The Long-Run Impacts of Specialized Programming for High-Achieving Students

Online Appendix

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A Additional Robustness Checks

Online Appendix A discusses additional robustness checks and provides more detail on some of the robustness checks described in Section V.

A Additional Bandwidths

In Panel B of Online Appendix Tables A.1 and A.2, I report estimates where I vary the bandwidths but otherwise continue to use local linear regression with a triangular kernel. Generally, with smaller bandwidths, magnitudes are larger and less precise due to the small sample size. With the smallest bandwidth of 0.25, in the Black and Latino student sample, no impacts are statistically significant; for all students the AP estimate is marginally significant. Given that the bandwidths employed in the main results are very close to 0.5, estimates from this specification closely conform to the baseline specification, and are useful to compare across samples using the exact same bandwidth. Treatment effects are slightly smaller with the 0.75 and 1 unit bandwidths, with standard errors predictably smaller, with the overall conclusions similar to the main findings.

Estimates using the CCT bandwidths generated for each outcome are similar, though there is small variation in both directions in terms of magnitudes. The college enrollment estimate for all students becomes statistically significant, and the high school graduation estimate for Black and Latino students is no longer significant. The Imbens and Kalyanaraman (2012) procedure typically generates larger bandwidths than the CCT bandwidths, ranging between 0.61 and 1.15 for all students and 0.47 to 0.94 for Black and Latino students. For Black and Latino students, estimates using IK bandwidths line up closely with the baseline specification, with smaller standard errors, and the college quality estimate becomes marginally statistically significant. For all students, results are quite similar though a little smaller, which is not surprising given that the IK bandwidths for this sample tend to be on the larger side.

A Split Sample Test

In addition to the placebo test in Section V.B, a second piece of evidence takes a different approach to the cutoffs. To address the concern that identifying the cutoff on the same sample that I am estimating the outcomes introduces endogeneity, I introduce a split sample approach as a robustness check in Online Appendix Table A.3. Here, I split each cohort into two randomly selected samples — the threshold estimation sample and the outcome estimation sample — 10,000 times. On the former sample I estimate the empirical cutoffs using the exact same methods described in Section III.B.[1] I then apply that threshold to the latter sample, and estimate the fuzzy regression discontinuity estimates using my standard specification. The median estimate for each outcome from the 10,000 runs serves as the impact estimate of interest, and estimates at the 2.5th and 97.5th percentiles form a nonparametric 95 percent confidence interval, and estimates at the 5th and 95th percentiles serve as a 90 percent confidence interval. As shown in Online Appendix Table A.3, these nonparametric confidence intervals always include zero. However, the medians are generally in line with the main results, though slightly smaller, and the high school graduation and four-year college enrollment outcomes for Black and Latino students become nonzero around the 20th percentile. Given that this procedure halves the sample size used to estimate the effects, it is not surprising that there are a large number of outliers, and it is reassuring that the median of the estimates are generally

[1] The correlation between these thresholds and the empirically derived thresholds for the full sample is 0.96.

similar. On the other hand, had I used the split sample approach as my main estimation strategy, I would not have found precise support for positive impacts of the program.

A Attrition

As discussed in Section III, there is no differential attrition by program eligibility, as shown in Online Appendix Table B.3. However, from middle school forward, there is a somewhat high level of overall attrition, with around 15 to 30 percent of the students not appearing in the data in later grades, with high school grades having the largest level of missing data. These students either leave the state, attend private schools, or drop out of high school. The state sends most students (84 percent) in my sample to match to the NSC, my source for college information, as seen in Column (10).[2]

To address the concern that the somewhat high level of attrition might bias my findings, I rerun my analyses to account for attrition by substituting predicted outcomes for those missing data. To generate predicted outcomes, I use students beneath the AWC eligibility threshold to predict performance on outcome variables, using the demographic characteristics and baseline test scores listed in Panel A of Table 1, along with a year by school fixed effect. Applying these predicted probabilities to those missing data provides allows me to test whether attrition is driving my results. The findings are displayed in the last line of Panel A of Online Appendix Tables A.1 and A.2. Estimates using this strategy are quite similar, though slightly smaller than those in the baseline specification. This is not surprising, given that there is no discontinuity in the predicted probabilities applied to all students, as shown in Online Appendix Figures B.3 to B.5. In addition to this evidence using predicted outcomes, college enrollment results are some of the most consistent throughout the robustness checks, and those outcomes have lower levels of attrition. Results using only the first two cohorts of data (not shown) — in which 95 percent of students are sent to the NSC for matching — are very similar, though less precise given the smaller sample size.

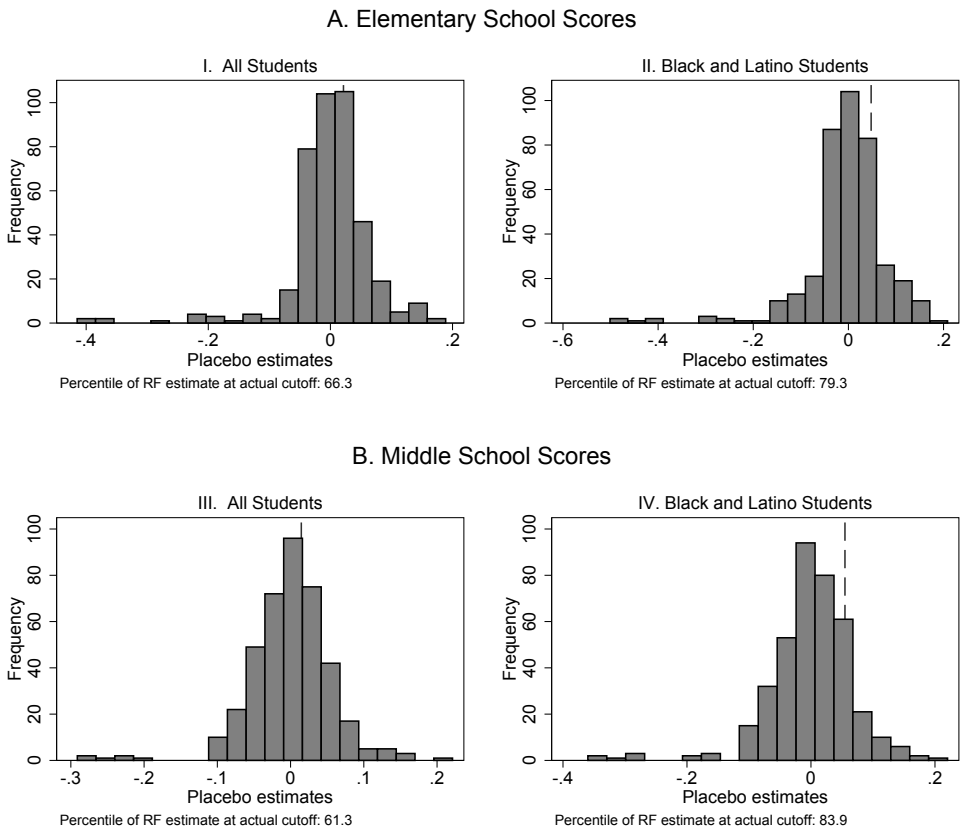
References

Calonico, Sebastian, Matias D Cattaneo, Max H Farrell, and Rocıo Titiunik. 2017. "rdrobust: Software for regression discontinuity designs." *Stata Journal*, 17(2): 372–404.

Imbens, Guido, and Karthik Kalyanaraman. 2012. "Optimal bandwidth choice for the regression discontinuity estimator." *The Review of Economic Studies*, 79(3): 933–959.

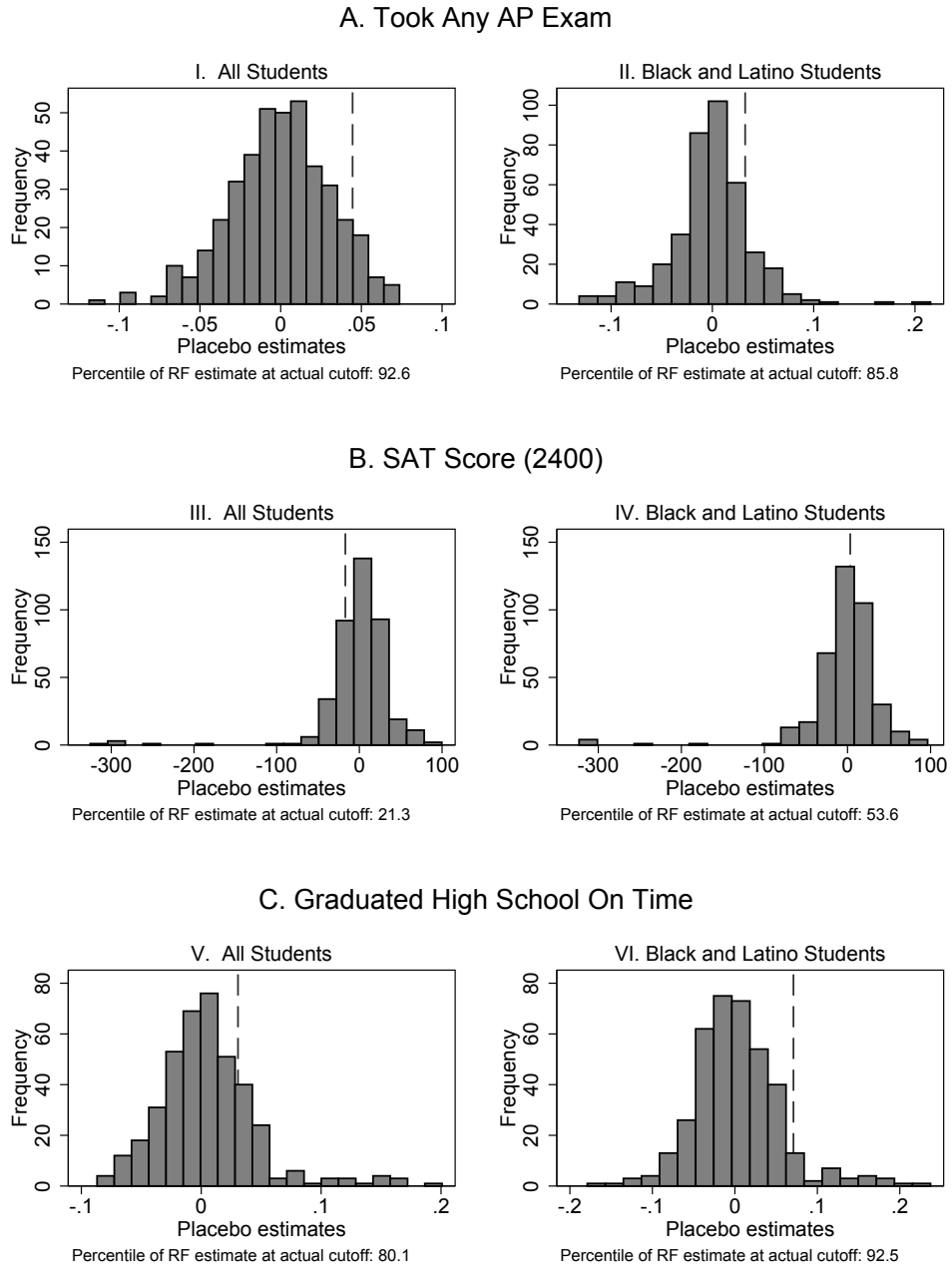
[2]This is because DESE sent some nongraduates to the NSC who enroll in at least 8th grade in a Massachusetts high schools and has occasionally conducted additional matches for researchers.

