

Table 9: Relationship between Demand Elasticity and Spending Priorities in 2007

	Dependent variable: Ratio of Student Services to Instructional Spending						
	Choice model includes college fixed effects						No fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Elasticity w.r.t. spending on							
Student services (standardized)	0.112*** (0.008)	0.080*** (0.008)	0.087*** (0.008)	0.083*** (0.008)	0.084*** (0.008)	0.092*** (0.010)	0.106*** (0.014)
Instruction (standardized)	-0.091*** (0.008)	-0.088*** (0.008)	-0.053*** (0.012)	-0.043*** (0.012)	-0.042*** (0.013)	-0.055*** (0.014)	-0.097*** (0.018)
Public institution		-0.207*** (0.015)	-0.215*** (0.015)	-0.145*** (0.020)	-0.146*** (0.021)	-0.144*** (0.022)	-0.135*** (0.022)
Mean SAT of college			-0.003*** (0.001)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002** (0.001)	-0.001* (0.001)
Log(Enrollment)				-0.055*** (0.010)	-0.055*** (0.010)	-0.048*** (0.011)	-0.044*** (0.011)
Log(Student services + instructional spending)					-0.005 (0.024)	-0.005 (0.026)	0.019 (0.026)
Constant	0.612*** (0.008)	0.693*** (0.009)	0.854*** (0.043)	1.147*** (0.069)	1.196*** (0.231)	1.137*** (0.250)	0.856*** (0.255)
Observations	1,151	1,151	1,151	1,151	1,151	1,151	1,151
R-squared	0.157	0.275	0.284	0.302	0.302	0.346	0.326
State FE	No	No	No	No	No	Yes	Yes

Notes: Enrollment elasticities are estimated for each college using estimates from model in Table 6 (specifications 3 and 4) which includes interactions between college characteristics and student characteristics (male, math score, and SES), and adjustments for admissions selectivity and net price. Enrollment elasticities are normalized to have a mean of zero and standard deviation of one.

were asked to list up to 5 schools they had attended since the 1992 survey. In order to capture a more complete set of schools to which the student may have applied, we combine information from both of these surveys. Specifically, we include all schools the student listed in the 1992 survey as well as the first two schools we observe the students attending based on the information reported in the 1994 survey (this survey provides enrollment dates which allow us to identify the first two schools). In this way, we observe a maximum of four application schools for each student. Also note that, by construction, a student will have been accepted to any school we observe him or her attending by 1994. Table C1 (C2) shows the distribution of applications and acceptances for the NELS (ELS) sample. Note that for this analysis we are incorporating information on all schools to which a student applied, including many two-year colleges that are not included in our analysis sample of colleges.

In the ELS, students were asked in 2006 (two years after expected high school graduation) to list up to 20 schools to which they applied, and whether they were accepted and/or attended. It also allows them to list the start and end dates of attendance.

Note that less than 0.1% of students listed the maximum possible number of schools in ELS, suggesting that we are capturing the full set of application schools for most students. In NELS, by contrast, over half of the students listed two different application schools in the 1992 survey, suggesting that even by including the extra information from the 1994 survey, we are likely missing at least some information on student application behavior.

We then estimate Probit models of the probability that student i was admitted to school j . In order to allow the admission function to vary across groups, we estimate separate models for each cohort year, and then within cohort year, we estimate separate models for six mutually exclusive set of student-school observations: 1) White or Asian students applying to in-state public colleges, 2) White or Asian students applying to out-state public colleges, 3) White or Asian students applying to private colleges, 4) other students applying to in-state public colleges, 5) other students applying to out-state public colleges, 6) other students applying to private colleges. We estimate separate models for racial minorities to allow for affirmative action policies. We estimate separate models for different school types to allow for admission preferences for in-state students in public universities and different admissions procedures in private colleges.

As predictors, we include several different measures of student academic ability, including high school GPA, 12th grade math score and the interaction between GPA and math score, a measure of student socioeconomic status, several measures of college selectivity, including the average SAT/ACT score of students in the college, the fraction of students admitted to the college and the log(enrollment). We also include a series of interactions between student ability and college selectivity. Finally, in order to allow for college preferences with regard to the geographic diversity of their students, we include a series of fixed effects for the region of the country in which the student went to high school (i.e., Northeast, South, Midwest, West) x the region in which the college is located.

Tables C3 and C4 show the results of these regressions. Because of the large number of higher-order terms and interactions, it is not productive to examine coefficients on specific predictors to assess the fit of the model. Instead, Tables C5 and C6 present summary statistics

on the resulting predicted probabilities, broken out by various subgroups. The results all go in the expected direction and suggest that our predicted probabilities will provide good estimates.

