Merit Aid, College Quality and College Completion: Massachusetts' Adams Scholarship as an In-Kind Subsidy

Online Appendix

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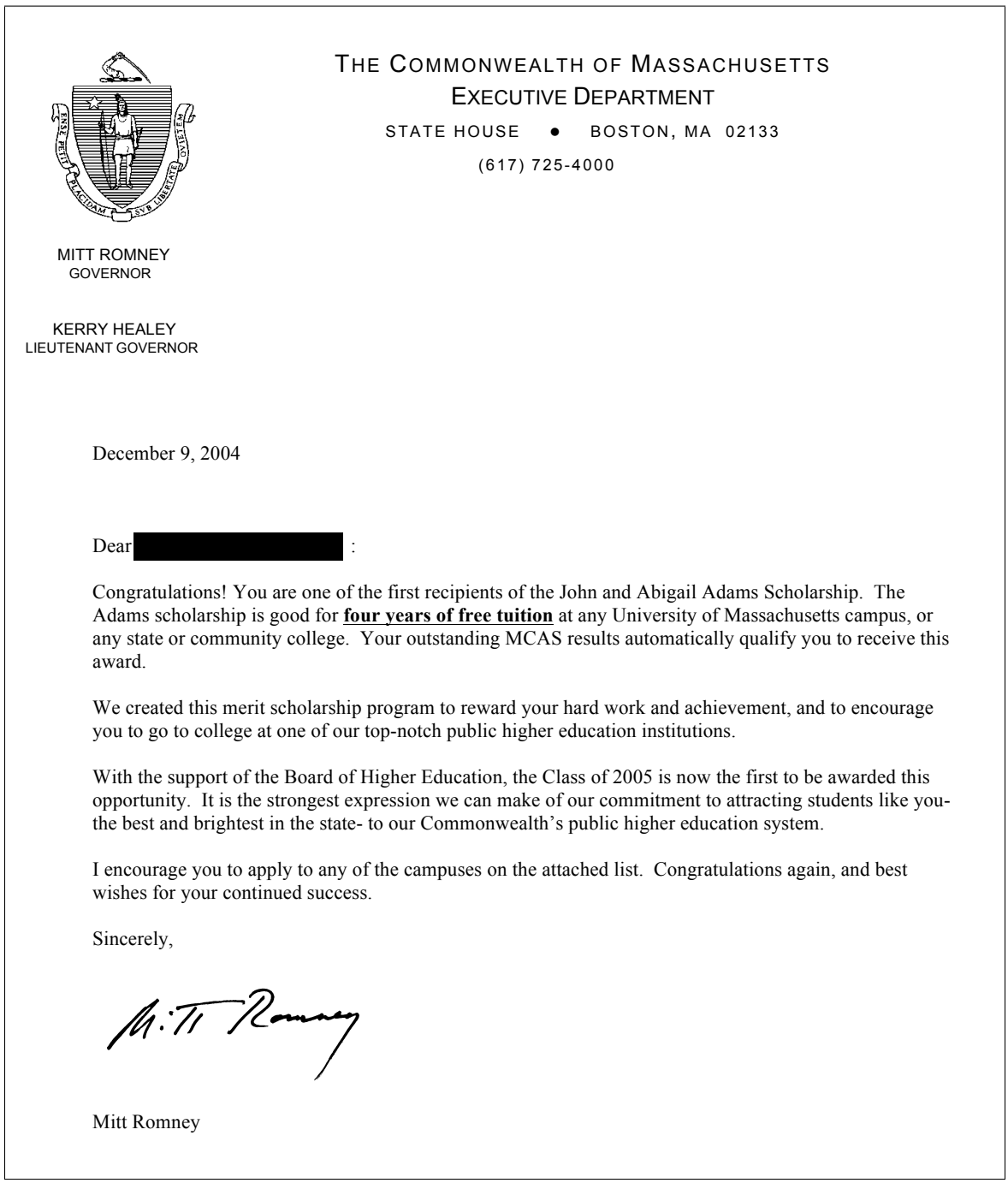
March 10, 2014

Figure A.1: Award Letter to Class of 2005



THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT
STATE HOUSE • BOSTON, MA 02133
(617) 725-4000

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

December 9, 2004

Dear [redacted] :

Congratulations! You are one of the first recipients of the John and Abigail Adams Scholarship. The Adams scholarship is good for **four years of free tuition** at any University of Massachusetts campus, or any state or community college. Your outstanding MCAS results automatically qualify you to receive this award.

We created this merit scholarship program to reward your hard work and achievement, and to encourage you to go to college at one of our top-notch public higher education institutions.

With the support of the Board of Higher Education, the Class of 2005 is now the first to be awarded this opportunity. It is the strongest expression we can make of our commitment to attracting students like you- the best and brightest in the state- to our Commonwealth's public higher education system.

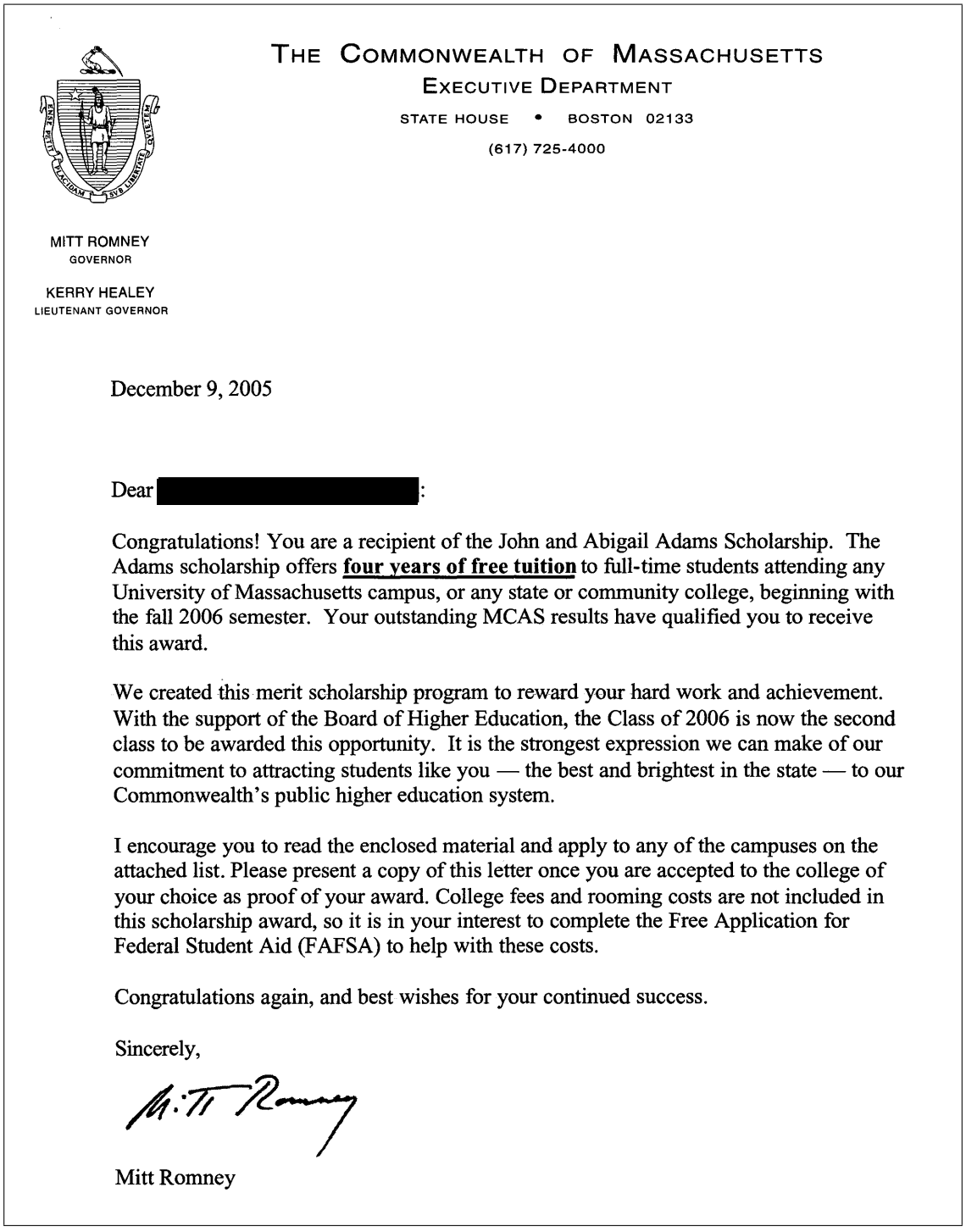
I encourage you to apply to any of the campuses on the attached list. Congratulations again, and best wishes for your continued success.

