

Appendix

Table A1

Results of Multi-level Models to Explain Variation in Math Course-Taking, Subsample of 10 States

	Up			Math Credit		Algebra II or Above			Precalculus or Above		
	β	OR	SE	B	SE	β	OR	SE	β	OR	SE
Intercept	-0.25*	0.78	0.12	4.10***	0.07	4.50	90.26	78.35	-1.67***	0.19	0.16
School-level											
Exam policy	-0.47***	0.63	0.11	-0.38***	0.06	0.13	1.13	0.14	0.63***	1.88	0.15
Math graduation requirement (ref. = 4 years)											
Below 3 years	0.09	1.10	0.19	-0.60***	0.11	-1.34***	0.26	0.21	-0.70**	0.50	0.27
3 years	0.07	1.07	0.12	-0.30***	0.07	-0.62***	0.54	0.14	-0.23	0.80	0.16
School mean SES	0.17	1.18	0.15	-0.01	0.08	0.64***	1.90	0.19	-0.06	0.94	0.20
Urbanicity (ref. = Urban)											
Suburban	0.16	1.18	0.12	-0.03	0.07	0.07	1.07	0.14	0.00	1.00	0.16
Rural	0.11	1.12	0.13	0.06	0.07	0.26	1.30	0.15	0.11	1.11	0.17
Student-level											
Race (ref. = White)											
Black	-0.02	0.98	0.10	0.08	0.05	0.01	1.01	0.12	-0.23	0.80	0.13
Hispanic	0.02	1.02	0.07	0.00	0.03	-0.01	0.99	0.09	-0.02	0.98	0.09
Asian	0.12	1.13	0.10	0.12**	0.05	0.23	1.26	0.17	0.65***	1.91	0.12
SES	0.10*	1.10	0.04	0.15***	0.02	0.42***	1.53	0.06	0.38***	1.47	0.05
Female (ref. = Male)	0.02	1.02	0.05	0.09***	0.02	0.39***	1.48	0.07	0.20***	1.22	0.06
Ninth grade math score	0.04***	1.04	0.00	0.02***	0.00	0.07***	1.07	0.00	0.10***	1.11	0.00
Started math coursework (ref. = Prealgebra)											
Algebra I	0.01	1.01	0.10	-0.02	0.05	1.08***	2.95	0.11	0.71***	2.02	0.18
Geometry	-0.35***	0.71	0.11	-0.09	0.06	1.89***	6.59	0.15	2.48***	11.89	0.19
Algebra II or above	-2.21***	0.11	0.14	-0.16**	0.06	-	-	-	2.14***	8.53	0.20
Track placement (ref. = General)											
Remedial	-0.88***	0.41	0.17	0.03	0.08	-0.90***	0.41	0.19	-1.26***	0.28	0.38
Advanced	0.47***	1.60	0.10	0.32***	0.05	0.13	1.14	0.16	0.59***	1.80	0.12
Honors/College	0.15	1.16	0.10	0.10*	0.05	0.72***	2.05	0.22	1.17***	3.22	0.12
N											
Students		9,005		9,005			9,005			9,005	
Schools		447		447			447			447	
Variance components											
School-level											
Intercept	0.88*			0.53*		0.91*			1.17*		
Residual				1.08							
Intraclass correlation coefficient (ICC)	0.19			0.19		0.20			0.29		

Note: β = Coefficient, OR= Odds Ratio, SE =Standard Error. * $p < .05$, ** $p < .01$, *** $p < .001$

Citation: Han, S. W., Kang, C., & Weis, L. (2024). Who benefits from high school exit exams? Examining variations in math course-taking by abilities and socioeconomic status. *Education Policy Analysis Archives*, 32(47). <https://doi.org/10.14507/epaa.32.8545>

Table A2

Covariate Balance Check; Absolute Standardized Difference Before and After Matching Across Achievement and SES Quartile in Total Sample