Figure A.1: Estimates of the Effect of AWC Eligibility on MCAS Outcomes at Placebo Cutoffs



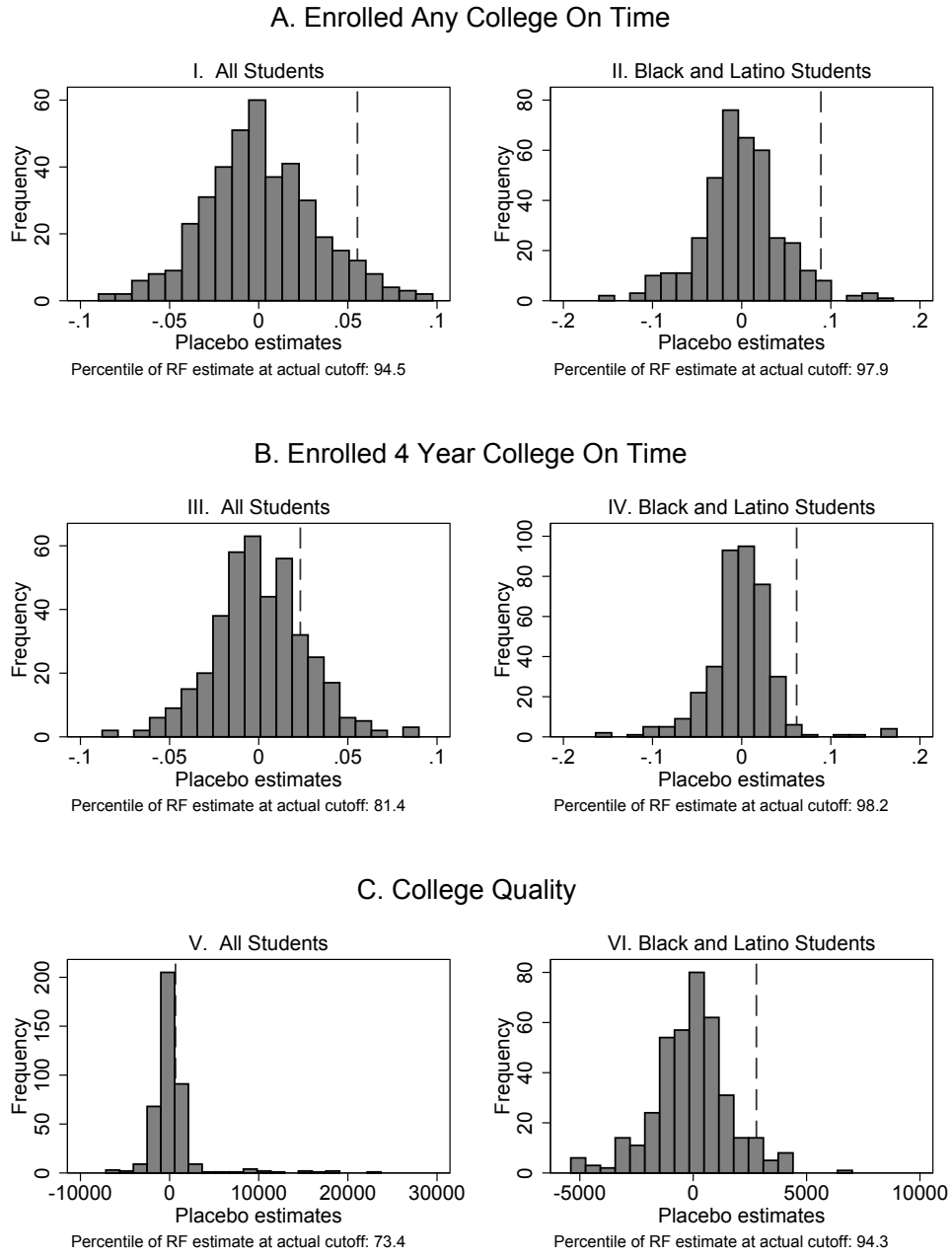
Notes: The above figure shows the frequency of estimates of the effect of AWC eligibility (the reduced form) on MCAS outcomes at placebo thresholds for all students (left side) and Black and Latino students (right side). Placebo thresholds place the threshold every 0.01 from [-3.2, 1], which is the area over which there are a sufficient number of observations on either side of the threshold to generate a regression discontinuity estimate. At each false cutoff, the standard specification is employed to estimate the effect of the offer of AWC on various outcomes. The dashed vertical lines are at the estimate of the reduced form (RF) at the standard cutoff. The percentile of the standard estimate is displayed under each panel. The figure displays estimates where at least 50 students are above the cutoff and 50 students are below the cutoff.

Figure A.2: Estimates of the Effect of AWC Eligibility on High School Outcomes at Placebo Cutoffs



Notes: The above figure shows the frequency of estimates of the effect of AWC eligibility (the reduced form) on high school outcomes at placebo thresholds for all students (left side) and Black and Latino students (right side). Placebo thresholds place the threshold every 0.01 from [-3.2, 1], which is the area over which there are a sufficient number of observations on either side of the threshold to generate a regression discontinuity estimate. At each false cutoff, the standard specification is employed to estimate the effect of the offer of AWC on various outcomes. The dashed vertical lines are at the estimate of the reduced form (RF) at the standard cutoff. The percentile of the standard estimate is displayed under each panel. The figure displays estimates where at least 50 students are above the cutoff and 50 students are below the cutoff.

Figure A.3: Estimates of the Effect of AWC Eligibility on College Outcomes at Placebo Cutoffs



Notes: The above figure shows the frequency of estimates of the effect of AWC eligibility (the reduced form) on college outcomes at placebo thresholds for all students (left side) and Black and Latino students (right side). Placebo thresholds place the threshold every 0.01 from [-3.2, 1], which is the area over which there are a sufficient number of observations on either side of the threshold to generate a regression discontinuity estimate. At each false cutoff, the standard specification is employed to estimate the effect of the offer of AWC on various outcomes. The dashed vertical lines are at the estimate of the reduced form (RF) at the standard cutoff. The percentile of the standard estimate is displayed under each panel. The figure displays estimates where at least 50 students are above the cutoff and 50 students are below the cutoff.

Table A.1: Robustness Checks, All Students, Fuzzy Regression Discontinuity Estimates

	Elem. Scores (1)	M.S. Scores (2)	Took Any AP (3)	SAT Score (4)	H.S. Grad. (5)	Enroll Any College (6)	Enroll 4yr College (7)	College Quality ($2014) (8)
(A) Specifications								
Baseline	0.058	0.041	0.118	-43.662	0.081	0.149*	0.063	1788.007
	(0.078)	(0.079)	(0.085)	(38.057)	(0.059)	(0.080)	(0.081)	(3866.399)
With controls	0.070	0.039	0.117	-15.586	0.085	0.161**	0.068	2320.541
	(0.072)	(0.074)	(0.084)	(34.913)	(0.058)	(0.081)	(0.082)	(3784.257)
With fixed effects	0.038	-0.018	0.123	-18.157	0.069	0.072	-0.020	-275.393
	(0.077)	(0.080)	(0.086)	(36.409)	(0.061)	(0.084)	(0.086)	(4104.450)
Derived cutoffs	0.041	0.021	0.138*	-49.797	0.097*	0.118	0.034	1401.901
	(0.074)	(0.075)	(0.080)	(35.930)	(0.055)	(0.078)	(0.077)	(3651.612)
Official cutoffs (2003+)	0.112	0.127	-0.054	-80.584	0.027	0.078	-0.077	-2322.835
	(0.109)	(0.108)	(0.128)	(59.788)	(0.083)	(0.112)	(0.121)	(5631.260)
Quadratic	0.029	0.004	0.133	46.439	0.061	0.078	0.020	7099.608
	(0.079)	(0.084)	(0.083)	(40.774)	(0.059)	(0.077)	(0.079)	(4348.080)
Predicted	0.035	0.024	0.091	-30.201	0.070	0.132*	0.054	1611.969
	(0.079)	(0.072)	(0.067)	(33.202)	(0.045)	(0.073)	(0.075)	(3514.144)
(B) Bandwidths								
BW = 0.25	0.149	0.209	0.252*	38.296	0.057	0.210	0.154	2383.479
	(0.138)	(0.160)	(0.151)	(67.724)	(0.104)	(0.137)	(0.144)	(6580.986)
BW = 0.5	0.075	0.073	0.173*	-31.627	0.105	0.158*	0.075	1326.758
	(0.092)	(0.092)	(0.100)	(44.607)	(0.068)	(0.091)	(0.094)	(4396.205)
BW = 0.75	0.063	0.051	0.103	-35.286	0.072	0.150**	0.062	2077.033
	(0.072)	(0.073)	(0.078)	(34.816)	(0.054)	(0.075)	(0.075)	(3610.297)
BW = 1	0.047	0.050	0.098	-24.674	0.056	0.149**	0.077	1694.566
	(0.064)	(0.065)	(0.066)	(30.609)	(0.046)	(0.066)	(0.066)	(3200.350)
CCT	0.058	0.143	0.109	20.378	0.063	0.151**	0.069	2050.880
	(0.079)	(0.124)	(0.082)	(59.830)	(0.050)	(0.074)	(0.072)	(3655.213)
BW	0.640	0.336	0.688	0.297	0.861	0.782	0.837	0.730
IK	0.062	0.042	0.104*	-37.148	0.074	0.149**	0.067	1547.368
	(0.073)	(0.080)	(0.062)	(35.397)	(0.055)	(0.067)	(0.073)	(3981.550)
BW	0.727	0.628	1.150	0.728	0.717	0.940	0.796	0.613

Notes: Robust standard errors clustered by baseline school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). The Baseline line follows the specification described in the previous tables, and each other line describes an alternative specification with deviations from the main specification described below. With controls which includes baseline demographics and test scores. With fixed effects includes a third grade by school fixed effect. Derived cutoffs uses only empirically derived AWC eligibility cutoffs. Official cutoffs uses only official AWC eligibility cutoffs and thus restricts the data to 3rd grade cohorts from 2003 to 2005. Quadratic includes the full sample, a rectangular kernel, and a second order polynomial. Predicted substitutes predicted outcomes for missing data, with the prediction generated for non-Boston students applied to the Boston students. Panel B displays alternative bandwidths as noted. The CCT and IK rows respectively follow the Calonico, Cattaneo and Titiunik (2017) and Imbens and Kalyanaraman (2012) procedures for estimating bandwidths and then apply the standard specification to that bandwidth.

Table A.2: Robustness Checks, Black and Latino Students, Fuzzy Regression Discontinuity Estimates

	Elem. Scores (1)	M.S. Scores (2)	Took Any AP (3)	SAT Score (4)	H.S. Grad. (5)	Enroll Any College (6)	Enroll 4yr College (7)	College Quality ($2014) (8)
(A) Specifications								
Baseline	0.141	0.175	0.094	9.330	0.207**	0.262**	0.182	8224.384
	(0.115)	(0.129)	(0.127)	(49.072)	(0.095)	(0.116)	(0.120)	(5456.289)
With controls	0.115	0.137	0.082	16.698	0.205**	0.265**	0.168	8148.104
	(0.108)	(0.122)	(0.124)	(47.416)	(0.094)	(0.115)	(0.121)	(5372.983)
With fixed effects	0.094	0.081	0.113	11.205	0.168*	0.209*	0.102	9428.993
	(0.115)	(0.130)	(0.134)	(50.320)	(0.100)	(0.124)	(0.128)	(5799.958)
Derived cutoffs	0.115	0.136	0.125	-8.758	0.231***	0.190*	0.112	7998.262
	(0.109)	(0.122)	(0.117)	(46.610)	(0.087)	(0.109)	(0.113)	(5163.709)
Official cutoffs (2003+)	0.259	0.366**	-0.033	-22.574	0.176	0.268	0.110	653.308
	(0.164)	(0.185)	(0.204)	(74.733)	(0.144)	(0.172)	(0.189)	(8624.200)
Quadratic	0.098	0.099	0.183	109.624*	0.135	0.199*	0.161	7456.631
	(0.120)	(0.147)	(0.131)	(59.459)	(0.096)	(0.116)	(0.121)	(5812.133)
Predicted	0.086	0.124	0.076	14.419	0.156**	0.237**	0.168	7973.466*
	(0.115)	(0.111)	(0.095)	(39.621)	(0.069)	(0.102)	(0.107)	(4837.920)
(B) Bandwidths								
BW = 0.25	0.076	0.158	0.153	14.998	0.199	0.229	0.245	-2251.399
	(0.198)	(0.210)	(0.199)	(69.859)	(0.142)	(0.171)	(0.182)	(7399.390)
BW = 0.5	0.124	0.175	0.128	13.676	0.270**	0.267**	0.207	6784.605
	(0.136)	(0.148)	(0.144)	(54.596)	(0.108)	(0.129)	(0.134)	(5847.548)
BW = 0.75	0.150	0.190	0.083	15.959	0.176**	0.249**	0.164	8354.855
	(0.105)	(0.119)	(0.117)	(45.409)	(0.088)	(0.107)	(0.112)	(5150.498)
BW = 1	0.139	0.193*	0.067	20.814	0.118	0.225**	0.153	8224.834*
	(0.091)	(0.104)	(0.102)	(40.631)	(0.077)	(0.094)	(0.098)	(4641.322)
CCT	0.081	0.150	0.078	9.757	0.131	0.258**	0.206	2407.592
	(0.187)	(0.176)	(0.112)	(66.082)	(0.080)	(0.132)	(0.135)	(6251.161)
BW	0.272	0.328	0.818	0.278	0.926	0.464	0.492	0.361
IK	0.144	0.187*	0.107	13.395	0.271**	0.273**	0.203	8240.749*
	(0.112)	(0.107)	(0.136)	(54.186)	(0.110)	(0.123)	(0.129)	(4766.663)
BW	0.672	0.940	0.570	0.512	0.471	0.566	0.554	0.925

Notes: Robust standard errors clustered by baseline school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). The Baseline line follows the specification described in the previous tables, and each other line describes an alternative specification with deviations from the main specification described below. With controls which includes baseline demographics and test scores. With fixed effects includes a third grade by school fixed effect. Derived cutoffs uses only empirically derived AWC eligibility cutoffs. Official cutoffs uses only official AWC eligibility cutoffs and thus restricts the data to 3rd grade cohorts from 2003 to 2005. Quadratic includes the full sample, a rectangular kernel, and a second order polynomial. Predicted substitutes predicted outcomes for missing data, with the prediction generated for non-Boston students applied to the Boston students. Panel B displays alternative bandwidths as noted. The CCT and IK rows respectively follow the Calonico, Cattaneo and Titiunik (2017) and Imbens and Kalyanaraman (2012) procedures for estimating bandwidths and then apply the standard specification to that bandwidth.