Sincerely,

Mitt Romney

Notes: Above is a copy of the Adams Scholarship award letter sent to the first treated cohort, high school seniors in the class of 2005.

Figure A.2: Award Letter to Class of 2006



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MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

December 9, 2005

Dear [redacted]:

Congratulations! You are a recipient of the John and Abigail Adams Scholarship. The Adams scholarship offers **four years of free tuition** to full-time students attending any University of Massachusetts campus, or any state or community college, beginning with the fall 2006 semester. Your outstanding MCAS results have qualified you to receive this award.

We created this merit scholarship program to reward your hard work and achievement. With the support of the Board of Higher Education, the Class of 2006 is now the second class to be awarded this opportunity. It is the strongest expression we can make of our commitment to attracting students like you — the best and brightest in the state — to our Commonwealth's public higher education system.

I encourage you to read the enclosed material and apply to any of the campuses on the attached list. Please present a copy of this letter once you are accepted to the college of your choice as proof of your award. College fees and rooming costs are not included in this scholarship award, so it is in your interest to complete the Free Application for Federal Student Aid (FAFSA) to help with these costs.

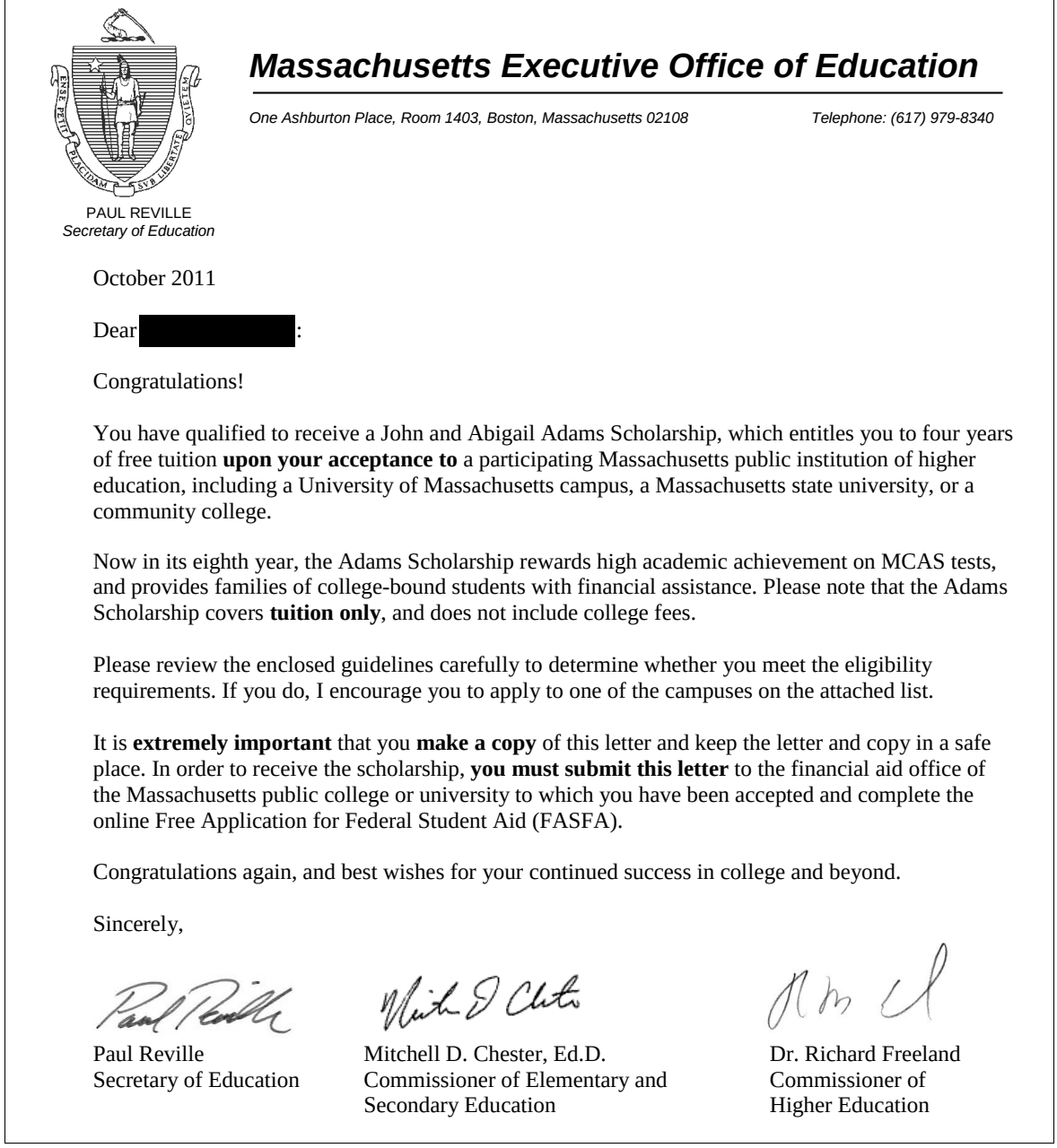
Congratulations again, and best wishes for your continued success.

Sincerely,

Mitt Romney

Notes: Above is a copy of the Adams Scholarship award letter sent to the second treated cohort, high school seniors in the class of 2006.

Figure A.3: Award Letter to Class of 2012



Massachusetts Executive Office of Education

One Ashburton Place, Room 1403, Boston, Massachusetts 02108 Telephone: (617) 979-8340

PAUL REVILLE
Secretary of Education

October 2011

Dear [redacted]:

Congratulations!

You have qualified to receive a John and Abigail Adams Scholarship, which entitles you to four years of free tuition **upon your acceptance to** a participating Massachusetts public institution of higher education, including a University of Massachusetts campus, a Massachusetts state university, or a community college.

Now in its eighth year, the Adams Scholarship rewards high academic achievement on MCAS tests, and provides families of college-bound students with financial assistance. Please note that the Adams Scholarship covers **tuition only**, and does not include college fees.

