a center open or close). Each treated school is matched to a control school in the same state on the basis of having a similar propensity to be treated two years prior to the actual treatment. Matching within-state makes it possible for control schools to account for a range of potentially important confounding factors such as secondary education funding levels, regional economic conditions, funding for public colleges and universities, and state-level policies to promote college enrollment. Schools are matched with replacement, though in practice only a small fraction of schools are used as controls more than once and no school is matched more than twice.

I examine if the propensity score matching process resulted in pairs of schools that are well matched in the years prior to treatment and if these schools continue to be well matched after treatment. If treated schools and their matched controls diverge significantly in terms of their characteristics over time, it could indicate that the treatment was precipitated by demographic changes or that changes over time are generating spurious estimates for the outcomes of interest. Tables D1 to D4 present the pre-treatment balance for variables used in the matching process (race, free lunch status, grade 12 enrollment, pupil-teacher ratio, and SAT taking) and variables not used for matching (SAT score, college application patterns). By design, schools and their controls are well matched in terms of demographic characteristics and rates of SAT taking. Being well matched on variables used in the matching process indicates that there was sufficient common support. There is little evidence that the schools differ in terms the rate at which their students send score reports to public and private colleges and selective and nonselective colleges. Finding that the schools are well-matched on variables that were not used explicitly in the matching process provides some evidence that the set of variables used to match was sufficient to match schools that are similar in terms of other, unobservable characteristics.

	HS Center Open	Matched Control	Difference	P-Value
	(1)	(2)	(3)	(4)
Student and School Cl	haracteristics			
Am. Indian	0.006	0.007	-0.001	0.604
Asian	0.053	0.048	0.004	0.657
Black	0.170	0.172	-0.003	0.904
Hispanic	0.177	0.170	0.007	0.758
White	0.571	0.579	-0.008	0.786
Other Races	0.024	0.023	0.000	0.842
Free Lunch	0.288	0.282	0.006	0.750
Grade 12 Enrol	302.2	288.4	13.86	0.432
Pupil-Teach Rat	16.427	16.406	0.021	0.963
SAT Testing				
Took SAT	0.493	0.507	-0.014	0.449
SAT Score	968.6	971.8	-3.17	0.718
College Score Reports				
Any College	0.378	0.385	-0.007	0.664
Inclusive	0.104	0.101	0.003	0.701
Selective	0.295	0.302	-0.007	0.560
More Selective	0.273	0.278	-0.005	0.706
Public	0.346	0.351	-0.005	0.704
Private	0.236	0.243	-0.007	0.623
Barrons 1	0.117	0.122	-0.005	0.581
Barrons 2	0.167	0.169	-0.002	0.843
Barrons 3	0.232	0.230	0.002	0.880
Barrons 4	0.269	0.276	-0.007	0.560
Barrons 5	0.094	0.099	-0.005	0.485
Barrons 6	0.028	0.021	0.007	0.226
Barrons 7	0.021	0.026	-0.005	0.306

TABLE D1—HIGH SCHOOLS WHERE CENTERS OPEN ARE BALANCED WITH MATCHED CONTROLS

*Note:* High schools with new test centers are matched to in-state controls using propensity score matching. This table presents the balance in characteristics between these groups in the year prior to the opening of the center. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. Rates of SAT taking and applications (score reports) are based on College Board student records. The classification of colleges as Selective and More Selective is based on the Carnegie Undergraduate Profile Classification. Barron's selectivity classifications range from 1, the most selective, to 7, the least selective. Note that demographic characteristics, enrollment, and rates of SAT taking are used in the matching process, but the SAT score, student-to-teacher ratio, and application rates are not.

	HS Center Close	Matched Control	Difference	P-Value
	(1)	(2)	(3)	(4)
Student and School	Characteristics			
Am. Indian	0.007	0.007	-0.000	0.927
Asian	0.070	0.062	0.009	0.494
Black	0.157	0.187	-0.030	0.288
Hispanic	0.206	0.207	-0.001	0.970
White	0.522	0.507	0.014	0.690
Other Races	0.038	0.030	0.008	0.199
Free Lunch	0.303	0.300	0.003	0.898
Grade 12 Enrol	295.4	292.3	3.090	0.884
Pupil-Teach Rat	16.590	16.884	-0.294	0.605
SAT Testing				
Took SAT	0.524	0.520	0.004	0.862
SAT Score	981.6	967.8	13.80	0.252
College Score Report	ts			
Any College	0.399	0.403	-0.004	0.831
Inclusive	0.091	0.110	-0.018	0.101
Selective	0.301	0.310	-0.009	0.567
More Selective	0.298	0.286	0.012	0.529
Public	0.366	0.363	0.002	0.912
Private	0.253	0.247	0.006	0.753
Barrons 1	0.144	0.127	0.017	0.225
Barrons 2	0.187	0.178	0.009	0.558
Barrons 3	0.246	0.234	0.012	0.446
Barrons 4	0.273	0.283	-0.011	0.485
Barrons 5	0.091	0.108	-0.017	0.101
Barrons 6	0.024	0.033	-0.009	0.167
Barrons 7	0.026	0.024	0.002	0.764