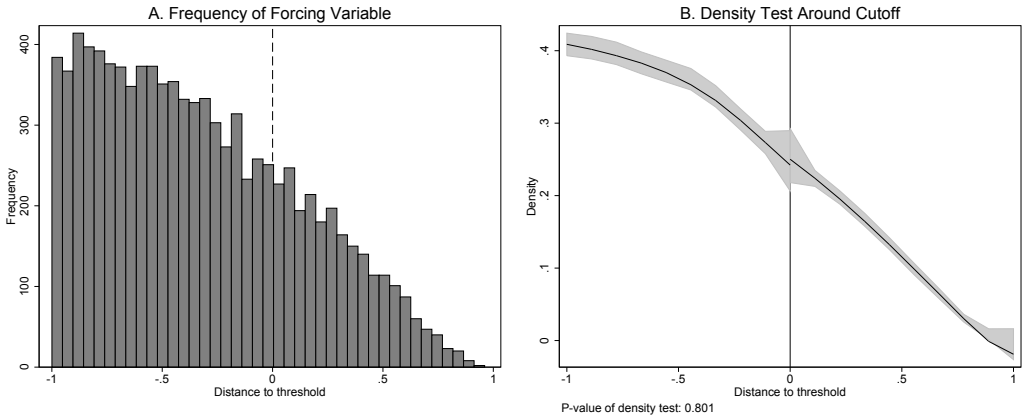
Table A.3: Fuzzy Regression Discontinuity Estimates, Split Sample Test

	All Students:			Black and Latino Students:		
	Median	Nonparametric 95% CI	Nonparametric 90% CI	Median	Nonparametric 95% CI	Nonparametric 90% CI
	(1)	(2)	(3)	(4)	(5)	(6)
Elementary School Scores	-0.042	(-0.340, 0.255)	(-0.284, 0.204)	0.070	(-0.372, 0.493)	(-0.298, 0.427)
Middle School Scores	0.062	(-0.268, 0.418)	(-0.215, 0.360)	0.244	(-0.243, 0.831)	(-0.170, 0.716)
Took Any AP	0.165	(-0.163, 0.483)	(-0.108, 0.427)	0.025	(-0.471, 0.468)	(-0.376, 0.397)
SAT Score (2400)	-7.743	(-156.123, 143.674)	(-132.885, 115.745)	44.774	(-114.613, 215.579)	(-87.513, 186.764)
Graduate H.S. On Time	0.051	(-0.195, 0.285)	(-0.152, 0.250)	0.143	(-0.248, 0.536)	(-0.168, 0.454)
Any On Time College Enrollment	0.126	(-0.151, 0.424)	(-0.114, 0.372)	0.161	(-0.255, 0.609)	(-0.173, 0.539)
4-Year On Time College Enrollment	0.125	(-0.166, 0.446)	(-0.118, 0.392)	0.209	(-0.179, 0.677)	(-0.119, 0.592)
College Quality ($2014)	3,852	(-12,101, 19,933)	(-9,238, 17,323)	7,340	(-5,541, 21,746)	(-3,390, 19,185)

Notes: In an alternative strategy for determining AWC eligibility cutoffs and estimating effects, students are randomly split into two samples, 10,000 times. Empirical thresholds are determined in one sample, and fuzzy regression discontinuity estimates of the AWC effect are estimated for 8 key outcomes in the other sample, applying the thresholds from the first sample. The standard fuzzy regression discontinuity estimate is employed, except the bandwidth is set at a standard 0.5 rather than re-estimated in each sample. This table reports the median estimate for each outcome from the 10,000 runs, as well as the 2.5th, 97.5th, 5th, and 95th percentiles. The range from the 2.5th to 97.5th percentile is thus the nonparametric 95% confidence interval and the range from the 5th to 95th percentile is the nonparametric 90% confidence interval.

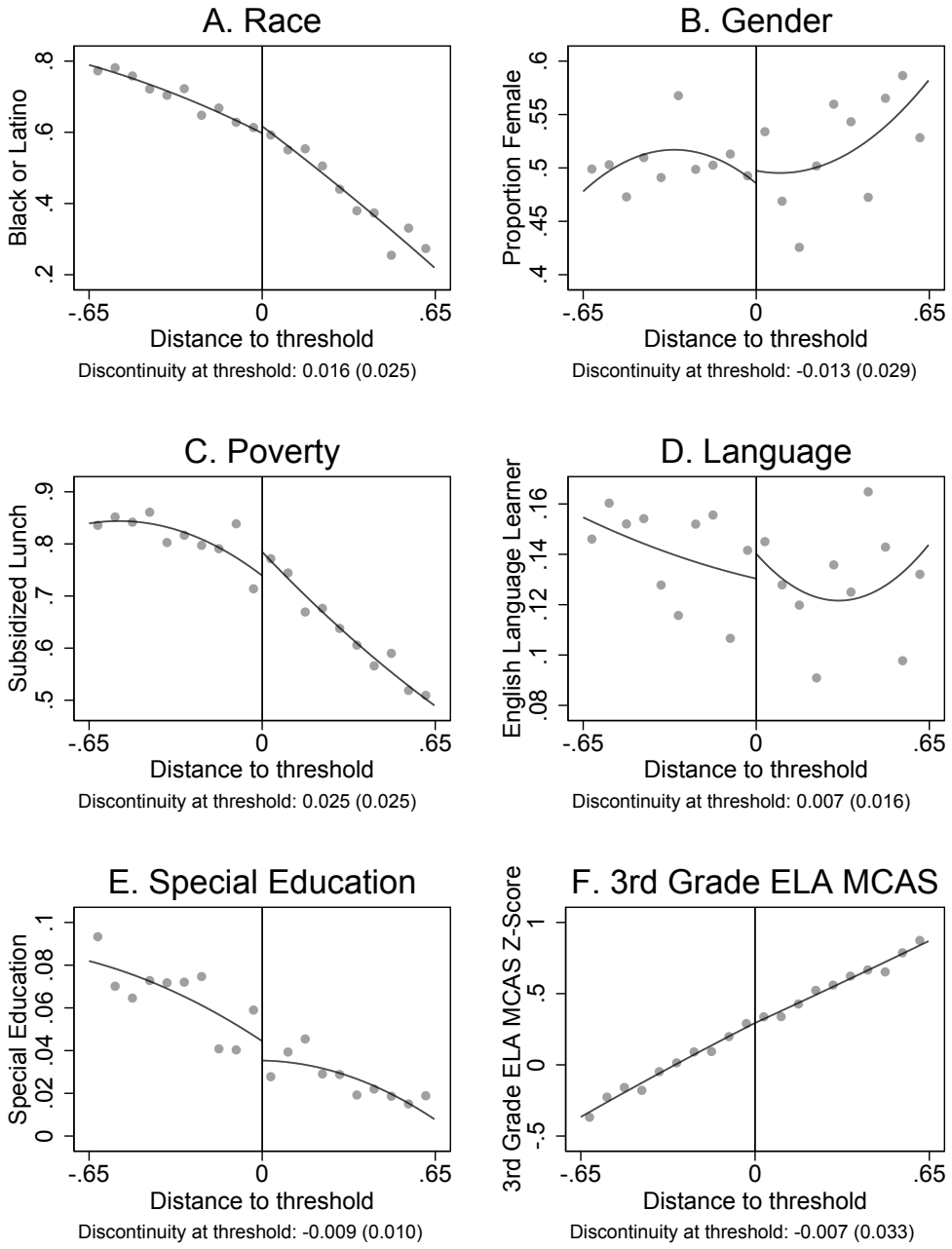
B Additional Figures and Tables

Figure B.1: Distribution of Scores near the Threshold



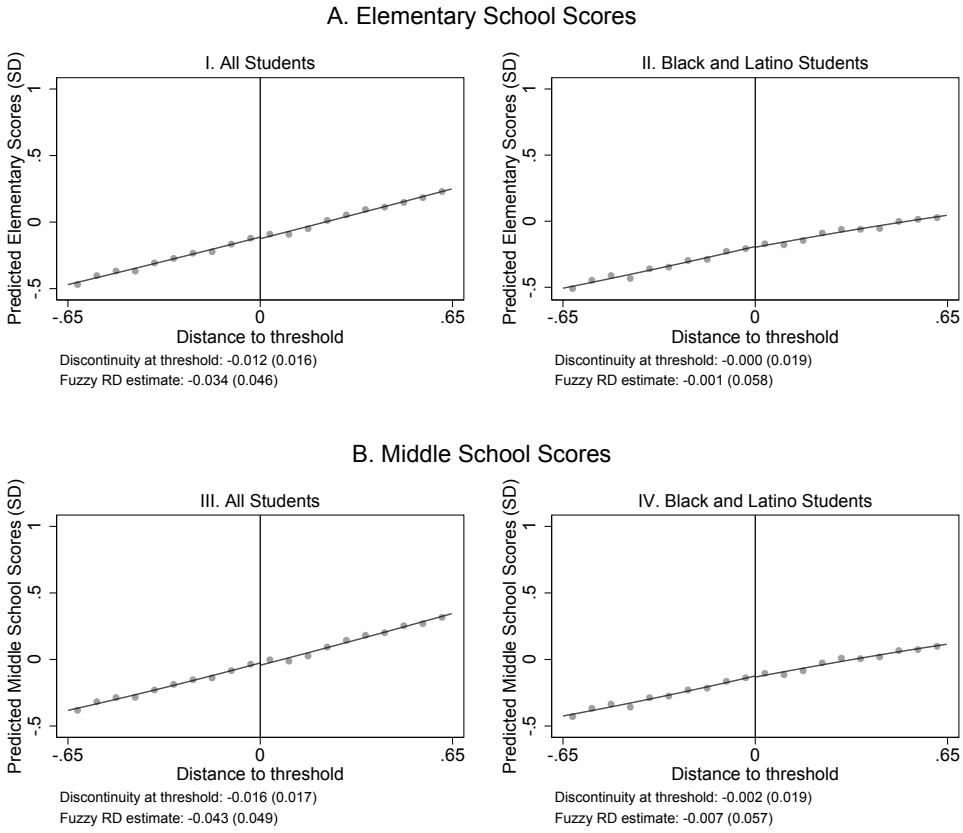
Notes: This figure shows the distribution of the running variable for the third grade cohorts from 2001 to 2005 within the bandwidth of 1 around the eligibility threshold. The running variable is the distance of a student's combined math and reading Stanford 9 scores from a given year's AWC threshold. Panel A shows the frequency of scores, and Panel B shows a density test at the threshold from Catteneo et al. (2017).