Appendix D: Simulation-Based vs. Admissions Probability Weighted Estimates

Table D1 compares the predicted choice probability for each student-school observation implied by the weighting-based procedure and the predicted choice probability implied by the simulation-based procedure with 100 replications. Choice probabilities are calculated assuming the parameter estimates of specification (2) in Table 5. These correlations are also reported separately for student-school observations in each group defined by the predicted likelihood that the student would be accepted to that particular school.

Table A1: Number of institutions (starting with constructed sample)

	NELS (1992)	ELS (2004)
Total schools in sample	1,409	1457
No fallout for missing zip code, student or instructional spending	1,409	1457
After dropping schools with missing tuition or room and board costs	1,401	1452
No fallout for missing enrollment or mean SAT information	1,401	1452
After dropping schools that no student in sample chose	977	1108

Table A2: Summary Statistics on Sample Construction

Number of students	NELS (1992)	ELS (2004)
Total students in survey	28,622	16,197
After dropping students not enrolled in 12 th grade at time of the 1992 or 2004 survey	17,959	13,370
After dropping students who did not respond to the follow-up survey	16,409	11,984
After dropping students who did not attend any postsecondary school within two years of expected high school graduation	8,571	9,466
After dropping students who did not attend a sample school	5,104	5,757
After dropping students with missing information on key covariates	4,101	5,757
After dropping students whose choice college was missing information	4,083	5,741

Table B1: College choice conditional on attendance

Dependent variable: attended college j within 2 years of high school graduation (odds ratios)

	1972			1980			1992		
	BTL (1)	JMS (2)	JMS (3)	BTL (4)	JMS (5)	JMS (6)	BTL (7)	JMS (8)	JMS (9)
Tuition & Fees (\$1000)	0.4686** [32.32]	0.543*** (0.00979)	0.523*** (0.010)	0.5809** [26.68]	0.573*** (0.0114)	0.555*** (0.0117)	.6548** [39.21]	0.755*** (0.00639)	0.738*** (0.00656)
Tuition & Fees (\$1000) sq	1.0485** [24.87]	1.030*** (0.00116)	1.030*** (0.001)	1.0328** [21.98]	1.030*** (0.00128)	1.030*** (0.00138)	1.0147** [31.91]	1.008*** (0.000292)	1.008*** (0.000308)
Distance (100mi)	.1665** [65.29]	0.213*** (0.00522)	0.208*** (0.005)	0.1954** [60.91]	0.204*** (0.00583)	0.196*** (0.00571)	.2668** [64.66]	0.235*** (0.00525)	0.235*** (0.00526)
Instruct expend. (\$1000)	1.038 [1.46]	1.053*** (0.0200)	0.992 (0.019)	1.0303 [1.27]	1.071*** (0.0191)	1.029 (0.0184)	1.1035** [6.08]	1.040*** (0.00929)	1.023** (0.00992)
% Faculty with PhD	1.0050** [7.18]	1.233*** (0.0752)	1.106 (0.068)	1.0048** [5.46]	0.950 (0.0656)	0.903 (0.0629)	1.0060** [6.20]	1.266*** (0.0918)	1.222*** (0.0902)
Enrollment (100)	not reported	1.052*** (0.00333)	1.048*** (0.004)	not reported	1.045*** (0.00349)	1.040*** (0.00417)	not reported	1.070*** (0.00401)	1.062*** (0.00506)
Enrollment (100) sq	not reported	1.000*** (4.71e-05)	1.000*** (0.000)	not reported	1.000*** (4.33e-05)	1.000*** (4.95e-05)	not reported	0.999*** (6.71e-05)	1.000*** (7.56e-05)
Student - School test score ptile (pos)	0.6525** [10.26]	0.805*** (0.0285)	0.815*** (0.029)	0.8662** [4.64]	0.858*** (0.0357)	0.883*** (0.0370)	.7129** [11.26]	0.850*** (0.0385)	0.875*** (0.0398)
Student - School test score ptile (neg)	0.995 [0.16]	0.899*** (0.0338)	0.898*** (0.034)	0.8324** [5.75]	0.886*** (0.0352)	0.885*** (0.0352)	1.1809** [4.78]	0.808*** (0.0324)	0.784*** (0.0317)
Student services + auxiliary expend. (\$1000)			1.457*** (0.045)			1.371*** (0.0496)			1.209*** (0.0281)
Has Div1 Basketball/Football			1.202*** (0.054)			1.200*** (0.0629)			1.212*** (0.0593)
% of Students who join Frat/Sor			2.421*** (0.322)			2.095*** (0.358)			2.052*** (0.293)
Individuals	5,666			4881			5,693		
Observations	12,118,588	4,108,256	4,108,256	9,651,768	2,566,527	2,566,527	15,011,370	4,006,240	4,006,240

Notes: [z-statistics] or (standard errors) reported below odds ratio. *** p<0.01, ** p<0.05, * p<0.1. All specifications also include a square and cubic in distance, square in cost, expenditure squared, and student-school match variables squared. BTL does not interact % faculty with PhD or student-school match variables with sector (2-year or 4-year), so our estimates for 4-year college students only are not directly comparable.