Please review the enclosed guidelines carefully to determine whether you meet the eligibility requirements. If you do, I encourage you to apply to one of the campuses on the attached list.

It is **extremely important** that you **make a copy** of this letter and keep the letter and copy in a safe place. In order to receive the scholarship, **you must submit this letter** to the financial aid office of the Massachusetts public college or university to which you have been accepted and complete the online Free Application for Federal Student Aid (FASFA).

Congratulations again, and best wishes for your continued success in college and beyond.

Sincerely,

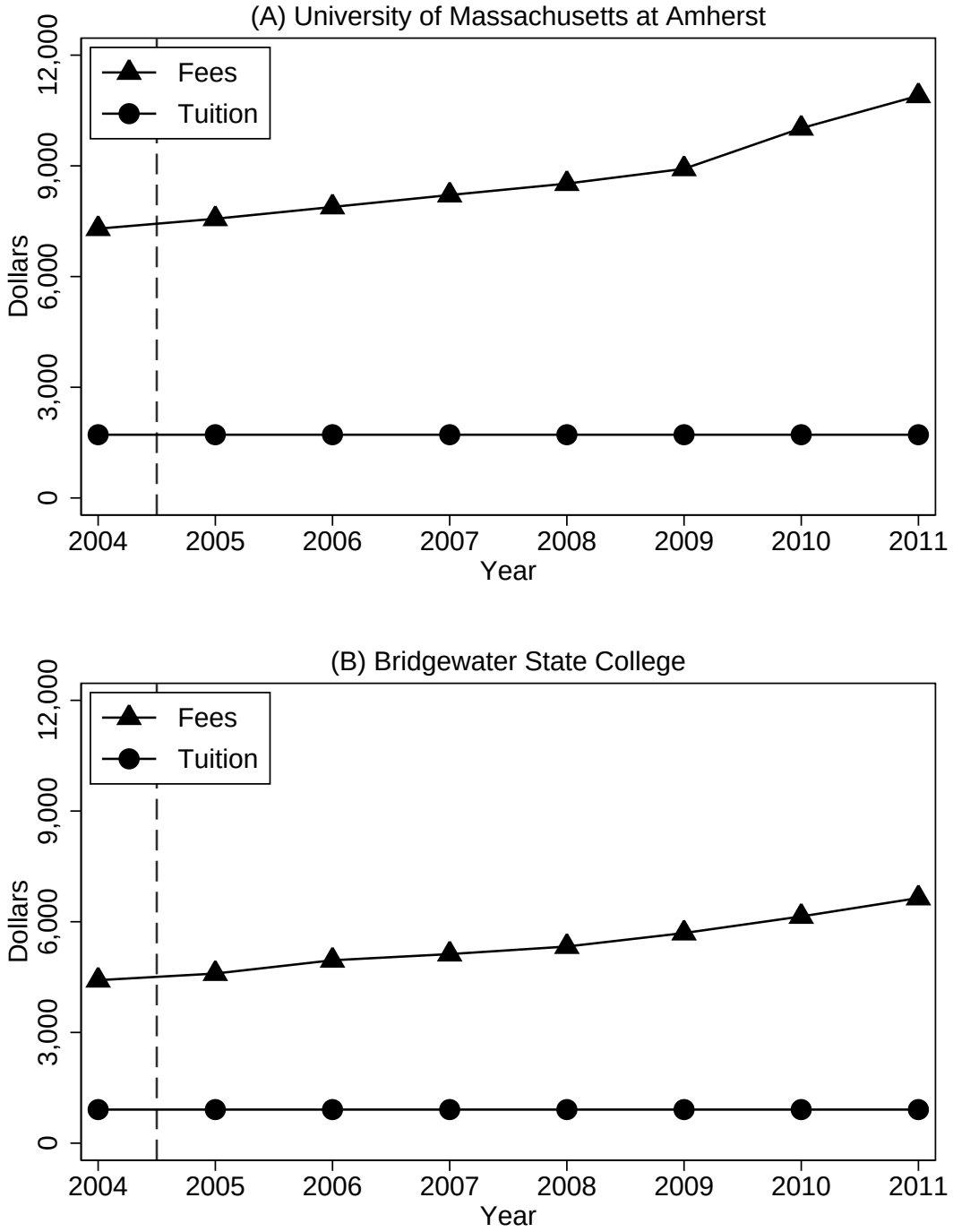
Paul Reville
Secretary of Education

Mitchell D. Chester, Ed.D.
Commissioner of Elementary and Secondary Education

Dr. Richard Freeland
Commissioner of Higher Education

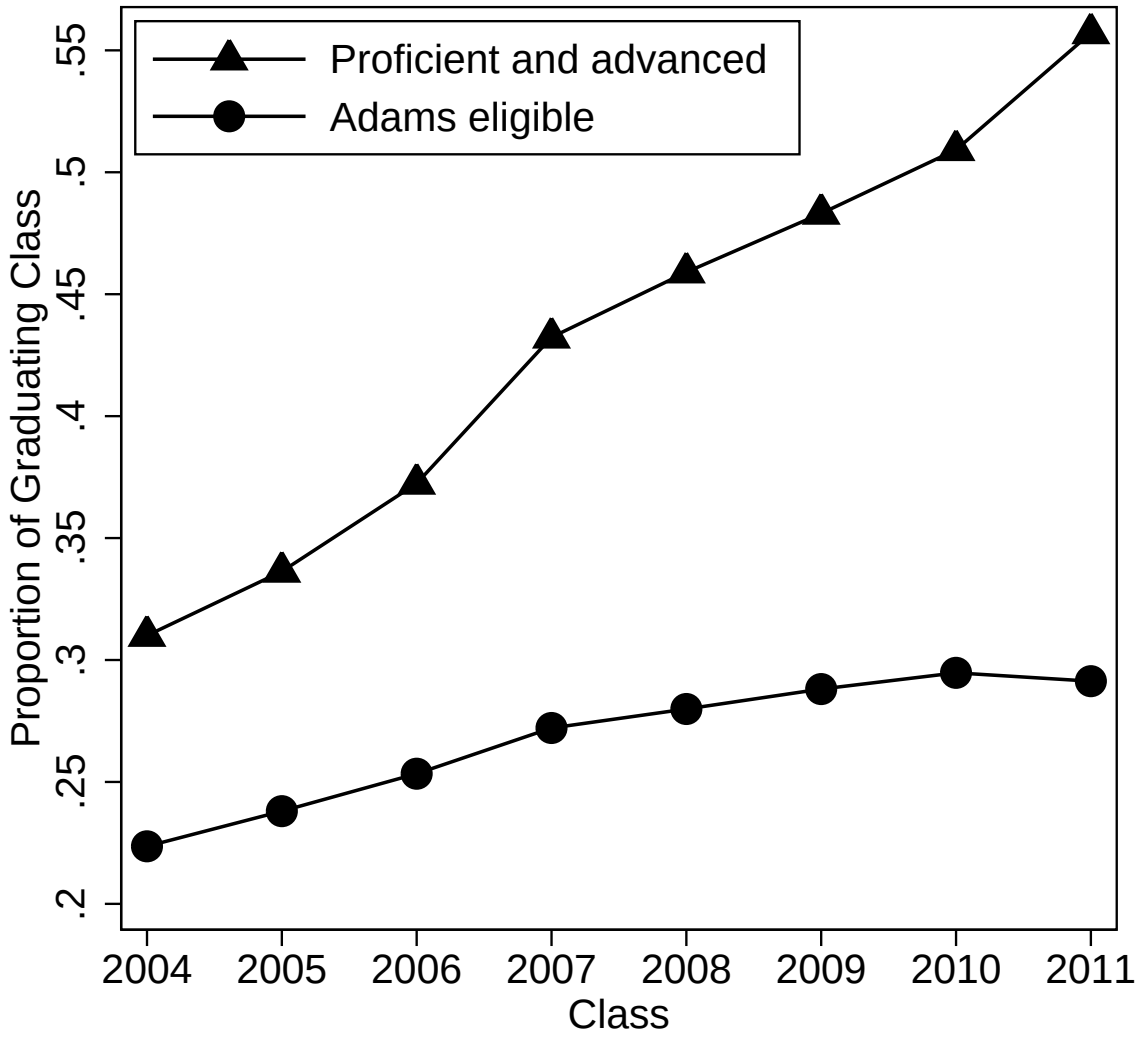
Notes: Above is a copy of the Adams Scholarship award letter sent to a recently treated cohort, high school seniors in the class of 2012.