Figure B.2: Covariate Balance



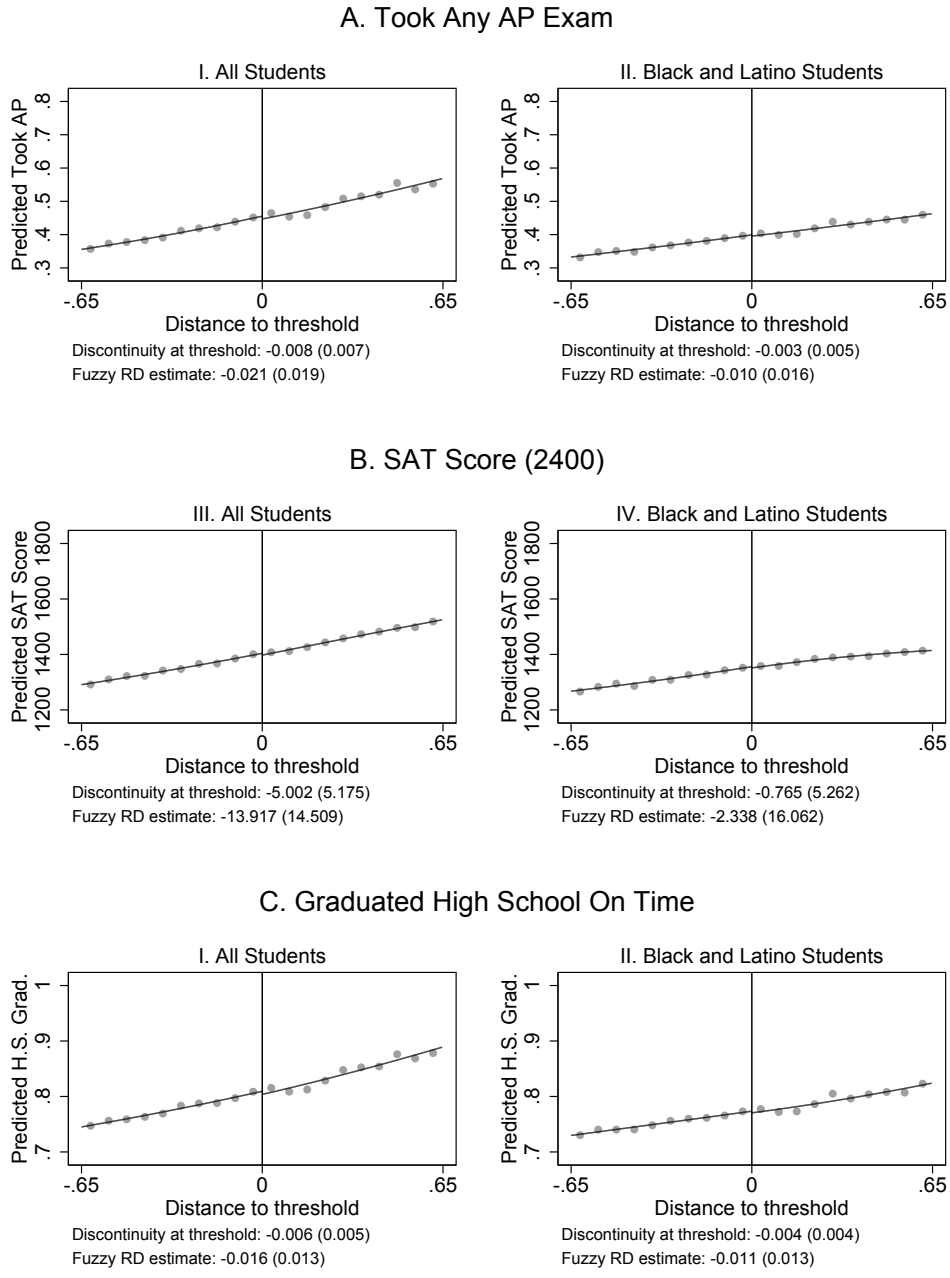
Notes: The above figure shows descriptive characteristics of students by the running variable for the 3rd grade cohorts from 2001 to 2005 within the bandwidth of 0.65. A quadratic fit is imposed on either side of the threshold. Each dot represents the average of the descriptive characteristics for a bin of width 0.065.

Figure B.3: Predicted MCAS Outcomes by Distance to Eligbility Threshold



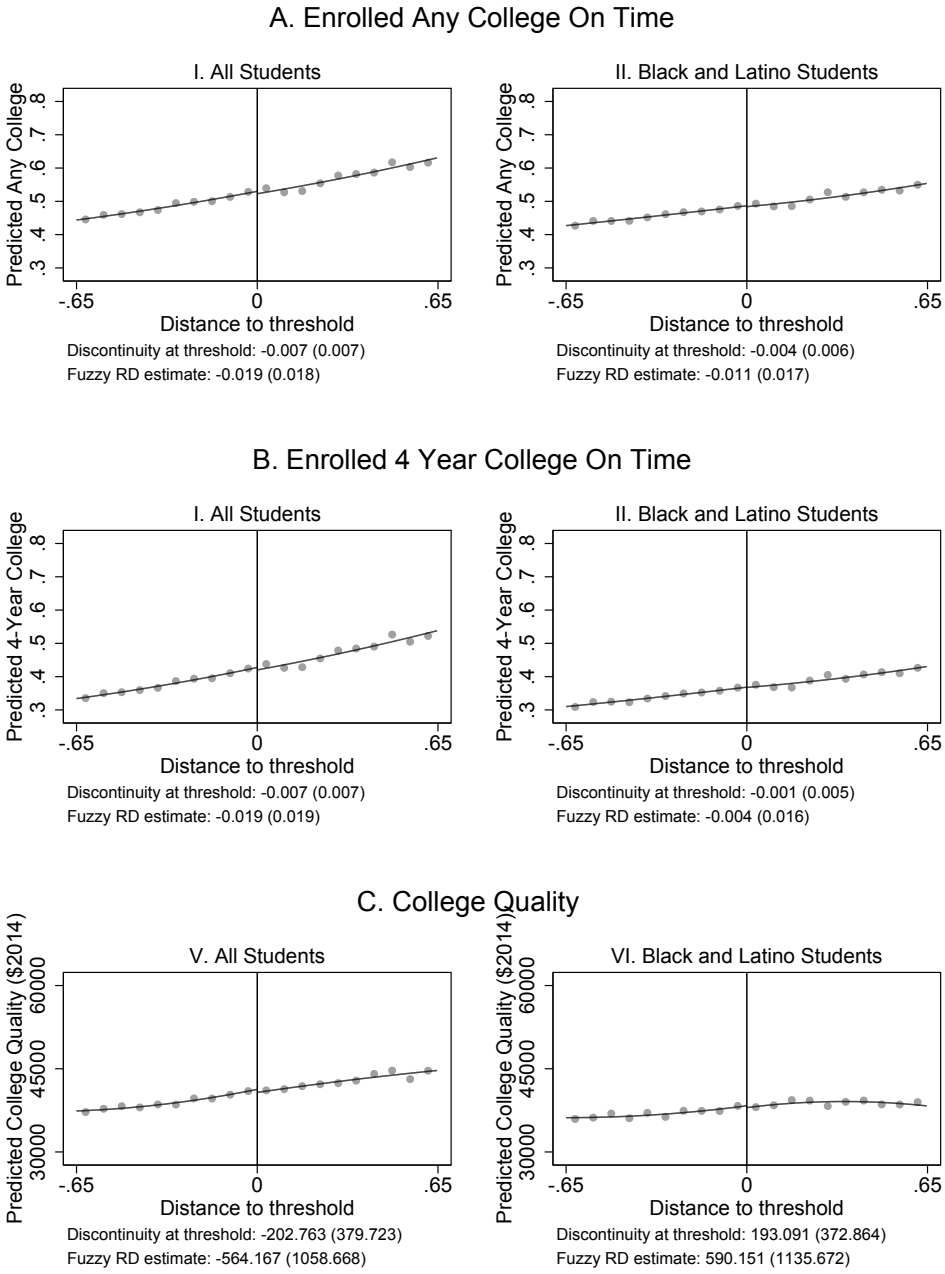
Notes: The above figure shows average predicted MCAS outcomes for bins of width 0.065 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.65 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. Predicted outcomes are generated by predicting the relationship between baseline characteristics and outcomes for students below the threshold of AWC eligibility and assigning those fitted values to students missing outcome data.

Figure B.4: Predicted High School Outcomes by Distance to Eligbility Threshold



Notes: The above figure shows average predicted high school outcomes for bins of width 0.065 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.65 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. Predicted outcomes are generated by predicting the relationship between baseline characteristics and outcomes for students below the threshold of AWC eligibility and assigning those fitted values to students missing outcome data.

Figure B.5: Predicted College Outcomes by Distance to Eligbility Threshold



Notes: The above figure shows average predicted college outcomes for bins of width 0.065 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.65 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. Predicted outcomes are generated by predicting the relationship between baseline characteristics and outcomes for students below the threshold of AWC eligibility and assigning those fitted values to students missing outcome data.

Table B.1: Characteristics of Students who Take-Up AWC, by AWC Eligibility

	Below Threshold (1)	Above Threshold (2)
Black	-0.010	0.021
	(0.013)	(0.031)
Latino	-0.001	0.001
	(0.014)	(0.037)
Asian	-0.029	0.082***
	(0.018)	(0.030)
Other race	0.089*	0.028
	(0.047)	(0.110)
Subsidized lunch	0.047***	0.045*
	(0.012)	(0.023)
English language learner	-0.005	-0.028
	(0.010)	(0.034)
Special education	-0.178***	-0.310***
	(0.011)	(0.060)
3rd grade ELA MCAS	0.029***	0.098***
	(0.004)	(0.020)
3rd grade school has AWC	-0.007	-0.008
	(0.011)	(0.024)
Constant	0.513***	0.415***
	(0.015)	(0.032)
R-squared	0.033	0.030
N	17,441	2,309

Notes: Robust standard errors clustered by baseline school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). This table shows the characteristics of students who enroll in AWC, both if the qualify given their test score and if they do not. The outcome is enrollment in AWC in 4th grade and the regression controls for year fixed effects. All student characteristics are measured in the 3rd grade. The excluded group are male, white students who do not participate in the subsidized lunch, special education or English language learner programs. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Columns (1) restricts this sample further to those below eligibility threshold for AWC. Column (2) restricts this sample further to those above eligibility threshold for AWC.

Table B.2: Covariate Balance by AWC Eligibility

	Female (1)	Black (2)	Latino (3)	Asian (4)	Subsidized lunch (5)	Eng. lang. learner (6)	Special ed. (7)	3rd grade MCAS ELA (8)
AWC Eligibility	-0.013	0.037	-0.022	-0.015	0.025	0.007	-0.009	-0.007
	(0.029)	(0.027)	(0.023)	(0.018)	(0.025)	(0.016)	(0.010)	(0.033)
$\bar{Y}$	0.480	0.375	0.227	0.184	0.688	0.137	0.059	0.290
N	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,350

Notes: Each coefficient on AWC eligibility (the reduced form) is generated by local linear regression with a triangular kernel of bandwidth 0.65. Demographic controls listed at the top of each column are used as outcomes. All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table B.3: Attrition: Regression Discontinuity Estimates of Effects on Staying in the Sample

	4th Grade (1)	5th Grade (2)	6th Grade (3)	7th Grade (4)	8th Grade (5)	9th Grade (6)	10th Grade (7)	11th Grade (8)	12th Grade (9)	Sent to NSC (10)
AWC Eligibility	0.001	0.007	0.024	0.009	0.013	0.024	0.011	-0.006	0.009	0.012
	(0.012)	(0.016)	(0.020)	(0.022)	(0.022)	(0.022)	(0.022)	(0.024)	(0.025)	(0.019)
$\bar{Y}$	0.949	0.895	0.844	0.840	0.809	0.820	0.789	0.734	0.680	0.840
N	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,475

Notes: Each coefficient labeled "AWC Eligibility" is the reduced form regression discontinuity estimate of 4th grade AWC eligibility on the presence in the DESE/NSC data in the grade listed in the column heading. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold. All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table B.4: Regression Discontinuity Estimates of Effects on Enrollment

	4th Grade (1)	5th Grade (2)	6th Grade (3)	7th Grade (4)	8th Grade (5)	9th Grade (6)	10th Grade (7)	11th Grade (8)	12th Grade (9)
(A) BPS Schools									
AWC Eligibility (All)	-0.006	-0.013	0.025	-0.005	0.000	0.010	0.012	0.015	0.033
	(0.015)	(0.024)	(0.026)	(0.028)	(0.029)	(0.029)	(0.027)	(0.028)	(0.027)
$\bar{Y}$	0.906	0.813	0.656	0.656	0.617	0.621	0.582	0.527	0.492
AWC Eligibility (Exam)				-0.001	0.012	0.030	0.025	0.029	0.027
				(0.025)	(0.025)	(0.026)	(0.026)	(0.026)	(0.026)
$\bar{Y}$				0.316	0.289	0.340	0.320	0.309	0.309
(B) Boston Charter Schools									
AWC Eligibility	0.002	0.012	-0.013	-0.015	-0.018	-0.012	-0.013	-0.015	-0.009
	(0.003)	(0.010)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)
$\bar{Y}$	0.000	0.031	0.098	0.082	0.074	0.063	0.063	0.066	0.051
(C) Other MA Public Schools									
AWC Eligibility	0.005	0.008	0.012	0.029	0.030	0.026	0.011	-0.006	-0.015
	(0.012)	(0.015)	(0.016)	(0.018)	(0.019)	(0.020)	(0.019)	(0.020)	(0.019)
$\bar{Y}$	0.043	0.051	0.090	0.102	0.117	0.137	0.145	0.141	0.137
(D) Leave MA Public Sample									
AWC Eligibility	-0.001	-0.007	-0.024	-0.009	-0.013	-0.024	-0.011	0.006	-0.009
	(0.012)	(0.016)	(0.020)	(0.022)	(0.022)	(0.022)	(0.022)	(0.024)	(0.025)
$\bar{Y}$	0.051	0.105	0.156	0.160	0.191	0.180	0.211	0.266	0.320
N	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,475	6,475

Notes: Each coefficient labeled "AWC Eligibility" is the reduced form regression discontinuity estimate of 4th grade AWC eligibility on the presence in the grade listed in the column heading at a school type. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold. All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table B.5: Fuzzy Regression Discontinuity Estimates of Effects on Exam School Application and Offers

	Apply Any Exam (1)	Apply BLS (2)	Apply BLA (3)	Apply O'Bryant (4)	Offer Any Exam (5)	Offer BLS (6)	Offer BLA (7)	Offer O'Bryant (8)	ISEE Z-Score (9)	GPA Z-Score (10)
(A) 7th Grade Entry										
2SLS	0.001	0.012	-0.005	0.000	0.042	-0.041	0.073	0.010	0.114	-0.117
	(0.078)	(0.077)	(0.079)	(0.079)	(0.078)	(0.057)	(0.058)	(0.049)	(0.107)	(0.100)
CCM	0.713	0.701	0.710	0.697	0.423	0.122	0.167	0.135	0.157	0.151
N	5,548	5,548	5,548	5,548	5,548	5,548	5,548	5,548	2,724	2,724
(B) 9th Grade Entry										
2SLS	0.018	0.011	0.008	0.024	-0.001	0.036*	-0.022	-0.015	0.015	0.169
	(0.064)	(0.063)	(0.059)	(0.060)	(0.047)	(0.020)	(0.026)	(0.035)	(0.222)	(0.261)
CCM	0.188	0.195	0.173	0.139	0.094	-0.010	0.045	0.059	0.447	0.272
N	5,375	5,375	5,375	5,375	5,375	5,375	5,375	5,375	739	739

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). BLS stands for Boston Latin School, BLA for Boston Latin Academy, and O'Bryant for John D. O'Bryant School of Math and Science.