Covariates	Ninth Grade Mathematics Score Quartile in Total Sample (N=16,280)								SES Quartile in Total Sample (N=16,280)							
	Bottom Quartile		Middle Quartile		Upper Middle Quartile		Top Quartile		Bottom Quartile		Middle Quartile		Upper Middle Quartile		Top Quartile	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Math requirement (ref. = 4 years)																
Below 3 years	0.26	0.01	0.15	0.00	0.21	0.01	0.30	0.03	0.24	0.01	0.22	0.01	0.23	0.00	0.24	0.01
3 years	0.10	0.00	0.16	0.00	0.15	0.00	0.14	0.01	0.05	0.01	0.12	0.00	0.16	0.01	0.21	0.01
Race (ref. = White)																
Black	0.01	0.01	0.05	0.00	0.04	0.01	0.02	0.01	0.04	0.01	0.00	0.01	0.04	0.00	0.01	0.01
Hispanic	0.12	0.01	0.10	0.01	0.14	0.00	0.06	0.01	0.11	0.01	0.13	0.01	0.12	0.00	0.05	0.01
Asian	0.00	0.01	0.06	0.01	0.02	0.00	0.02	0.00	0.02	0.01	0.03	0.01	0.01	0.00	0.02	0.01
Native/Indian	0.00	0.01	0.05	0.01	0.06	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.07	0.01	0.02	0.00
SES	0.08	0.02	0.01	0.00	0.09	0.01	0.03	0.01	0.07	0.01	0.02	0.01	0.02	0.01	0.05	0.01
Female (ref. = male)	0.05	0.01	0.08	0.01	0.01	0.01	0.03	0.00	0.06	0.00	0.00	0.00	0.01	0.01	0.00	0.01
Ninth grade math score	0.05	0.01	0.04	0.00	0.01	0.00	0.02	0.00	0.06	0.01	0.04	0.01	0.00	0.00	0.04	0.00
Started math coursework (ref. = Prealgebra)																
Algebra 1	0.27	0.02	0.26	0.00	0.30	0.01	0.19	0.03	0.31	0.00	0.28	0.00	0.24	0.00	0.18	0.01
Geometry	0.05	0.01	0.02	0.01	0.02	0.01	0.07	0.03	0.07	0.01	0.02	0.01	0.05	0.00	0.01	0.02
Algebra 2 or above	0.33	0.01	0.32	0.01	0.37	0.00	0.25	0.00	0.38	0.01	0.33	0.00	0.34	0.00	0.22	0.00
Track placement (ref.= general)																
Remedial	0.10	0.01	0.05	0.00	0.10	0.00	0.05	0.01	0.09	0.01	0.11	0.01	0.03	0.01	0.04	0.00
Advanced	0.07	0.00	0.13	0.01	0.10	0.01	0.07	0.02	0.13	0.00	0.17	0.00	0.09	0.01	0.01	0.01
Honors/College	0.16	0.01	0.03	0.01	0.05	0.00	0.16	0.00	0.04	0.00	0.01	0.01	0.01	0.01	0.15	0.00
Urbanicity (ref. = Urban)																
Suburban	0.10	0.03	0.06	0.01	0.11	0.01	0.11	0.02	0.08	0.03	0.09	0.02	0.06	0.02	0.14	0.01
Rural	0.04	0.01	0.04	0.00	0.03	0.01	0.15	0.02	0.06	0.01	0.04	0.02	0.09	0.01	0.08	0.01
School mean SES	0.14	0.01	0.11	0.00	0.11	0.00	0.20	0.00	0.16	0.02	0.12	0.00	0.07	0.01	0.20	0.01

Citation: Han, S. W., Kang, C., & Weis, L. (2024). Who benefits from high school exit exams? Examining variations in math course-taking by abilities and socioeconomic status. *Education Policy Analysis Archives*, 32(47). <https://doi.org/10.14507/epaa.32.8545>

Table A3

Results of Inverse-Probability Weighting, Average Treatment Effect of Exam Policy on Math Course-Taking, Subsample of 10 States

		Up	Math credit	Algebra II or above	Precalculus or above
Average Treatment Effect (ATE)		-.11*** (.01)	-.42*** (.03)	-.02 (.01)	.06*** (.01)
Ninth Grade Achievement Quartile	Bottom	-.11*** (.03)	-.54*** (.08)	-.03 (.03)	.02 (.02)
	Lower-Middle	-.14*** (.03)	-.40*** (.07)	.00 (.02)	.02 (.02)
	Upper-Middle	-.12*** (.03)	-.34*** (.06)	.00 (.02)	.09*** (.02)
	Top	-.05* (.03)	-.26*** (.06)	.01 (.01)	.08** (.02)
SES Quartile	Bottom	-.13*** (.03)	-.51*** (.08)	-.05 (.03)	.04 (.02)
	Lower-Middle	-.10*** (.03)	-.38*** (.07)	.00 (.02)	.08*** (.02)
	Upper-Middle	-.13*** (.03)	-.39*** (.06)	.02 (.02)	.03 (.02)
	Top	-.09*** (.03)	-.25*** (.05)	-.01 (.01)	.10*** (.02)

Note: Standard errors in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$