Figure A.4: Tuition and Fees at Two Typical Adams Colleges



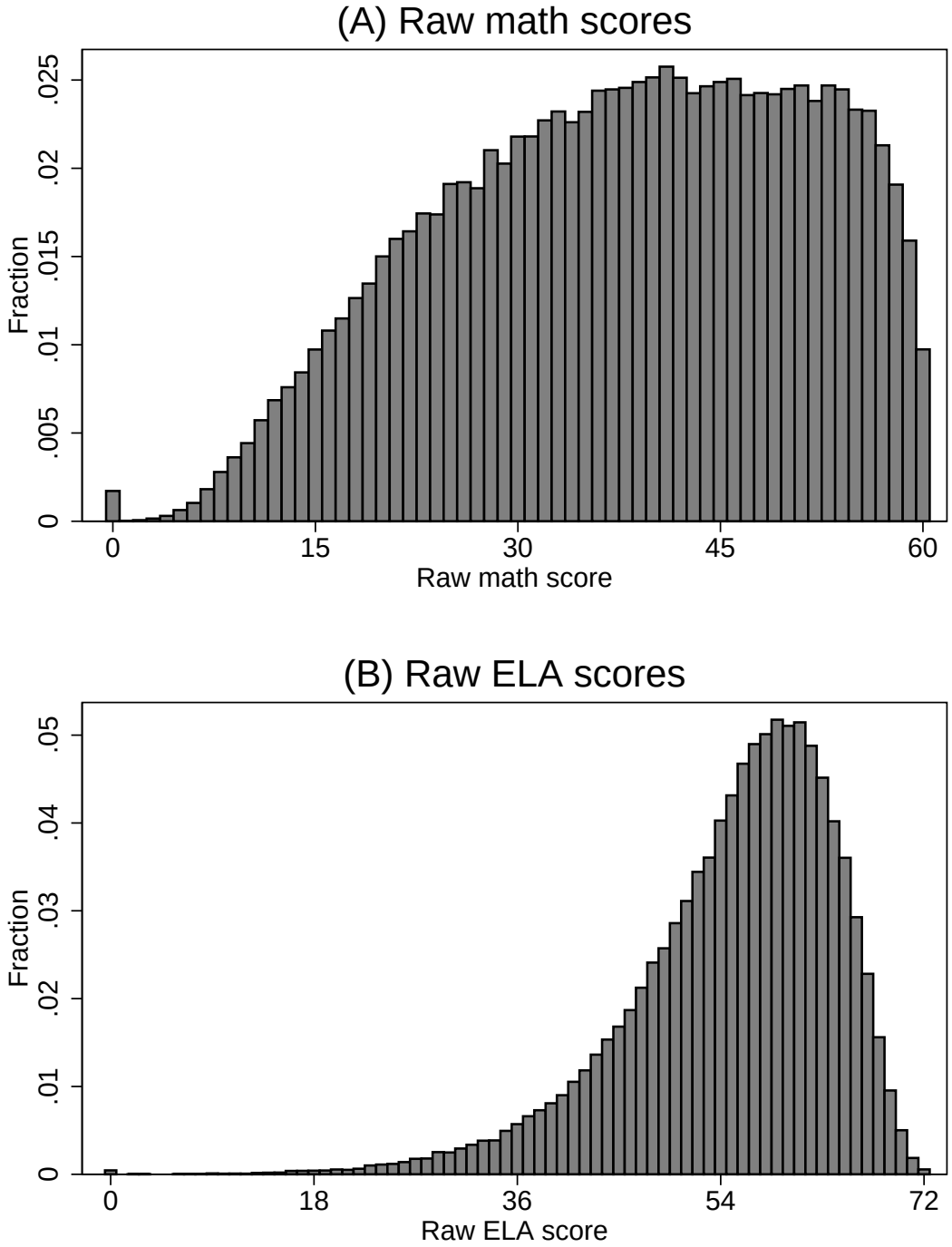
Notes: The above panels show tuition and fees over time for the largest U. Mass. campus and the largest state college. Data come from `http://www.mass.edu/campuses/tuitionfees.asp`, accessed on May 28, 2013.