TABLE D2—High Schools Where Centers Close Are Balanced With Matched Controls

*Note:* High schools with centers that close are matched to in-state controls using propensity score matching. This table presents the balance in characteristics between these groups in the year prior to the closing of the test center. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. Rates of SAT taking and applications (score reports) are based on College Board student records. The classification of colleges as Selective and More Selective is based on the Carnegie Undergraduate Profile Classification. Barron's selectivity classifications range from 1, the most selective, to 7, the least selective. Note that demographic characteristics, enrollment, and rates of SAT taking are used in the matching process, but the SAT score, student-to-teacher ratio, and application rates are not.

	Center Neighbor	Matched Control	Difference	P-Value
	(1)	(2)	(3)	(4)
Student and School Ch	aracteristics			
Am. Indian	0.006	0.007	-0.000	0.712
Asian	0.067	0.065	0.002	0.841
Black	0.224	0.225	-0.001	0.970
Hispanic	0.154	0.141	0.013	0.536
White	0.503	0.521	-0.017	0.575
Other Races	0.045	0.042	0.004	0.354
Free Lunch	0.253	0.238	0.014	0.490
Grade 12 Enrol	226.9	255.8	-28.93	0.047
Pupil-Teach Rat	15.953	15.374	0.579	0.079
SAT Testing				
Took SAT	0.587	0.583	0.004	0.843
SAT Score	939.7	953.2	-13.45	0.233
College Score Reports				
Any College	0.461	0.454	0.007	0.671
Inclusive	0.138	0.145	-0.007	0.534
Selective	0.356	0.349	0.007	0.609
More Selective	0.366	0.358	0.008	0.620
Public	0.414	0.405	0.008	0.590
Private	0.353	0.340	0.013	0.409
Barrons 1	0.164	0.156	0.009	0.469
Barrons 2	0.234	0.239	-0.005	0.726
Barrons 3	0.288	0.275	0.013	0.292
Barrons 4	0.335	0.319	0.016	0.253
Barrons 5	0.092	0.120	-0.028	0.006
Barrons 6	0.035	0.036	-0.002	0.793
Barrons 7	0.053	0.041	0.012	0.070

TABLE D3—NEIGHBOR HIGH SCHOOLS ARE BALANCED WITH MATCHED CONTROLS

*Note:* High schools with neighboring centers that open are matched to in-state controls using propensity score matching. This table presents the balance in characteristics between these groups in the year prior to the opening of the neighboring center. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. Rates of SAT taking and applications (score reports) are based on College Board student records. The classification of colleges as Selective and More Selective is based on the Carnegie Undergraduate Profile Classification. Barron's selectivity classifications range from 1, the most selective, to 7, the least selective. Note that demographic characteristics, enrollment, and rates of SAT taking are used in the matching process, but the SAT score, student-to-teacher ratio, and application rates are not.

	HS with Policy	Matched Control	Difference	P-Value
	(1)	(2)	(3)	(4)
Student and School	Characteristics			
Am. Indian	0.014	0.004	0.010	0.053
Asian	0.080	0.084	-0.004	0.931
Black	0.230	0.253	-0.022	0.781
Hispanic	0.425	0.370	0.055	0.523
White	0.251	0.290	-0.038	0.671
Free Lunch	0.429	0.437	-0.008	0.897
Grade 12 Enrol	417.1	369.2	47.82	0.343
SAT Testing				
Took SAT	0.354	0.359	-0.005	0.935
SAT Score	933.5	927.8	5.62	0.865
College Score Repor	rts			
Any College	0.257	0.276	-0.019	0.680
Inclusive	59.176	46.647	12.529	0.295
Selective	83.765	88.294	-4.529	0.810
More Selective	81.353	81.000	0.353	0.984
Public	0.241	0.258	-0.016	0.707
Private	0.143	0.146	-0.004	0.888
Barrons 1	0.101	0.118	-0.017	0.576
Barrons 2	0.132	0.156	-0.023	0.514
Barrons 3	0.168	0.173	-0.005	0.880
Barrons 4	0.174	0.190	-0.016	0.586
Barrons 5	0.058	0.064	-0.005	0.810
Barrons 6	0.009	0.026	-0.017	0.160
Barrons 7	0.007	0.004	0.003	0.275