Table B.6: Fuzzy Regression Discontinuity Estimates of Effects on Subject Specific MCAS Scores

	ELA (1)	Math (2)	Science (3)	Writing Composition (4)	Writing Topic Development (5)	Top Score Any Subject (6)
(A) Elementary School						
2SLS	0.105	0.044	0.077	0.122	-0.025	0.032
	(0.096)	(0.090)	(0.104)	(0.126)	(0.122)	(0.042)
CCM	0.321	0.239	-0.034	0.153	0.323	0.290
N (students)	6,123	6,112	5,843	6,077	6,077	6,161
(B) Middle School						
2SLS	0.020	0.016	0.043	-0.024	0.103	-0.007
	(0.096)	(0.082)	(0.122)	(0.128)	(0.130)	(0.031)
CCM	0.493	0.308	-0.080	0.270	0.294	0.231
N (students)	5,737	5,684	5,352	5,419	5,419	5,741
(C) 10th Grade						
2SLS	0.223*	0.237**	0.023	0.157	0.053	0.011
	(0.115)	(0.104)	(0.124)	(0.142)	(0.125)	(0.069)
CCM	0.407	0.084	0.236	0.087	0.263	0.797
N (students)	4,904	4,914	5,087	4,914	4,914	5,202

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Elementary school regressions stack 4th and 5th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student. Middle school regressions stack 6th, 7th, and 8th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student (* p<.10 ** p<.05 *** p<.01).

Table B.7: Fuzzy Regression Discontinuity Estimates of Effects on Class Rank and MCAS Thresholds

	Class Rank:			MCAS Thresholds:	
	Elementary School	Middle School	10th Grade	Passed Grad. Req.	Adams Eligible
	(1)	(2)	(3)	(4)	(5)
(A) All Students					
2SLS	-5.775**	1.947	4.501	0.110**	0.128
	(2.877)	(3.151)	(5.087)	(0.052)	(0.081)
CCM	71.704	65.678	53.884	0.848	0.536
N (students)	6,159	5,741	4,878	5,098	5,098
(B) Black and Latino Students					
2SLS	-5.060	4.976	5.566	0.160*	0.151
	(4.082)	(4.689)	(7.521)	(0.088)	(0.124)
CCM	74.571	67.095	59.971	0.798	0.432
N (students)	3,836	3,523	2,950	3,110	3,110
(C) Asian and White Students					
2SLS	-5.779	-1.219	4.157	0.074	0.119
	(4.520)	(4.205)	(6.548)	(0.062)	(0.101)
CCM	67.869	63.930	47.219	0.889	0.642
N (students)	2,323	2,218	1,928	1,988	1,988

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Elementary school regressions stack 4th and 5th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student. Middle school regressions stack 6th, 7th, and 8th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student (* p<.10 ** p<.05 *** p<.01). Class rank is generated by determining the percentile of a student's academic index in the distribution of scores in their school in that year and grade. Class rank is measured between the 0th and 99th percentile, with larger numbers indicating the higher end of the score distribution. Students who are score at least proficient on math and ELA MCAS subjects meet Massachusetts' high school graduation requirement. Students are eligible for the Adams Scholarship if they score at least proficient in both math and ELA, advanced on one of those subjects, and are in the top 25% of scores in the district. Students without test scores are marked as zeroes for the two indicator variables.

Table B.8: Fuzzy Regression Discontinuity Estimates of Effects on MCAS Indices (All Years)

	Elementary School (1)	Middle School (2)	10th Grade (3)
2SLS	0.060	-0.017	0.036
	(0.067)	(0.070)	(0.114)
CCM	0.184	0.362	0.275
N (students)	14,825	11,752	6,332
(B) Black and Latino Students			
2SLS	0.057	0.066	0.183
	(0.092)	(0.102)	(0.191)
CCM	0.165	0.267	0.085
N (students)	9,676	7,564	3,953
(C) White and Asian Students			
2SLS	0.079	-0.105	-0.096
	(0.100)	(0.103)	(0.138)
CCM	0.224	0.512	0.499
N (students)	5,149	4,188	2,379

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade school by year fixed effects and controls for demographic characteristics and baseline status for in subsidized lunch, special education, and English learner. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2012. The MCAS index is the mean of all available MCAS subject test z-scores, standardized to be mean zero, standard deviation one. Elementary school regressions stack 4th and 5th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student. Middle school regressions stack 6th, 7th, and 8th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student (* p<.10 ** p<.05 *** p<.01).

Table B.9: Fuzzy Regression Discontinuity Estimates of Effects on Advanced Placement Test Taking and Scores

	Any AP (1)	Any English (2)	U.S. Hist or Gov't (3)	Any Econ (4)	Any Science (5)	Any Calculus (6)
(A) Took AP Exam						
2SLS	0.118	-0.046	-0.001	0.107**	-0.042	0.021
	(0.085)	(0.075)	(0.071)	(0.055)	(0.079)	(0.062)
CCM	0.540	0.371	0.193	0.066	0.304	0.107
(B) Scored above 2						
2SLS	0.062	-0.096	0.031	0.056	-0.030	0.014
	(0.080)	(0.073)	(0.068)	(0.048)	(0.068)	(0.048)
CCM	0.487	0.365	0.149	0.064	0.206	0.074
(C) Scored above 3						
2SLS	0.007	-0.107*	-0.022	0.048	0.010	-0.013
	(0.079)	(0.060)	(0.056)	(0.045)	(0.062)	(0.042)
CCM	0.369	0.242	0.125	0.042	0.102	0.059
(D) Scored above 4						
2SLS	-0.125*	-0.101**	-0.037	0.010	-0.039	0.014
	(0.069)	(0.042)	(0.044)	(0.035)	(0.044)	(0.037)
CCM	0.269	0.097	0.075	0.026	0.054	0.034
N	4,671	4,671	4,671	4,671	4,671	4,671

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects . The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table B.10: Fuzzy Regression Discontinuity Estimates of Effects on SAT Test Taking and Scores

	Composite (2400) (1)	Verbal (800) (2)	Math (800) (3)	Writing (800) (4)
(A) Took SAT				
2SLS	0.058			
	(0.059)			
CCM	0.820			
(B) Scored above MA Median				
2SLS	0.031	-0.017	0.001	0.077
	(0.083)	(0.079)	(0.084)	(0.080)
CCM	0.427	0.435	0.600	0.350
N	4,671	4,671	4,671	4,671
(C) Average score (for Takers)				
2SLS	-43.662	-17.200	-15.595	-10.867
	(38.057)	(14.430)	(15.819)	(14.345)
CCM	1565	511	556	499
N	3,844	3,844	3,844	3,844

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table B.11: Fuzzy Regression Discontinuity Estimates of Effects on Days Attended and Days Suspended

	Days Attended:				Days Suspended:			
	Elementary	Middle	High	Total	Elementary	Middle	High	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) All Students								
2SLS	4.578	-3.784	14.236	20.667	-0.020	-0.023	0.085	-0.162
	(3.833)	(6.570)	(12.579)	(18.446)	(0.083)	(0.365)	(0.479)	(0.709)
CCM	340.623	519.719	655.015	1519.972	0.042	0.438	0.497	1.001
N	5,933	5,336	4,808	4,548	5,933	5,336	1,891	1,787
(B) Black and Latino Students								
2SLS	8.321	7.533	38.984*	62.012*	-0.051	-0.446	-0.276	-1.056
	(6.277)	(10.669)	(22.310)	(31.730)	(0.145)	(0.632)	(0.840)	(1.229)
CCM	334.014	511.160	622.226	1471.226	0.075	1.098	0.714	1.801
N	3,662	3,277	2,916	2,748	3,662	3,277	1,125	1,063
(C) Asian and White Students								
2SLS	1.073	-13.454	-6.543	-9.418	0.027	0.459	0.357	0.441
	(4.959)	(8.651)	(13.525)	(20.237)	(0.033)	(0.332)	(0.488)	(0.717)
CCM	348.293	528.807	686.129	1562.259	-0.009	-0.271	0.368	0.509
N	2,271	2,059	1,892	1,800	2,271	2,059	766	724

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65 for all students, bandwidth 0.489 for Black and Latino students, and bandwidth 0.551 for White and Asian students. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). Attendance outcomes are calculated for students with nonzero attendance in the relevant years. Elementary school outcomes are the sum of days in the first and second school year subsequent to 3rd grade (4th and 5th grade for students making on time progress). Middle school outcomes are the sum of days for the third through fifth year subsequent to 3rd grade (6th, 7th, and 8th for on time students). High school outcomes are the sum of days for the sixth through ninth year post 3rd grade (9th-12th grades for on time students). DESE stopped collecting suspension data in the SIMS database beginning in 2013-2013, so high school and total suspension outcomes are limited to the first two cohorts.

Table B.12: Fuzzy Regression Discontinuity Estimates of Effects on On Time Grade Progress

	On Time Enrollment in Grade:					On Time 12th &
	8	9	10	11	12	MCAS Grad. Req.
	(1)	(2)	(3)	(4)	(5)	(6)
(A) All Students						
2SLS	0.005	-0.013	0.023	0.062	0.018	0.131**
	(0.029)	(0.040)	(0.050)	(0.046)	(0.036)	(0.052)
CCM	0.966	0.946	0.901	0.877	0.926	0.820
N	5,488	5,375	5,098	4,784	4,671	4,540
(B) Black and Latino Students						
2SLS	-0.007	-0.002	0.044	0.062	0.075	0.194**
	(0.045)	(0.062)	(0.077)	(0.071)	(0.055)	(0.082)
CCM	0.975	0.924	0.878	0.889	0.888	0.760
N	3,371	3,303	3,110	2,882	2,814	2,714
(C) Asian and White Students						
2SLS	0.022	-0.027	0.002	0.066	-0.036	0.087
	(0.037)	(0.047)	(0.061)	(0.056)	(0.045)	(0.066)
CCM	0.951	0.969	0.929	0.868	0.972	0.870
N	2,117	2,072	1,988	1,902	1,857	1,826

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.65. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). The outcome in the final column is an indicator for both on time enrollment in grade 12 *and* meeting Massachusetts' MCAS high school graduation requirement for students present in the data in both 10th and 12th grade.

C Results for Additional Subgroups

Table C.1: Fuzzy Regression Discontinuity Estimates of Effects on MCAS Indices for Additional Subgroups

	Elementary School (1)	Middle School (2)	10th Grade (3)
(A) All Students			
2SLS	0.058	0.041	0.149
	(0.078)	(0.079)	(0.113)
CCM	0.228	0.363	0.226
N (students)	6,161	5,741	5,209
(B) Low-Income Students			
2SLS	0.050	0.072	0.130
	(0.091)	(0.090)	(0.139)
CCM	0.169	0.320	0.206
N (students)	4,733	4,418	4,016
(C) Non-Low-Income Students			
2SLS	0.115	0.001	0.311
	(0.163)	(0.171)	(0.220)
CCM	0.381	0.447	0.197
N (students)	1,428	1,323	1,193
(D) High MCAS Students			
2SLS	0.005	-0.056	-0.019
	(0.096)	(0.104)	(0.154)
CCM	0.402	0.525	0.454
N (students)	3,096	2,858	2,590
(E) Low MCAS Students			
2SLS	0.063	0.115	0.308*
	(0.127)	(0.128)	(0.166)
CCM	0.077	0.238	0.013
N (students)	3,018	2,835	2,573

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of of bandwidth 0.65. High MCAS students are defined as those who score 0.25σ or higher on their 3rd grade ELA MCAS; lower MCAS students are those who score below that threshold. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. The MCAS index is the mean of all available MCAS subject test z-scores, standardized to be mean zero, standard deviation one. Elementary school regressions stack 4th and 5th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student. Middle school regressions stack 6th, 7th, and 8th grade outcomes, include grade fixed effects, and double cluster standard errors by 3rd grade school by year and student (* p<.10 ** p<.05 *** p<.01).