Figure A.5: Adams Eligibility by High School Class



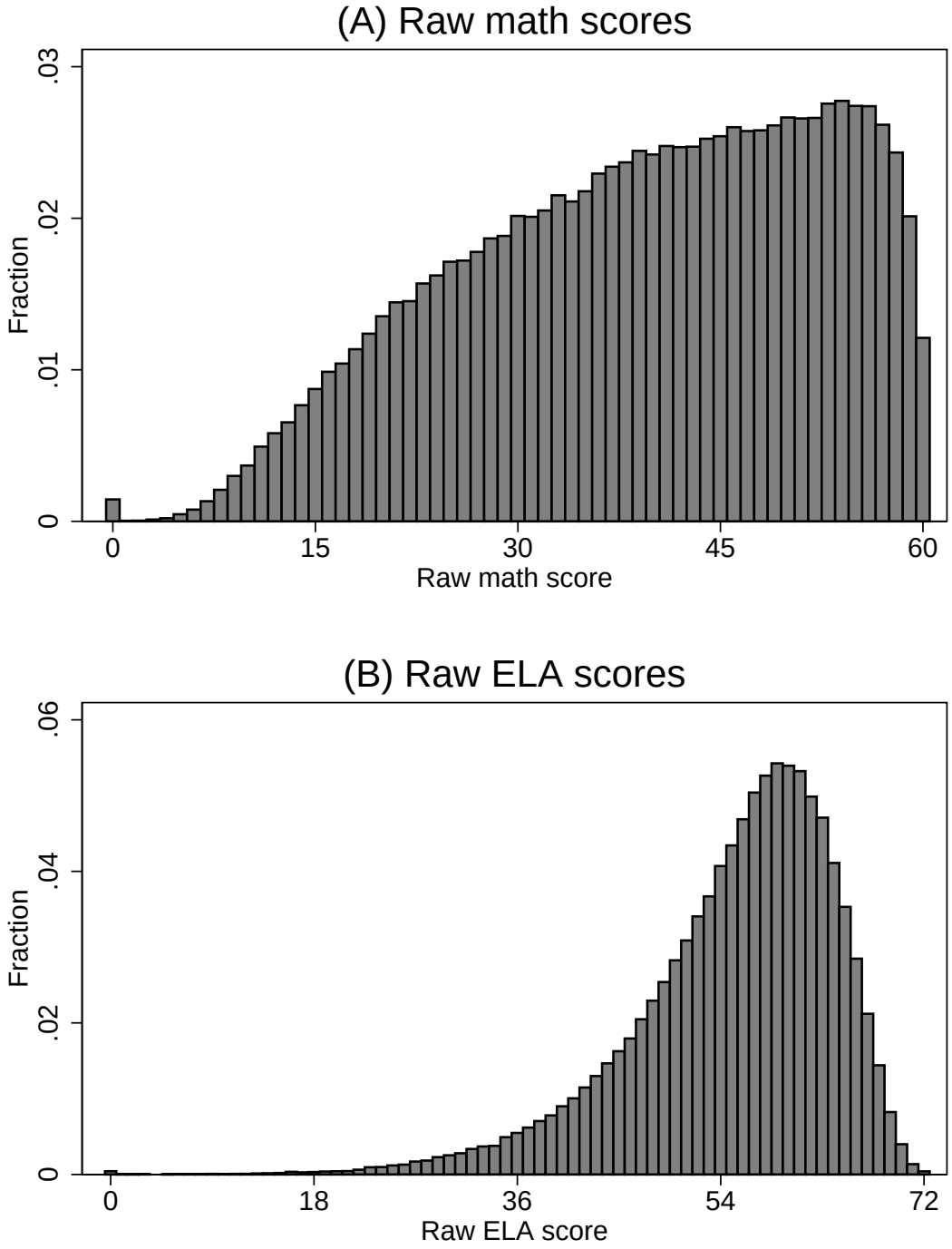
Notes: The top line shows the fraction of students scoring advanced on one MCAS section and proficient or advanced on the other. The bottom line shows the fraction of students deemed eligible for the Adams Scholarship. Calculations are based on data from DESE.

Figure A.6: Density of Raw Scores, Classes of 2005-06



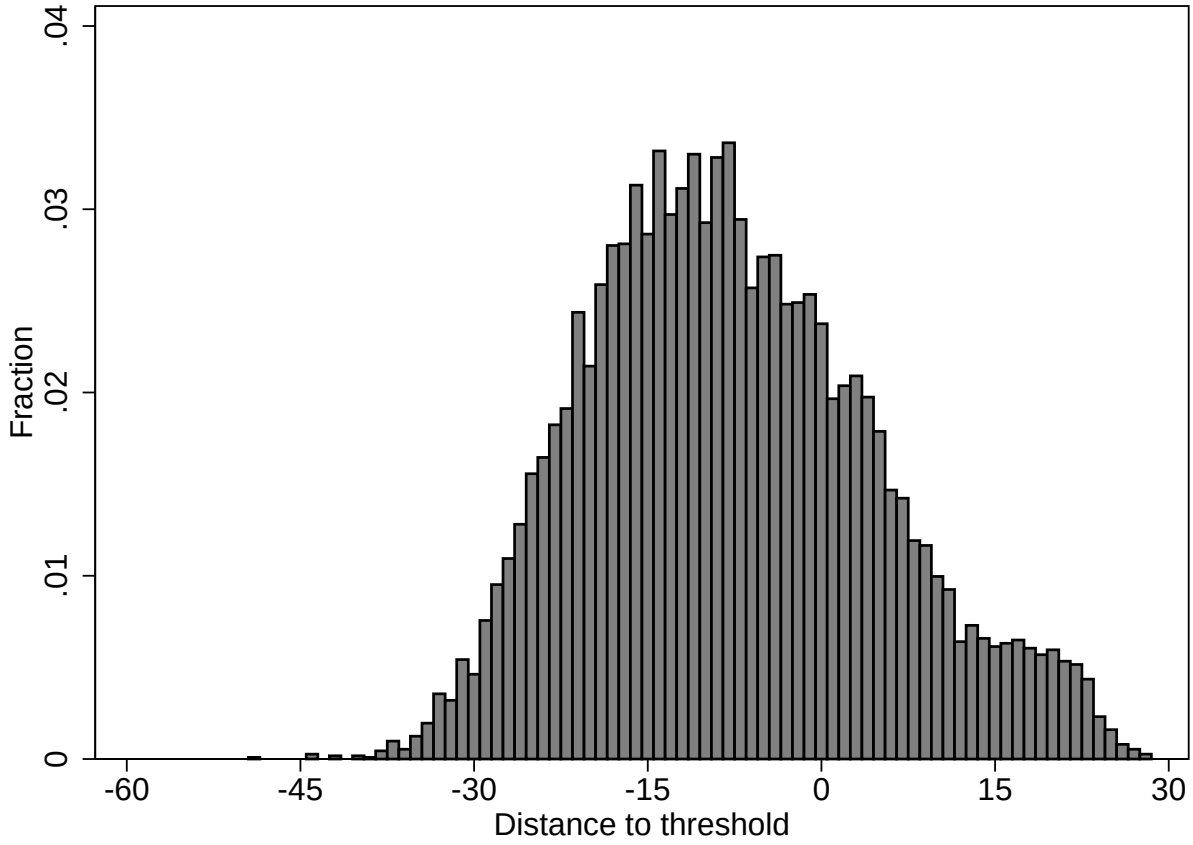
Notes: The above panels show, for the high school classes of 2005-06, the full distribution of raw math and ELA MCAS scores that underlie construction of the running variable. Calculations are based on data from DESE.