TABLE D4—HIGH SCHOOLS WITH DISTRICT POLICIES ARE BALANCED WITH MATCHED CONTROLS

*Note:* High schools in districts with policies are matched to in-state controls using propensity score matching. This table presents the balance in characteristics between these groups in the year prior to policy implementation. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. Rates of SAT taking and applications (score reports) are based on College Board student records. The classification of colleges as Selective and More Selective is based on the Carnegie Undergraduate Profile Classification. Barron's selectivity classifications range from 1, the most selective, to 7, the least selective. Note that demographic characteristics, enrollment, and rates of SAT taking are used in the matching process, but the SAT score, student-to-teacher ratio, and application rates are not.

	HS Cent	er Open	Matched	l Control	Compai	rison
	Before	After	Before	After	Diff-in-Diff	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Student and Scho	ol Charact	eristics				
Am. Indian	0.006	0.006	0.007	0.007	0.000	0.975
Asian	0.053	0.054	0.048	0.049	0.001	0.683
Black	0.170	0.166	0.172	0.171	-0.002	0.579
Hispanic	0.177	0.187	0.170	0.180	-0.000	0.968
White	0.571	0.560	0.579	0.569	-0.001	0.896
Other Races	0.024	0.026	0.023	0.024	0.002	0.440
Free Lunch	0.288	0.302	0.282	0.297	-0.002	0.694
Grade 12 Enrol	302.2	307.8	288.4	288.3	5.70	0.108
Pupil-Teach Rat	16.427	16.595	16.406	16.482	0.041	0.905

TABLE D5—CHANGE IN SCHOOL CHARACTERISTICS BEFORE AND AFTER A CENTER OPENS

*Note:* High schools where test centers opened are matched to in-state controls using propensity score matching. This table compares the changes in student characteristics and school resources before and after the centers opened. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. The difference-in-difference comparisons are based on the year before and the year after the center opened. The table indicates that the treated schools experienced similar changes to the matched control schools.

TABLE D6—CHANGE IN SCHOOL CHARACTERISTICS BEFORE AND AFTER A CENTER CLOSES

	HS Cent	er Close	Matcheo	l Control	Compa	rison
	Before	After	Before	After	Diff-in-Diff	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Student and Scho	ol Charac	teristics				
Am. Indian	0.007	0.007	0.007	0.007	0.000	0.947
Asian	0.070	0.071	0.062	0.060	0.002	0.371
Black	0.157	0.159	0.187	0.187	0.002	0.598
Hispanic	0.206	0.215	0.207	0.211	0.005	0.325
White	0.522	0.521	0.507	0.503	0.004	0.494
Other Races	0.038	0.026	0.030	0.032	-0.013	0.050
Free Lunch	0.303	0.321	0.300	0.318	-0.001	0.925
Grade 12 Enrol	295.4	297.5	292.3	295.0	-0.578	0.902
Pupil-Teach Rat	16.590	16.631	17.204	17.105	-0.085	0.731

*Note:* High schools where test centers closed are matched to in-state controls using propensity score matching. This table compares the changes in student characteristics and school resources before and after the closing. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. The difference-in-difference comparisons are based on the year before and the year after the center closed. The table indicates that the treated schools experienced similar changes to the matched control schools.

	Neight	oor HS	Matcheo	l Control	Compa	rison
	Before	After	Before	After	Diff-in-Diff	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Student and Scho	ol Charac	teristics				
Am. Indian	0.006	0.006	0.007	0.005	0.001	0.975
Asian	0.067	0.067	0.065	0.063	-0.005	0.683
Black	0.224	0.235	0.225	0.236	-0.004	0.579
Hispanic	0.154	0.170	0.141	0.160	-0.001	0.968
White	0.503	0.470	0.521	0.492	0.007	0.896
Other Races	0.045	0.052	0.042	0.043	0.002	0.440
Free Lunch	0.253	0.301	0.238	0.287	0.008	0.694
Grade 12 Enrol	227.1	246.8	256.6	276.7	-0.055	0.986
Pupil-Teach Rat	15.953	15.850	15.374	15.516	131	0.713

TABLE D7—CHANGE IN SCHOOL CHARACTERISTICS BEFORE AND AFTER A NEIGHBORING CENTER OPENS

*Note:* High schools where test centers open at neighboring schools are matched to in-state controls using propensity score matching. This table compares the changes in student characteristics and school resources before and after the neighboring center opens. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. The difference-in-difference comparisons are based on the baseline year and the year after the neighboring center opened. The table indicates that the treated schools experienced similar changes to the matched control schools.