Table C.2: Fuzzy Regression Discontinuity Estimates of Effects on Academic Outcomes for Additional Subgroups

	Algebra 1 by 8th (1)	Took Any AP (2)	# APs Taken (3)	Took SAT (4)	SAT Score (5)	On Time HS Grad. (6)	Late HS Grad. (7)
(A) All Students							
2SLS	0.254*	0.118	0.075	0.058	-43.662	0.081	0.034
	(0.131)	(0.085)	(0.354)	(0.059)	(38.057)	(0.059)	(0.044)
CCM	0.505	0.540	1.546	0.820	1565.433	0.810	0.912
N	4,456	4,671	4,671	4,671	3,844	4,671	3,771
(A) Low-Income Students							
2SLS	0.121	0.130	0.124	0.043	-5.265	0.115*	0.046
	(0.153)	(0.095)	(0.414)	(0.068)	(39.510)	(0.067)	(0.053)
CCM	0.645	0.548	1.641	0.828	1524.262	0.771	0.895
N	3,342	3,543	3,543	3,543	2,870	3,543	2,844
(C) Not Low-Income Students							
2SLS	1.004**	0.096	-0.076	0.135	-124.345	-0.027	0.013
	(0.425)	(0.176)	(0.761)	(0.131)	(94.604)	(0.117)	(0.068)
CCM	-0.270	0.480	1.113	0.771	1662.115	0.942	0.962
N	1,114	1,128	1,128	1,128	974	1,128	927
(D) High MCAS Students							
2SLS	0.225	0.078	0.193	-0.074	-23.135	0.017	-0.005
	(0.196)	(0.109)	(0.473)	(0.080)	(46.715)	(0.086)	(0.061)
CCM	0.581	0.596	1.498	0.939	1571.832	0.878	0.961
N	2,163	2,384	2,384	2,384	2,053	2,384	1,948
(E) Low MCAS Students							
2SLS	0.217	0.099	-0.253	0.253***	-66.472	0.157*	0.075
	(0.202)	(0.133)	(0.498)	(0.096)	(60.158)	(0.087)	(0.070)
CCM	0.496	0.546	1.837	0.641	1567.942	0.720	0.845
N	2,272	2,247	2,247	2,247	1,760	2,247	1,787

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of of bandwidth 0.65. High MCAS students are defined as those who score 0.25σ or higher on their 3rd grade ELA MCAS; lower MCAS students are those who score below that threshold. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). For Algebra 1 by 8th grade, the sample to students who match to the student course data (2011-2014), which are the fall cohorts from 2005-2008. On time high school graduation is an indicator for high school graduation 10 years after the third grade exam for AWC eligibility; late high school graduation is an indicator for 11 years after.

Table C.3: Fuzzy Regression Discontinuity Estimates of Effects on On Time Grade Progress for Additional Subgroups

	On Time Enrollment in Grade:					On Time 12th &
	8	9	10	11	12	MCAS Grad. Req.
	(1)	(2)	(3)	(4)	(5)	(6)
(A) All Students						
2SLS	0.005	-0.013	0.023	0.062	0.018	0.131**
	(0.029)	(0.040)	(0.050)	(0.046)	(0.036)	(0.052)
CCM	0.966	0.946	0.901	0.877	0.926	0.820
N	5,488	5,375	5,098	4,784	4,671	4,540
(A) Low-Income Students						
2SLS	-0.000	-0.013	0.048	0.087*	0.039	0.153***
	(0.035)	(0.048)	(0.059)	(0.053)	(0.041)	(0.059)
CCM	0.971	0.944	0.874	0.867	0.920	0.802
N	4,259	4,155	3,935	3,641	3,543	3,441
(C) Not Low-Income Students						
2SLS	0.029	-0.023	-0.052	-0.021	-0.049	0.066
	(0.053)	(0.061)	(0.087)	(0.092)	(0.090)	(0.124)
CCM	0.947	0.956	0.990	0.916	0.950	0.881
N	1,229	1,220	1,163	1,143	1,128	1,099
(D) High MCAS Students						
2SLS	0.025	0.012	0.074	0.093	0.044	0.138*
	(0.041)	(0.059)	(0.073)	(0.069)	(0.053)	(0.075)
CCM	0.948	0.918	0.842	0.849	0.904	0.819
N	2,709	2,643	2,537	2,422	2,384	2,323
(E) Low MCAS Students						
2SLS	-0.017	-0.037	-0.045	0.007	-0.039	0.061
	(0.045)	(0.060)	(0.081)	(0.069)	(0.061)	(0.082)
CCM	0.978	0.968	0.977	0.925	0.974	0.875
N	2,735	2,689	2,517	2,321	2,247	2,179

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of of bandwidth 0.65. High MCAS students are defined as those who score 0.25σ or higher on their 3rd grade ELA MCAS; lower MCAS students are those who score below that threshold. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). The outcome in the final column is an indicator for both on time enrollment in grade 12 *and* meeting Massachusetts' MCAS high school graduation requirement for students present in the data in both 10th and 12th grade.

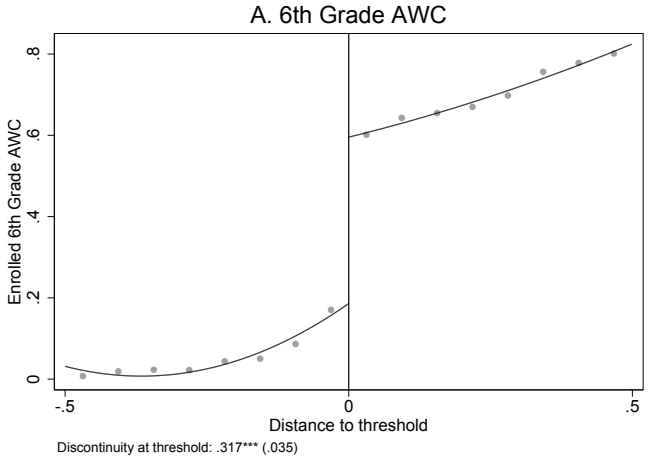
Table C.4: Fuzzy Regression Discontinuity Estimates of Effects on College for Additional Subgroups

	On Time College Enrollment:			College Quality	Late Enrollment
	Any	Four-year	Two-year	$2014	Any
	(1)	(2)	(3)	(4)	(5)
(A) All Students					
2SLS	0.149*	0.063	0.087*	1788.007	0.169**
	(0.080)	(0.081)	(0.045)	(3866.399)	(0.084)
CCM	0.532	0.522	0.009	43653.586	0.548
N	5,502	5,502	5,502	5,502	4,567
(B) Low-Income Students					
2SLS	0.141	0.065	0.076	96.222	0.148
	(0.089)	(0.091)	(0.053)	(4451.520)	(0.093)
CCM	0.574	0.544	0.029	46208.528	0.611
N	4,189	4,189	4,189	4,189	3,473
(C) Not Low-Income Students					
2SLS	0.226	0.100	0.126	8684.839	0.299*
	(0.163)	(0.164)	(0.080)	(8519.128)	(0.158)
CCM	0.373	0.427	-0.054	34973.373	0.310
N	1,313	1,313	1,313	1,313	1,094
(D) High MCAS Students					
2SLS	0.148	0.058	0.090*	8451.068*	0.159
	(0.103)	(0.103)	(0.054)	(4885.616)	(0.104)
CCM	0.539	0.514	0.025	37204.101	0.570
N	2,756	2,756	2,756	2,756	2,299
(E) Low MCAS Students					
2SLS	0.174	0.092	0.083	-5177.410	0.229
	(0.134)	(0.131)	(0.074)	(6772.978)	(0.141)
CCM	0.500	0.528	-0.029	51100.623	0.465
N	2,680	2,680	2,680	2,680	2,206

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 4th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of of bandwidth 0.65. High MCAS students are defined as those who score 0.25σ or higher on their 3rd grade ELA MCAS; lower MCAS students are those who score below that threshold. Listed below each coefficient is the control complier mean (CCM). All regressions include 3rd grade year fixed effects. The sample is restricted to 3rd graders enrolled in Boston Public Schools in the fall of 2001 to 2005. Robust standard errors clustered by 3rd grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). On time college entrance is calculated based on entry into college 10 years after the 3rd grade exam for AWC eligibility. Late college entrance is calculated based on entry into college 11 years after the 3rd grade exam for AWC eligibility. College quality earnings outcomes are measured by the estimated 2014 earnings of college attendees from the 1980-1982 birth cohorts from Chetty, et al. (2017). Students are assigned the earnings outcomes of the college they attend, by gender, even if they are not on time attendees. Students who do not attend college are assigned the outcomes for non-attendees of the same gender.

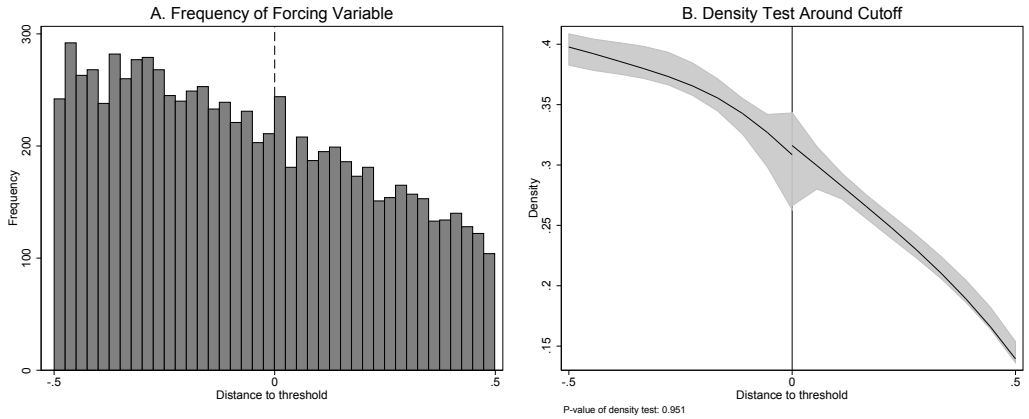
D Results based on 6th Grade Eligibility

Figure D.1: AWC Enrollment by Distance to Eligibility Threshold (6th Grade)



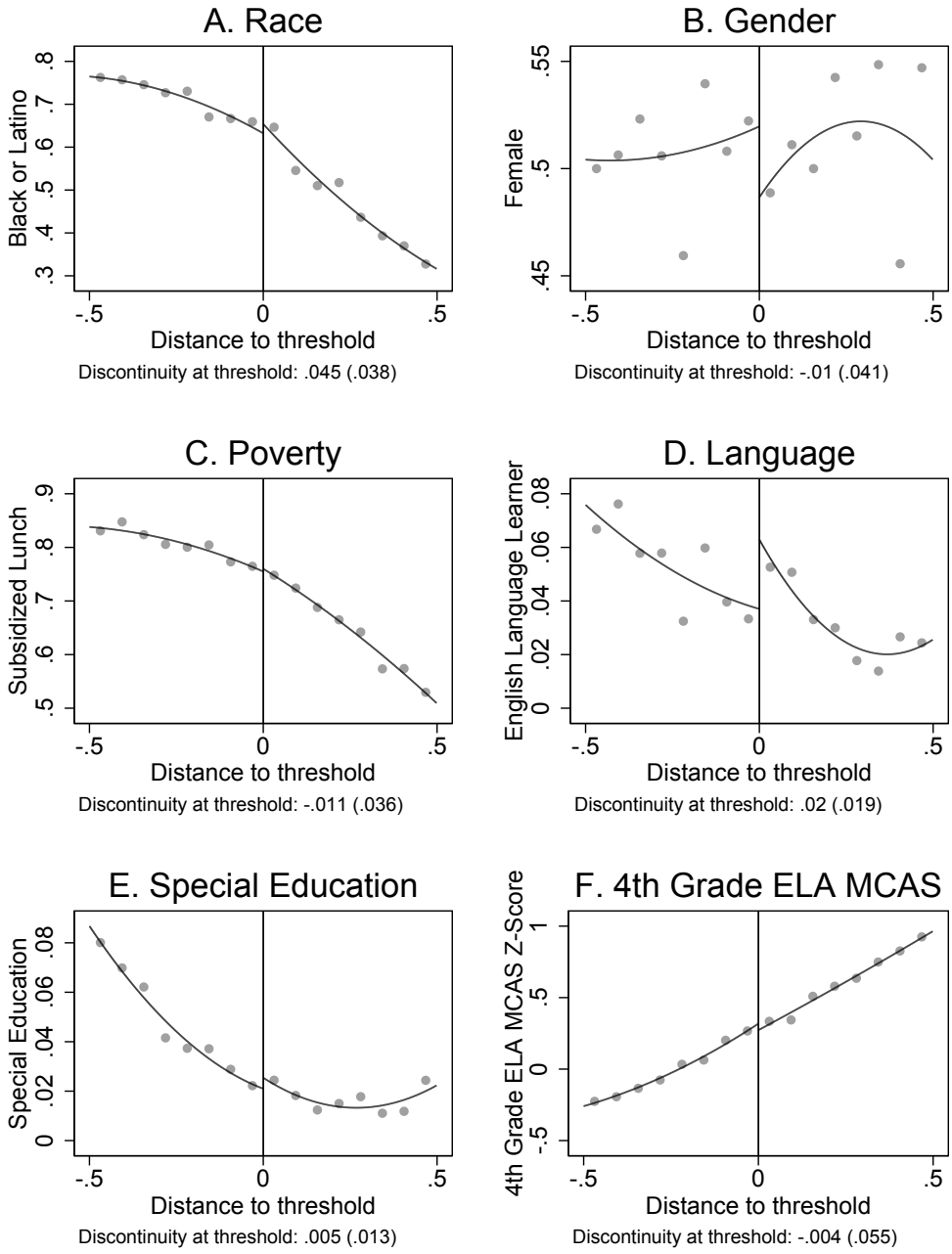
Notes: The above figure shows 6th grade AWC enrollment by the running variable for the 5th grade cohorts from 2001 to 2007 within the bandwidth of 0.5 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. Each dot represents the average enrollment for a bin of width 0.05.