Figure A.7: Density of Raw Scores, Classes of 2005-08



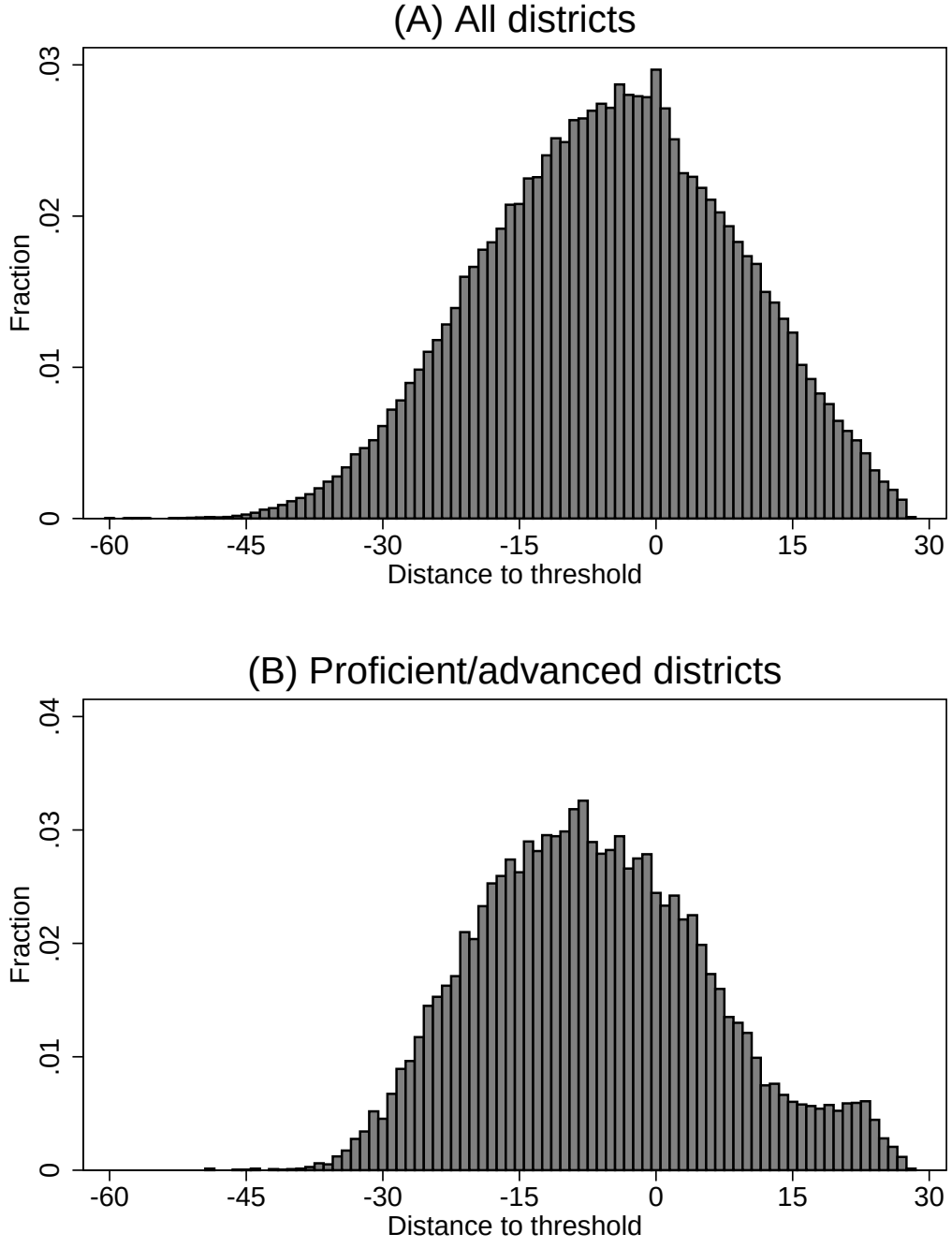
Notes: The above panels show, for the high school classes of 2005-08, the full distribution of raw math and ELA MCAS scores that underlie construction of the running variable. Calculations are based on data from DESE.

Figure A.8: Density of the Running Variable in Proficient/Advanced Districts, Classes of 2005-06



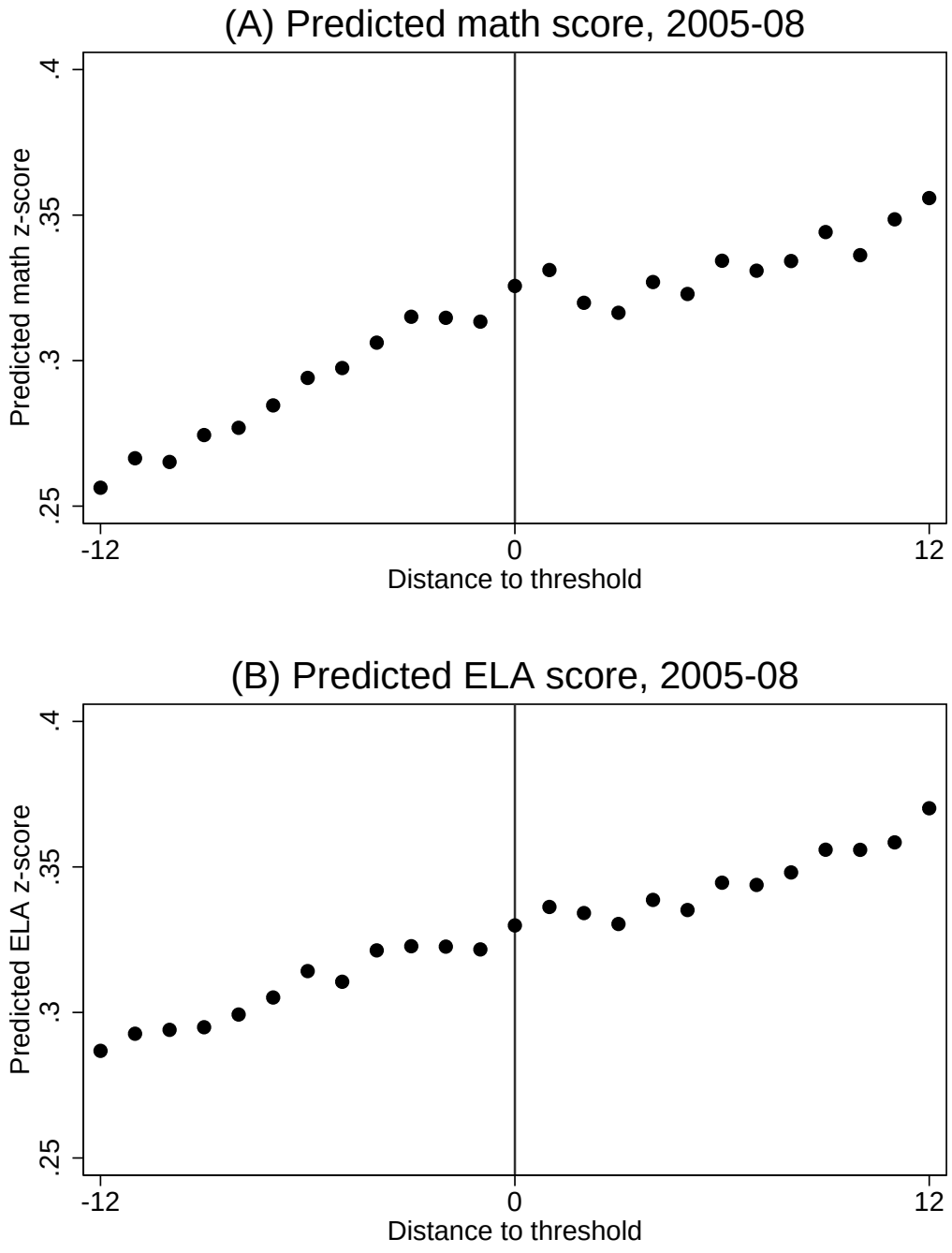
Notes: The above figure shows, for the high school classes of 2005-06, the full distribution of the running variable in school districts where the proficient/advanced threshold is binding and the top 25% threshold is irrelevant. Calculations are based on data from DESE.