	HS Cent	er Open	Matched	l Control	Compa	rison
	Before	After	Before	After	Diff-in-Diff	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Student and Scho	ool Charac	eteristics				
Am. Indian	0.014	0.016	0.004	0.005	0.001	0.463
Asian	0.080	0.077	0.084	0.084	-0.004	0.335
Black	0.230	0.227	0.252	0.244	0.005	0.313
Hispanic	0.425	0.451	0.370	0.388	0.007	0.316
White	0.251	0.215	0.290	0.258	-0.004	0.702
Other Races	0.000	0.014	0.000	0.020	-0.006	0.347
Free Lunch	0.429	0.538	0.437	0.525	0.022	0.389
Grade 12 Enrol	417.1	433.8	369.2	381.2	4.82	0.781

TABLE D8—CHANGE IN SCHOOL CHARACTERISTICS BEFORE AND AFTER DISTRICT POLICY IMPLEMENTA-TION

*Note:* High schools in districts that adopt policies are matched to in-state controls using propensity score matching. This table compares the changes in student characteristics and school resources before and after policy implementation. The racial composition of the student body is based on grade 12 counts reported by the NCES CCD. The difference-in-difference comparisons are based on the baseline year and the year after the year in which the policy in implemented. The table indicates that the treated schools experienced similar changes to the matched control schools.

Tables D5 to D8 compare the changes in characteristics between the before and after cohorts for the treatment and control schools for each of the treated groups. If there are differential changes, it could suggest an endogenous response to treatment, which would change the interpretation of the estimates. Alternatively, it could suggest that treatment was the result of a sudden demographic shift. There is no evidence that treated schools and their matched schools experience significantly different changes in their demographic characteristics. Schools in all four treatment categories experienced increases in Hispanic enrollment and increases in the fraction of students receiving free and reduced lunches, which is consistent with national trends. The latter change is likely due in part to changes in program eligibility requirements, changing demographics, and the economic downturn. The lack of differential changes is in contrast to the immediate shift in SAT taking and college outcomes presented in the paper.

## APPENDIX E. DATA CONSTRUCTION AND COUNSELOR SURVEY

This paper uses a new data set of every SAT testing center, its location, and the months and years when it was open. Figure E presents the "SAT Registration Bulletin" used to construct the history of centers. Recent versions of these booklets can be found online. Older versions were acquired from the College Board and high school counselors. The digitization of older versions of the bulletin was outsourced using Freelancer.com. I ensured the accuracy of the data entry by awarding the same project to two contractors and cross-validating the results. I was not able to locate the bulletin for half of states for the 2002-2003 academic year, and for Ohio and New York for several years prior. In these cases, the analysis only exploits cohorts where I can confirm that a high school was not a center and then became one in the years after these omissions (conversely, where the high school had a center and it closes in the years after omission).

In addition to data about each center, I gathered information about why new centers open. Specifically, I contacted guidance counselors at 50 high schools that became test centers between 2008 and 2010 in Florida, Indiana, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Virginia, and Washington. The goal was to identify if new test centers were opened at their campuses as a result of broader policies at the school or as a result of individual initiative, as this affects the interpretation of the estimated effects. I also wished to identify the extent to which new test centers resulted in greater salience for students. I initiated contact by sending an email with a brief introduction and two questions: (Question 1) What factors led to your high school offering the SAT on campus? (Question 2) Was the new SAT test center advertised to students? Of the guidance counselors surveyed, over 80 percent responded by email or phone. In many cases they forwarded the email to the specific counselor or teacher who is the test center supervisor at their school. I present typical responses, omitting names and places.

What factors led to your high school offering the SAT on campus?