Figure D.2: Distribution of Scores near the Threshold (6th Grade)



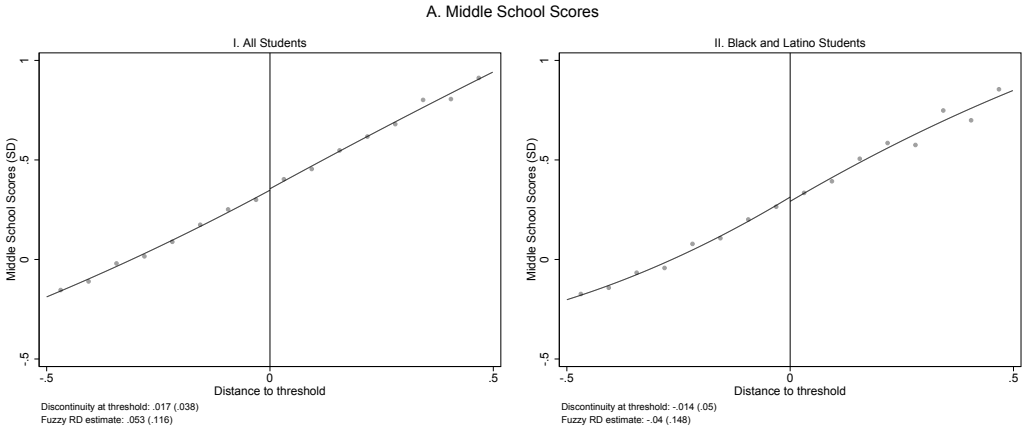
Notes: The above figure shows the distribution of the running variable for the 5th grade cohorts from 2001 to 2007 within the bandwidth of 1 around the eligibility threshold. The running variable is the distance of a student's combined math and reading Stanford 9 scores from a given year's AWC threshold. Panel A shows the frequency of scores, and Panel B shows a density test at the threshold from Catteneo et al. (2017).

Figure D.3: Covariate Balance (6th Grade)



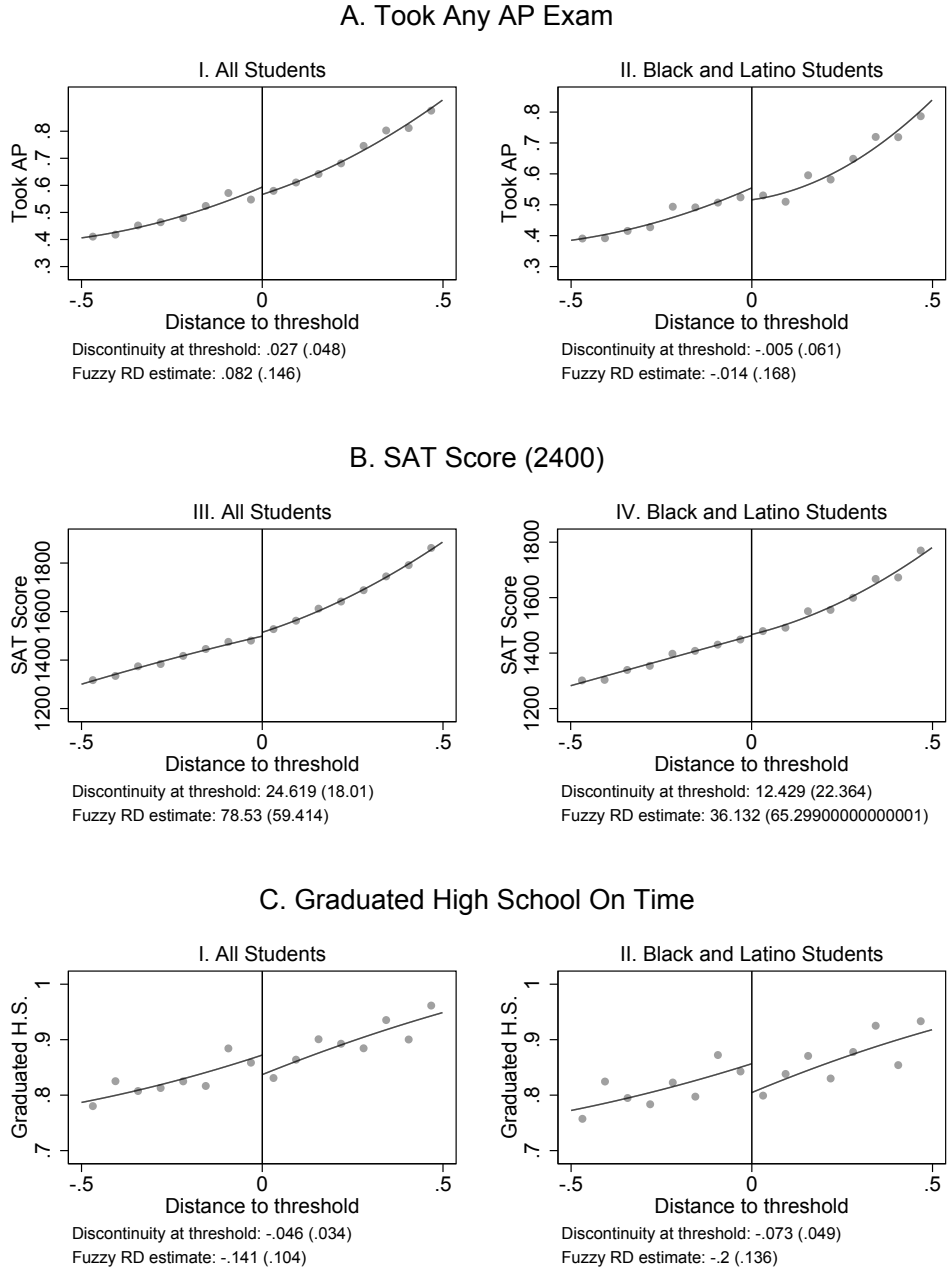
Notes: The above figure shows descriptive characteristics of students by the running variable for the 5th grade cohorts from 2001 to 2007 within the bandwidth of 0.5. A quadratic fit is imposed on either side of the threshold. Each dot represents the average of the descriptive characteristics for a bin of width 0.05

Figure D.4: MCAS Outcomes by Distance to Eligbility Threshold (6th Grade)



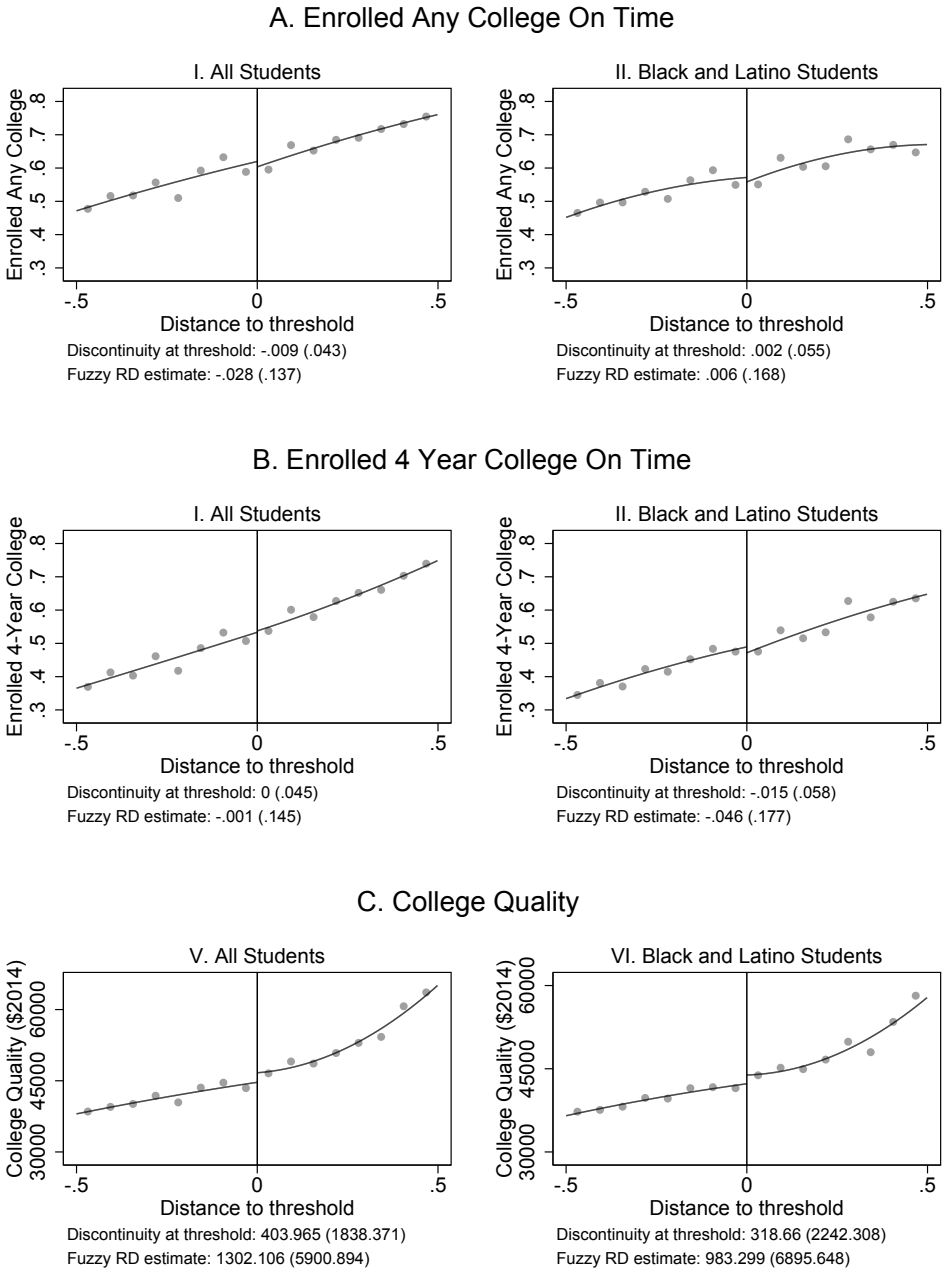
Notes: The above figure shows average MCAS outcomes for bins of width 0.05 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.5 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. Elementary school scores are the MCAS index for 4th and 5th grade students; middle school scores are the MCAS index for 6th, 7th, and 8th grade students.

Figure D.5: High School Outcomes by Distance to Eligbility Threshold (6th Grade)



Notes: The above figure shows average high school outcomes for bins of width 0.05 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.5 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold.

Figure D.6: College Enrollment Outcomes by Distance to Eligbility Threshold (6th Grade)



Notes: The above figure shows average college enrollment outcomes for bins of width 0.05 on either side of the threshold for all students (left side) and Black and Latino students (right side) within the bandwidth of 0.5 around the eligibility threshold. A quadratic fit is imposed on either side of the threshold. College quality earnings outcomes are measured by the estimated 2014 earnings of college attendees from the 1980-1982 birth cohorts from Chetty, et al. (2017). Students are assigned the earnings outcomes of the college they attend, by gender, even if they are not on time attendees. Students who do not attend college are assigned the outcomes for non-attendees of the same gender.