Table C1: Application and Acceptance Rates for NELS Cohort (High School Class of 1992)

Panel A: Applications to 4-year institutions

Number of different 4-year institutions to which the student applied	Proportion of sample	Number of different 4-year institutions to which the student was accepted			
		1	2	3	4
1	35.7%	100.0%	0.0%	0.0%	0.0%
2	49.1%	40.4%	59.6%	0.0%	0.0%
3	13.9%	35.5%	34.6%	29.9%	0.0%
4	1.2%	0.0%	55.1%	32.7%	12.2%

Panel B: Applications to all institutions

Number of different institutions (any type) to which the student applied	Proportion of sample	Number of different institutions (any type) to which the student was accepted			
		1	2	3	4
1	27.9%	100.0%	0.0%	0.0%	0.0%
2	50.7%	37.0%	63.0%	0.0%	0.0%
3	19.0%	26.9%	38.5%	34.6%	0.0%
4	2.4%	0.0%	46.4%	29.9%	23.7%

Table C2: Application and Acceptance Rates for ELS (High School Class of 2004)

Restricted to eligible institutions		Number of schools accepted to										
Number of different schools applied to	Proportion of sample	1	2	3	4	5	6	7	8	9	10+	
1	22.2%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
2	23.4%	25.0%	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3	18.8%	11.7%	29.5%	58.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
4	12.9%	6.6%	20.8%	27.1%	45.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
5	8.9%	3.3%	11.4%	21.4%	30.8%	33.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6	5.5%	1.9%	5.1%	17.1%	25.9%	25.9%	24.1%	0.0%	0.0%	0.0%	0.0%	
7	3.5%	1.5%	11.3%	8.9%	17.7%	19.7%	20.7%	20.2%	0.0%	0.0%	0.0%	
8	1.7%	2.0%	3.0%	5.1%	24.2%	17.2%	19.2%	20.2%	9.1%	0.0%	0.0%	
9	1.3%	2.7%	1.3%	2.7%	8.0%	13.3%	20.0%	16.0%	24.0%	12.0%	0.0%	
10+	1.8%	1.0%	3.0%	3.0%	7.9%	11.9%	19.8%	10.9%	14.9%	10.9%	16.8%	

Unrestricted by institution		Number of schools accepted to										
Number of different schools applied to	Proportion of sample	1	2	3	4	5	6	7	8	9	10+	
1	16.3%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
2	22.1%	18.6%	81.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3	20.6%	9.2%	29.6%	61.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
4	15.2%	4.5%	17.6%	28.3%	49.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
5	10.1%	3.1%	10.7%	21.8%	30.1%	34.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
6	6.3%	1.9%	4.7%	14.2%	25.3%	26.4%	27.5%	0.0%	0.0%	0.0%	0.0%	
7	3.9%	1.4%	9.0%	7.7%	21.2%	22.1%	20.7%	18.0%	0.0%	0.0%	0.0%	
8	2.1%	1.7%	8.3%	18.2%	19.8%	18.2%	20.7%	13.2%	0.0%	0.0%	0.0%	
9	1.5%	1.1%	2.3%	2.3%	6.8%	17.0%	18.2%	20.5%	20.5%	11.4%	0.0%	
10+	1.9%	3.6%	5.5%	9.1%	13.6%	21.8%	15.5%	13.6%	10.9%	4.5%	1.8%	