Figure A.9: Density of the Running Variable, Classes of 2005-08



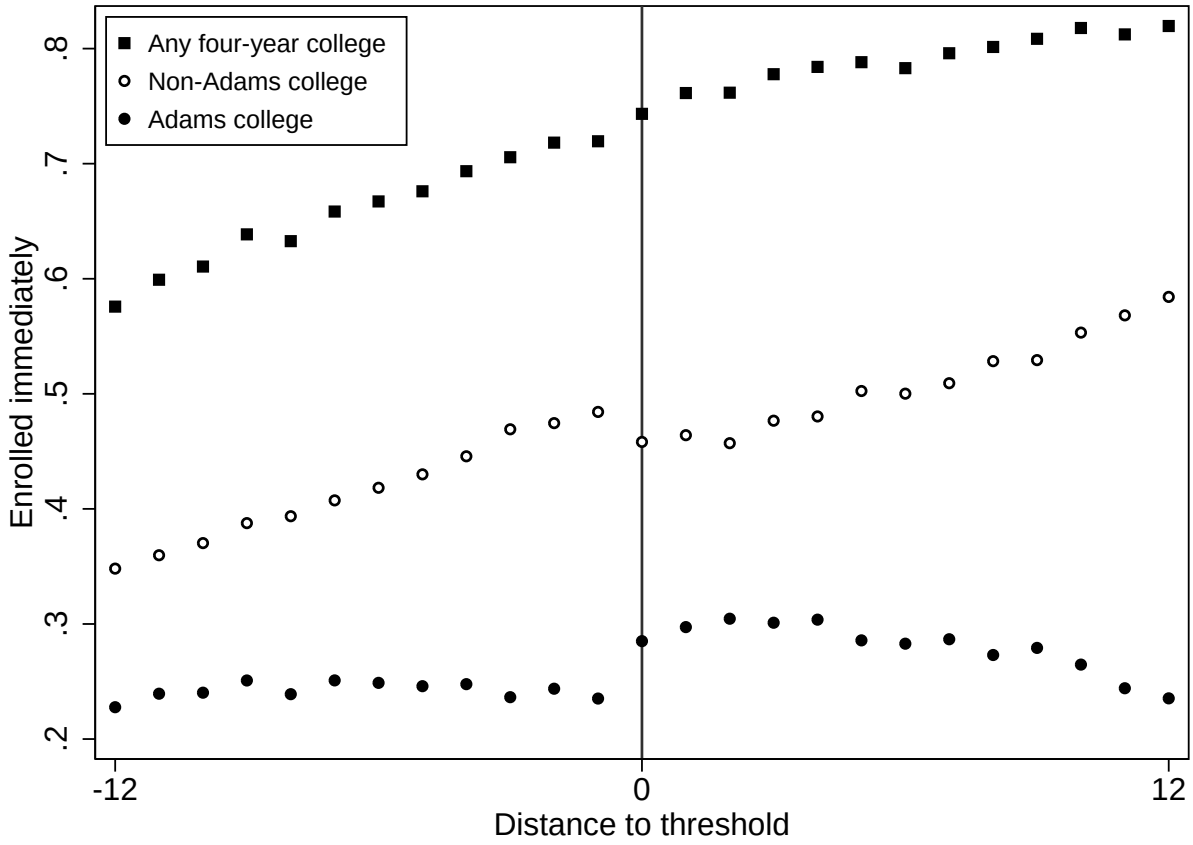
Notes: Panel A shows, for the high school classes of 2005-08, the full distribution of the running variable in all school districts. Panel B shows the distribution of the running variable in districts where the proficient/advanced threshold is binding and the top 25% threshold is irrelevant. Calculations are based on data from DESE.

Figure A.10: Smoothness of Covariates, Classes of 2005-08



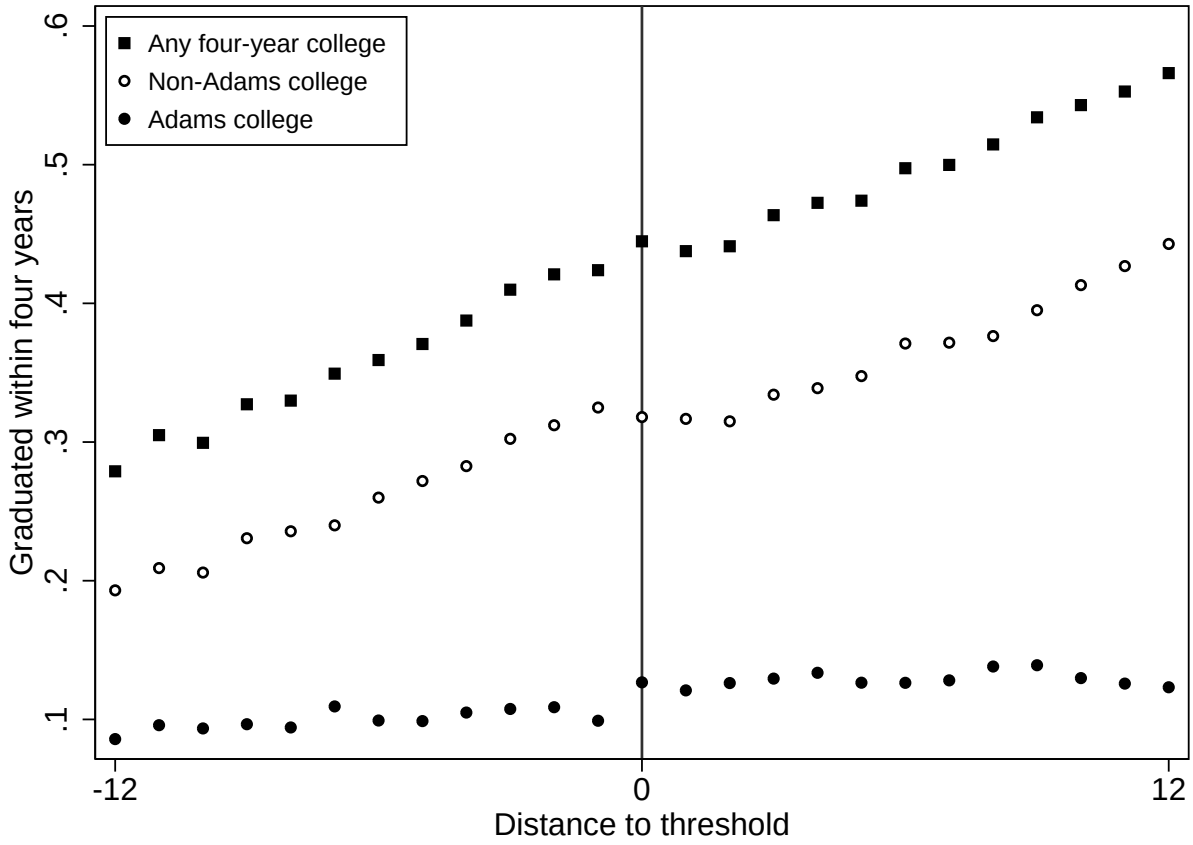
Notes: Each panel shows the mean predicted math and ELA score by each value of the running variable, for the high school classes of 2005-08. Predicted scores are generated by regressing math and ELA scores on demographic characteristics for the class of 2004. The resulting coefficients are then used to generate predictions for subsequent classes.

Figure A.11: Enrollment at Four-Year Colleges, Classes of 2005-08



Notes: The above figure shows the fraction of students enrolling in four-year colleges immediately following high school graduation by each value of the running variable, for the high school classes of 2005-08. Adams colleges are Massachusetts public four-year colleges where the Adams Scholarship tuition waiver may be used. Non-Adams colleges are all other four-year colleges, both in-state and out of state. Calculations are based on National Student Clearinghouse data.

Figure A.12: Graduation from Four-Year Colleges, Classes of 2005-08



Notes: The above figure shows the fraction of students graduating from four-year colleges within six years of high school graduation by each value of the running variable, for the high school classes of 2005-08. Adams colleges are Massachusetts public four-year colleges where the Adams Scholarship tuition waiver may be used. Non-Adams colleges are all other four-year colleges, both in-state and out of state. Calculations are based on National Student Clearinghouse data.