Table D.1: Summary Statistics (6th Grade)

	All Students (1)	Enrolled in 6th Grade AWC (2)	RD Sample (3)
(A) Demographics			
Female	0.482	0.529	0.509
Black	0.461	0.248	0.350
Latino	0.313	0.193	0.256
White	0.122	0.265	0.196
Asian	0.091	0.278	0.181
Other Race	0.013	0.016	0.017
Subsidized Lunch	0.832	0.637	0.756
English Language Learner	0.120	0.033	0.045
4th Grade ELA	0.223	0.013	0.024
Special Education	-0.677	0.613	0.276
(B) AWC Enrollment			
6th Grade AWC	0.107	1.000	0.355
(C) MCAS Standardized Index			
4th Grade	-0.541	0.829	0.458
10th Grade	-0.482	0.649	0.329
(D) High School Milestones			
Took Any AP	0.352	0.743	0.574
Took SAT	0.656	0.903	0.850
On Time H.S. Graduation	0.728	0.899	0.855
(E) On Time College Enrollment			
Any College	0.424	0.711	0.615
4-Year College	0.317	0.655	0.537
2-Year College	0.107	0.056	0.079
College Quality ($2014)	37,410	55,121	45,793
N	27,436	2,945	2,751

Notes: Mean values of each variable are shown by sample. Column (1) is the full sample of 5th graders enrolled in BPS in the fall years from 2001-2007. Column (2) restricts that sample to students enrolled in AWC in 6th grade. Column (3) restricts the full sample to those within 0.363 of the eligibility threshold. College quality earnings outcomes are measured by the estimated 2014 earnings of college attendees from the 1980-1982 birth cohorts from Chetty, et al. (2017). Students are assigned the earnings outcomes of the college they attend, by gender, even if they are not on time attendees. Students who do not attend college are assigned the outcomes for non-attendees of the same gender.

Table D.2: Covariate Balance by AWC Eligibility (6th Grade)

	Female (1)	Black (2)	Latino (3)	Asian (4)	Subsidized lunch (5)	Eng. lang. learner (6)	Special ed. (7)	4th grade MCAS ELA (8)
AWC Eligibility	-0.010	0.022	0.034	-0.026	-0.011	0.020	0.005	-0.004
	(0.041)	(0.038)	(0.035)	(0.029)	(0.036)	(0.019)	(0.013)	(0.055)
$\bar{Y}$	0.522	0.385	0.240	0.186	0.745	0.037	0.022	0.266
N	2,751	2,751	2,751	2,751	2,751	2,751	2,751	2,260

Notes: Each coefficient on AWC eligibility (the reduced form) is generated by local linear regression with a triangular kernel of bandwidth 0.16. Demographic controls listed at the top of each column are used as outcomes. All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold.Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table D.3: Attrition: Regression Discontinuity Estimates of Effects on Staying in the Sample (6th Grade)

	6th Grade (1)	7th Grade (2)	8th Grade (3)	9th Grade (4)	10th Grade (5)	11th Grade (6)	12th Grade (7)	Sent to NSC (8)
AWC Eligibility	0.036**	0.019	0.026	-0.010	0.044	0.052	0.035	
	(0.017)	(0.024)	(0.026)	(0.028)	(0.031)	(0.035)	(0.035)	
$\bar{Y}$	0.939	0.907	0.885	0.875	0.814	0.748	0.740	
N	2,751	2,751	2,751	2,751	2,751	2,751	2,751	

Notes: Each coefficient labeled "AWC Eligibility" is the reduced form regression discontinuity estimate of 4th grade AWC eligibility on the presence in the grade listed in the column heading at a school type. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold.All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table D.4: First Stage Estimates of AWC Enrollment (6th Grade)

	6th Grade and Above (1)
6th Grade AWC	0.317***
	(0.035)
$\bar{Y}$	0.194
N	2,751

Notes: Robust standard errors clustered by baseline school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). All regressions include baseline school by year fixed effects and controls for demographic characteristics and baseline program participation. Each coefficient is generated by local linear regression with a triangular kernel of bandwidth 0.16. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold.

Table D.5: Fuzzy Regression Discontinuity Estimates of Effects on Enrollment (6th Grade)

	6th Grade (1)	7th Grade (2)	8th Grade (3)	9th Grade (4)	10th Grade (5)	11th Grade (6)	12th Grade (7))
(A) BPS Schools							
AWC Eligibility (All)	0.065**	0.048	0.043	-0.022	0.034	0.044	0.021
	(0.031)	(0.035)	(0.037)	(0.040)	(0.039)	(0.042)	(0.042)
$\bar{Y}$	0.811	0.765	0.730	0.711	0.650	0.586	0.598
AWC Eligibility (Exam)		0.033	0.025	-0.021	0.004	0.028	-0.004
		(0.040)	(0.041)	(0.042)	(0.042)	(0.041)	(0.041)
$\bar{Y}$		0.306	0.297	0.380	0.355	0.316	0.331
(B) Boston Charter Schools							
AWC Eligibility	-0.020	-0.022	-0.010	0.018	0.020	0.016	0.012
	(0.019)	(0.018)	(0.017)	(0.018)	(0.016)	(0.016)	(0.015)
$\bar{Y}$	0.069	0.061	0.056	0.042	0.037	0.034	0.034
(C) Other MA Public Schools							
AWC Eligibility	-0.009	-0.007	-0.007	-0.006	-0.011	-0.008	0.002
	(0.017)	(0.022)	(0.025)	(0.027)	(0.026)	(0.027)	(0.025)
$\bar{Y}$	0.059	0.081	0.098	0.123	0.127	0.127	0.108
(D) Leave MA Public Sample							
AWC Eligibility	-0.036**	-0.019	-0.026	0.010	-0.044	-0.052	-0.035
	(0.017)	(0.024)	(0.026)	(0.028)	(0.031)	(0.035)	(0.035)
$\bar{Y}$	0.061	0.093	0.115	0.125	0.186	0.252	0.260
N	2,751	2,751	2,751	2,751	2,751	2,751	2,751

Notes: Each coefficient labeled "AWC Eligibility" is the reduced form regression discontinuity estimate of 4th grade AWC eligibility on the presence in the grade listed in the column heading at a school type. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each coefficient is the mean of the outcome for students between 0 and 0.05 units below the eligibility threshold.All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01).

Table D.6: Fuzzy Regression Discontinuity Estimates of Effects on Exam School Application and Offers (6th Grade)

	Apply Any Exam (1)	Apply BLS (2)	Apply BLA (3)	Apply O'Bryant (4)	Offer Any Exam (5)	Offer BLS (6)	Offer BLA (7)	Offer O'Bryant (8)	ISEE Z-Score (9)	GPA Z-Score (10)
(A) 7th Grade Entry										
2SLS	0.324***	0.307***	0.342***	0.311***	0.132	-0.060	0.144	0.049	0.193	-0.479**
	(0.116)	(0.118)	(0.118)	(0.120)	(0.123)	(0.066)	(0.109)	(0.096)	(0.177)	(0.202)
CCM	0.509	0.499	0.486	0.505	0.293	0.101	0.137	0.055	-0.031	0.423
N	2,499	2,499	2,499	2,499	2,499	2,499	2,499	2,499	1,632	1,632
(B) 9th Grade Entry										
2SLS	0.022	0.023	0.065	0.003	0.060	0.005	-0.029	0.084	-0.483	0.857*
	(0.105)	(0.105)	(0.103)	(0.101)	(0.082)	(0.026)	(0.050)	(0.068)	(0.328)	(0.437)
CCM	0.223	0.223	0.174	0.175	0.052	0.033	0.025	-0.006	0.797	-0.268
N	2,386	2,386	2,386	2,386	2,386	2,386	2,386	2,386	518	518

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 6th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each 2SLS coefficient is the control complier mean (CCM). All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). BLS stands for Boston Latin School, BLA for Boston Latin Academy, and O'Bryant for John D. O'Bryant School of Math and Science.

Table D.7: Fuzzy Regression Discontinuity Estimates of Effects on MCAS Indices (6th Grade)

	Middle School (1)	10th Grade (2)
(A) All Students		
2SLS	0.053	0.272
	(0.116)	(0.173)
CCM	0.303	0.154
N (students)	2,597	2,269
(B) Black and Latino Students		
2SLS	-0.040	0.125
	(0.148)	(0.212)
CCM	0.261	0.133
N (students)	1,608	1,394
(C) White and Asian Students		
2SLS	0.237	0.610**
	(0.196)	(0.299)
CCM	0.398	0.181
N (students)	989	875

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 6th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each coefficient is the control complier mean (CCM). All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. The MCAS index is the mean of all available MCAS subject test z-scores, standardized to be mean zero, standard deviation one. Elementary school regressions stack 4th and 5th grade outcomes, include grade fixed effects, and double cluster standard errors by 5th grade school by year and student. Middle school regressions stack 6th, 7th, and 8th grade outcomes, include grade fixed effects, and double cluster standard errors by 5th grade school by year and student (* p<.10 ** p<.05 *** p<.01).

Table D.8: Fuzzy Regression Discontinuity Estimates of Effects on Academic Outcomes (6th Grade)

	Took Any AP (1)	# APs Taken (2)	Took SAT (3)	SAT Score (4)	On Time HS Grad. (5)	Late HS Grade (6)
(A) All Students						
2SLS	0.082	0.748	0.057	78.530	-0.141	0.018
	(0.146)	(0.535)	(0.099)	(59.414)	(0.104)	(0.150)
CCM	0.511	1.362	0.815	1401.174	0.976	0.534
N	2,078	2,078	2,078	1,767	2,078	2,078
(B) Black and Latino Students						
2SLS	-0.014	0.431	-0.073	36.132	-0.200	-0.110
	(0.168)	(0.563)	(0.122)	(65.299)	(0.136)	(0.172)
CCM	0.525	1.299	0.867	1381.749	0.977	0.556
N	1,264	1,264	1,264	1,037	1,264	1,264
(C) Asian and White Students						
2SLS	0.351	1.931	0.379**	203.799*	0.009	0.380
	(0.263)	(1.197)	(0.176)	(121.014)	(0.151)	(0.267)
CCM	0.469	1.329	0.700	1434.921	0.977	0.469
N	814	814	814	730	814	814

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 6th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each coefficient is the control complier mean (CCM). All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). On time high school graduation looks for high school graduation 8 years after the 5th grade exam for AWC eligibility. Late graduation is one year after that.

Table D.9: Fuzzy Regression Discontinuity Estimates of Effects on College (6th Grade)

	On Time College Enrollment			College Quality	Late Enrollment
	Any	Four-year	Two-year	$2014	Any
	(1)	(2)	(3)	(4)	(5)
(A) All Students					
2SLS	-0.028	-0.001	-0.020	1302.106	0.138
	(0.137)	(0.145)	(0.079)	(5900.894)	(0.139)
CCM	0.737	0.670	0.059	47543.338	0.701
N	2,497	2,497	2,497	2,497	2,193
(B) Black and Latino Students					
2SLS	0.006	-0.046	0.061	983.299	0.149
	(0.168)	(0.177)	(0.099)	(6895.648)	(0.185)
CCM	0.769	0.761	-0.001	50642.633	0.742
N	1,544	1,544	1,544	1,544	1,337
(C) Asian and White Students					
2SLS	-0.066	0.117	-0.178	3393.939	0.140
	(0.238)	(0.242)	(0.129)	(10701.673)	(0.246)
CCM	0.666	0.493	0.167	41176.015	0.608
N	953	953	953	953	856

Notes: Each coefficient labeled "2SLS" is the fuzzy regression discontinuity estimate of 6th grade AWC attendance on the outcome listed in the column heading. An indicator for scoring above the AWC qualification threshold is the instrument for AWC attendance. The specification uses local linear regression with a triangular kernel of bandwidth 0.16. Listed below each coefficient is the control complier mean (CCM). All regressions include 5th grade year fixed effects. The sample is restricted to 5th graders enrolled in Boston Public Schools in the fall of 2001 to 2007. Robust standard errors clustered by 5th grade school by year are in parentheses (* p<.10 ** p<.05 *** p<.01). On time college entrance looks at entry into college 10 years after the 5th grade exam for AWC eligibility. Late college entrance is calculated based on enrollment in college 9 years after the 5th grade exam for AWC eligibility and includes on time enrollment. College quality earnings outcomes are measured by the estimated 2014 earnings of college attendees from the 1980-1982 birth cohorts from Chetty, et al. (2017). Students are assigned the earnings outcomes of the college they attend, by gender, even if they are not on time attendees. Students who do not attend college are assigned the outcomes for non-attendees of the same gender.