Table C3: Probit Estimation for Predicted Probabilities of Admission - NELS 1992

VARIABLES	White or Asian			All Others		
	Public		Private	Public		Private
	In State	Out of State	Both	In State	Out of State	Both
	(1)	(2)	(3)	(4)	(5)	(6)
	accepted	accepted	accepted	accepted	accepted	accepted
Student Grade Point Average	-0.391 (2.294)	4.473 (5.531)	-4.173 (2.840)	8.982** (3.802)	5.948 (11.612)	-5.321 (3.728)
Missing GPA	0.241** (0.106)	0.579*** (0.211)	0.291*** (0.102)	0.012 (0.188)	-0.554 (0.849)	0.209 (0.233)
Student Standardized Math Score	1.841** (0.735)	0.964 (1.723)	0.613 (0.873)	1.061 (1.191)	-3.143 (3.498)	1.249 (1.046)
Student Math Score * Student GPA	0.132 (0.248)	1.527** (0.600)	-0.413 (0.277)	0.369 (0.615)	-0.473 (2.229)	0.428 (0.522)
Student Socioeconomic Status	0.229 (0.211)	-0.133 (0.452)	0.026 (0.227)	-0.145 (0.333)	-0.643 (0.993)	0.173 (0.398)
Log Enrollment	-0.060* (0.036)	-0.051 (0.068)	0.018 (0.030)	-0.153** (0.063)	0.036 (0.174)	-0.085 (0.075)
Mean College SAT Score	-0.001 (0.014)	-0.054* (0.031)	-0.024* (0.014)	-0.022 (0.024)	-0.064 (0.092)	-0.012 (0.022)
College Admission Rate	1.515 (1.325)	-2.562 (3.195)	-0.147 (1.559)	-1.035 (2.159)	1.174 (6.538)	1.758 (2.256)
School Mean SAT * Student GPA	-0.011 (0.030)	-0.061 (0.063)	0.048 (0.031)	-0.124** (0.052)	-0.257 (0.213)	0.044 (0.047)
School Mean SAT * Student Math Score	-0.015 (0.011)	-0.005 (0.024)	-0.012 (0.011)	-0.009 (0.016)	0.059 (0.046)	-0.014 (0.013)
School Mean SAT * Student Math * StudentGPA	-0.002 (0.002)	-0.009** (0.005)	0.001 (0.002)	0.001 (0.004)	-0.018 (0.021)	-0.009* (0.004)
School Mean SAT * Student SES	-0.003 (0.002)	0.001 (0.004)	-0.000 (0.002)	-0.001 (0.003)	0.000 (0.007)	-0.001 (0.003)
College Admission Rate * Student GPA	-0.861 (2.885)	-6.093 (6.749)	3.781 (3.589)	-11.391** (4.628)	-15.309 (14.996)	6.204 (4.823)
College Admission Rate * Student Math Score	-1.977** (0.870)	-0.682 (2.093)	-0.113 (1.101)	-1.502 (1.485)	6.633 (4.779)	-1.472 (1.372)
College Admission Rate * Student Math Score * Student GPA	-0.091 (0.205)	-1.146** (0.505)	0.271 (0.236)	-0.486 (0.588)	2.232 (1.599)	0.166 (0.550)
College Admission Rate * Student SES	-0.013 (0.164)	0.074 (0.330)	0.046 (0.154)	0.394 (0.307)	1.216 (0.946)	-0.021 (0.348)
Squared Student GPA	0.663 (1.006)	-1.798 (2.641)	1.508 (1.294)	-3.911** (1.722)	-2.412 (5.596)	2.326 (1.677)
Squared Student Math Score	0.064 (0.606)	0.684 (1.275)	-0.363 (0.763)	-1.028 (1.024)	-0.444 (2.747)	-1.469 (0.994)
School Mean SAT * College Admission Rate	-0.001 (0.018)	0.045 (0.039)	0.017 (0.019)	0.025 (0.030)	0.138 (0.127)	-0.005 (0.030)
School Mean SAT * College Admission Rate * Student Math Score	0.021* (0.013)	0.006 (0.030)	0.013 (0.015)	0.023 (0.020)	-0.111* (0.065)	0.021 (0.018)
School Mean SAT * College Admission Rate * Student GPA	0.028 (0.039)	0.062 (0.078)	-0.046 (0.040)	0.153** (0.067)	0.486* (0.291)	-0.047 (0.064)
School Mean SAT * College Admission Rate * Squared Student GPA	-0.003 (0.017)	-0.017 (0.037)	0.011 (0.018)	-0.073** (0.030)	-0.240* (0.143)	0.023 (0.028)
School Mean SAT * College Admission Rate * Squared Student Math Score	0.004 (0.010)	0.010 (0.019)	-0.010 (0.011)	-0.009 (0.017)	0.015 (0.056)	-0.017 (0.016)
School Mean SAT * Squared Student GPA	-0.002 (0.013)	0.021 (0.029)	-0.015 (0.014)	0.057** (0.024)	0.124 (0.104)	-0.019 (0.021)
College Admission Rate * Squared Student GPA	-0.253 (1.252)	2.330 (3.226)	-1.092 (1.629)	5.125** (2.088)	6.982 (7.283)	-2.749 (2.173)
School Mean SAT * Squared Student Math Score	-0.001 (0.008)	-0.007 (0.016)	0.008 (0.009)	0.011 (0.013)	-0.006 (0.040)	0.019 (0.012)
College Admission Rate * Squared Student Math Score	-0.271 (0.721)	-0.927 (1.524)	0.358 (0.968)	0.965 (1.260)	0.568 (3.739)	1.389 (1.277)
Constant	-0.394 (1.077)	3.544 (2.657)	0.952 (1.243)	2.657 (1.798)	-2.507 (5.187)	0.412 (1.815)
Observations	4990	1335	3873	1124	212	621