Table A.1: College Quality Measures, Selected Institutions

	2004 MA freshmen (1)	Four-year grad. rate (2)	SAT math score, p75 (3)	Instr. spending (4)	College quality (5)	Net price (6)
(A) Adams colleges						
U. Mass. Amherst	2608	.43	630	9.9	.02	8.6
U. Mass. Dartmouth	1078	.26	580	5.3	-.72	10.7
U. Mass. Lowell	793	.24	610	6.4	-.58	7.6
U. Mass. Boston	349	.12	560	8.8	-1.03	8.3
Bridgewater State	959	.23	560	3.7	-.93	7.7
(B) Other colleges						
Suffolk Univ.	420	.35	550	12.2	-.53	23.3
Univ. of Rhode Island	287	.35	600	7.3	-.38	19.4
Johnson and Wales Univ.	436	.42	590	7.2	-.32	16.9
Univ. of Connecticut	275	.45	650	13.2	.26	18.3
Merrimack College	231	.45	590	7.5	-.22	15.6
Univ. of Vermont	228	.50	630	10.8	.18	18.1
Univ. of New Hampshire	502	.54	620	8.9	.17	19.7
Syracuse Univ.	216	.66	670	16.8	.88	17.7
Boston Univ.	587	.62	690	32.5	1.33	17.2
Tufts Univ.	186	.84	740	29.1	1.96	15.1
Harvard Univ.	124	.86	790	107.8	4.35	12.3

Notes: College characteristics are taken from IPEDS and are measured in the fall of 2004. Instructional spending and net price are measured in thousands of dollars. College quality is the standardized first principal component of each institution's four-year graduation rate, the 75th percentile SAT math score, and instructional expenditures per student, measured as of 2004.

Table A.2: On-Time Enrollment and Graduation, By Adams College

	Adams college (1)	Any U. Mass. (2)	U. Mass. Amherst (3)	U. Mass. Dartmouth (4)	U. Mass. Lowell (5)	U. Mass. Boston (6)	Any state college (7)	Bridgewater State Coll. (8)
(A) Classes of 2005-06								
Enrolled immediately	0.069***	0.040***	0.030***	0.009**	-0.000	0.001	0.029***	0.009***
	(0.010)	(0.008)	(0.006)	(0.004)	(0.003)	(0.002)	(0.006)	(0.003)
$\bar{Y}$	0.238	0.151	0.073	0.034	0.031	0.013	0.087	0.024
Graduated within 6 years	0.029***	0.018***	0.015***	0.005	-0.004	0.001	0.011**	0.000
	(0.008)	(0.007)	(0.005)	(0.003)	(0.003)	(0.002)	(0.005)	(0.003)
$\bar{Y}$	0.184	0.119	0.064	0.019	0.023	0.012	0.065	0.026
N	41,190	41,190	41,190	41,190	41,190	41,190	41,190	41,190
(B) Classes of 2005-08								
Enrolled immediately	0.060***	0.036***	0.019***	0.007***	0.003	0.006***	0.024***	0.008***
	(0.007)	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)
$\bar{Y}$	0.235	0.145	0.074	0.034	0.026	0.011	0.090	0.023
Graduated within 4 years	0.018***	0.010***	0.007**	0.001	0.000	0.000	0.009***	0.002
	(0.004)	(0.004)	(0.003)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)
$\bar{Y}$	0.099	0.067	0.045	0.013	0.007	0.002	0.032	0.009
N	88,152	88,152	88,152	88,152	88,152	88,152	88,152	88,152

Notes: Heteroskedasticity robust standard errors clustered by 12th grade school district are in parentheses (* p<.10 ** p<.05 *** p<.01). Outcomes are enrollment in or graduation from the specific college or set of colleges listed at the top of each column. Each coefficient on aid eligibility is generated by local linear regression with a triangular kernel of bandwidth 12. In panel (A), the sample consists of the high school classes of 2005-06. In panel (B), the sample consists of the high school classes of 2005-08. Listed below each coefficient is the mean of the outcome for students just below the eligibility threshold.

Table A.3: Robustness Checks

	Classes of 2005-06			Classes of 2005-08		
	Enrolled immed., Adams college (1)	On campus in year 4, four-year college (2)	Graduated within 6, four-year college (3)	Enrolled immed., Adams college (4)	On campus in year 4, four-year college (5)	Graduated within 4, four-year college (6)
(A) LLR, no controls						
IK bandwidth	0.067***	-0.022**	-0.023**	0.060***	-0.017**	-0.009
	(0.009)	(0.010)	(0.009)	(0.007)	(0.007)	(0.007)
BW	14.3	10.2	10.3	11.3	9.5	9.4
BW = 6	0.073***	-0.014	-0.013	0.056***	-0.016*	-0.002
	(0.014)	(0.013)	(0.014)	(0.009)	(0.010)	(0.010)
BW = 9	0.072***	-0.020**	-0.019*	0.059***	-0.017**	-0.008
	(0.011)	(0.010)	(0.010)	(0.007)	(0.007)	(0.008)
BW = 12	0.069***	-0.023***	-0.025***	0.060***	-0.017***	-0.010
	(0.010)	(0.009)	(0.009)	(0.007)	(0.006)	(0.007)
BW = 15	0.067***	-0.021**	-0.025***	0.059***	-0.016***	-0.012**
	(0.009)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)
BW = 18	0.066***	-0.018**	-0.024***	0.059***	-0.015***	-0.012**
	(0.009)	(0.008)	(0.008)	(0.006)	(0.005)	(0.005)
(B) LLR, BW = 12						
District*class FE	0.065***	-0.021**	-0.020**	0.053***	-0.015**	-0.003
	(0.010)	(0.008)	(0.009)	(0.006)	(0.006)	(0.006)
Demographics	0.069***	-0.022**	-0.022**	0.060***	-0.018***	-0.011*
	(0.010)	(0.009)	(0.009)	(0.007)	(0.006)	(0.007)
Donut hole	0.079***	-0.030***	-0.036***	0.071***	-0.025***	-0.020***
	(0.011)	(0.011)	(0.011)	(0.008)	(0.007)	(0.007)
(C) Parametric						
Quadratic	0.063***	-0.028***	-0.029***	0.051***	-0.026***	-0.023***
	(0.009)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)
Cubic	0.068***	-0.028***	-0.035***	0.061***	-0.019***	-0.014**
	(0.011)	(0.010)	(0.010)	(0.007)	(0.007)	(0.007)
Quartic	0.063***	-0.029**	-0.029***	0.057***	-0.015*	-0.004
	(0.012)	(0.012)	(0.011)	(0.008)	(0.008)	(0.009)

Notes: Heteroskedasticity robust standard errors clustered by 12th grade school district are in parentheses (* p<.10 ** p<.05 *** p<.01). In panel A, each coefficient on aid eligibility is generated by local linear regression with a triangular kernel of the listed bandwidth. Each row in panel B replicates the panel A specification using a bandwidth of 12, with modifications. The first row adds school district by class fixed effects. The second row adds controls for gender, race, low-income status, limited English proficiency and special education status. The third row excludes observations on the eligibility threshold. Panel C fits quadratic, cubic and quadratic functions on either side of the threshold, using the entire sample and a rectangular kernel. The samples consists of the high school classes of 2005-06 and 2005-08.