- We do hold the SAT here but no one who is affiliated with the high school is the coordinator. I do not know who decided to have the SAT tested here.
- We felt the need to offer our students the option to test in a familiar environment, and local test centers become crowded quickly.
- The high density of high school students in this area made it difficult for our students to find a test center with an available seat.
- Students had expressed interest in having the exam in a familiar setting with familiar classrooms and proctors.
- There was already one in close proximity. However that school was getting too many requests thus we opened as a test site.
- Before we became a test site for the SAT, our students had to drive to another town to take the test. They needed to allow an hour for the trip, and roads are often dangerous or closed in the winter. That is why we chose to pursue becoming a testing site. One of our high school counselors agreed to be the test center supervisor.
- The main reason in offering the SAT here is because we are quite a distance away from other testing centers and a colleague became a certified SAT testing administrator.
- I am the test center supervisor. I also teach at the school. After observing my students stress and panic over the various test centers they were assigned for SAT testing I wanted to help. Students were waking up extra early on test days, map questing directions (pre GPS), and taking trial runs to the test cite with parents. I knew something had to be done. As a test center my students now have the comfort of "home" atmosphere, shorter drives, familiar faces of proctors and myself, calculators in their locker ( if needed), close proximity if need to run home to get ID or admission ticket. It was not that I yearned to be the supervisor. But it fell on me because I wanted to help our students.
- We visited another school in our county that offered the SAT. The school actually had seen higher scores. We became a site to offer easy access and to hopefully improve their SAT scores.
- We had a request from our student body to begin this process. Typically we have 75-100 students take the SAT here every time even though there is another test site less than 5 miles from us.
- This was a service to our students. This allowed them the convenience of testing near their homes and not have a need to travel too far. We are a rural school and many of our students our economically challenged.
- We have a school where many of our students would have a transportation issue to take the SAT at another school. Providing the test at their home school made it more accessible to the whole population. They are also familiar with the school and we thought it would be helpful if they tested in familiar surroundings.
- We felt that by giving the test here students would be less nervous (familiar with surroundings, test supervisors, etc.). They also would not have to get up quite as early because the test was at their "home school".

Was the new SAT test center advertised to students?

- The test was advertised through word of mouth and on the school webpage. We, the counselors, mentioned it to students when we went into classrooms.
- When we first became a site, we informed our own students in the daily bulletin. We really didn't advertise at all outside the school. Students became aware via word of mouth, or by looking at locations on the SAT registration website.

- We did advertise for the test not only in our hometown but also in neighboring communities and had a few attendees from those communities who had a conflict with testing dates offered by their SAT testing center.
- We inform our students and families via various channels including announcements and email blasts to all families.
- Announcements, personal conversations, etc.
- The Guidance office and I collaborate to keep students informed with posters, school announcements, website news, and I am developing a testing wikispace.
- As you probably know, SAT offers the SAT test center list for all test centers. Students choose the one closest to their testing location or if they are locked out due to closed enrollment, they find the next nearest location.
- Yes, we send a mailing at the start of the year to all of the senior parents and provide dates, both registration and test dates for the test. We make daily announcements, especially the week before the registration deadline.
- We put in the announcements and made flyers for the kids to be aware of the fact we were now a testing center. Flyers were also sent to neighboring schools.

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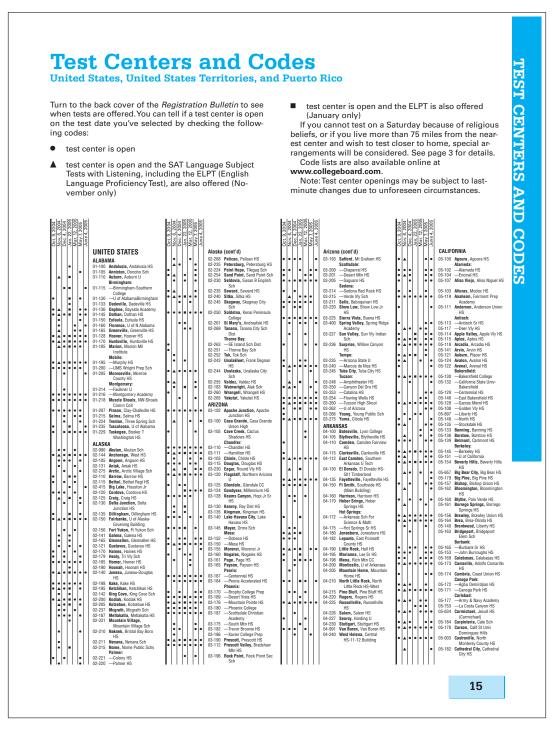


FIGURE E1. SAT REGISTRATION BULLETIN