Coefficient Estimates, Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Variables included but not presented: Interactions between Student and Institution Census (4) Region.

Out-of-State specification (2,3,5,6), combine non-Northeast Institution region to account for relatively few students traveling to out-of-state public schools

Table C4: Probit Estimation for Predicted Probabilities of Admission - ELS 2004

VARIABLES	White or Asian			All Others		
	Public		Private	Public		Private
	In State	Out of State	Both	In State	Out of State	Both
	(1)	(2)	(3)	(4)	(5)	(6)
	accepted	accepted	accepted	accepted	accepted	accepted
Student Grade Point Average	1.115** (0.560)	4.407*** (1.668)	1.717** (0.753)	-0.054 (0.464)	0.634 (0.933)	0.923 (0.783)
Missing GPA	0.393*** (0.079)	0.373*** (0.135)	0.229*** (0.080)	0.060 (0.094)	0.071 (0.199)	0.140 (0.128)
Student Standardized Math Score	0.596 (0.481)	0.519 (1.516)	0.595 (0.679)	1.270*** (0.459)	-0.682 (0.890)	-0.163 (0.764)
Student Math Score * Student GPA	-0.514 (0.317)	-0.052 (0.863)	-0.170 (0.439)	-0.118 (0.329)	-1.194** (0.564)	0.823* (0.435)
Student Socioeconomic Status	0.044 (0.136)	-0.711* (0.395)	0.084 (0.229)	0.162 (0.154)	0.092 (0.291)	0.131 (0.238)
Log Enrollment	-0.129*** (0.037)	-0.125* (0.064)	-0.081*** (0.028)	-0.093** (0.046)	-0.103 (0.083)	-0.115** (0.047)
Mean College SAT Score	-0.039*** (0.008)	-0.028 (0.019)	-0.043*** (0.009)	-0.046*** (0.007)	-0.026** (0.012)	-0.041*** (0.008)
College Admission Rate	1.241* (0.723)	0.749 (1.828)	0.558 (0.951)	-0.789 (0.649)	-0.184 (1.193)	-1.434 (0.909)
School Mean SAT * Student GPA	-0.012 (0.009)	-0.053** (0.024)	-0.026** (0.010)	0.005 (0.007)	-0.015 (0.014)	-0.005 (0.010)
School Mean SAT * Student Math Score	-0.007 (0.008)	-0.010 (0.022)	-0.007 (0.009)	-0.013* (0.007)	0.015 (0.013)	0.006 (0.009)
School Mean SAT * Student Math * StudentGPA	0.005 (0.003)	0.001 (0.008)	0.002 (0.004)	-0.003 (0.003)	0.014*** (0.005)	-0.003 (0.004)
School Mean SAT * Student SES	-0.002 (0.001)	0.004 (0.004)	0.000 (0.002)	-0.001 (0.002)	0.003 (0.003)	-0.001 (0.002)
College Admission Rate * Student GPA	-1.021 (0.803)	-4.985** (2.182)	-2.131** (0.998)	0.278 (0.696)	-0.666 (1.420)	-0.465 (1.121)
College Admission Rate * Student Math Score	-0.202 (0.700)	0.071 (1.956)	-0.406 (0.904)	-1.216* (0.695)	1.432 (1.349)	1.045 (1.096)
College Admission Rate * Student Math Score * Student GPA	0.288 (0.272)	-0.158 (0.627)	0.031 (0.300)	0.417 (0.343)	0.512 (0.685)	-0.709* (0.419)
College Admission Rate * Student SES	0.268** (0.118)	0.739*** (0.281)	0.092 (0.148)	-0.012 (0.152)	-0.162 (0.339)	0.177 (0.202)
Squared Student GPA	-0.725* (0.415)	-0.111 (1.449)	0.216 (0.595)	0.013 (0.317)	1.119* (0.584)	0.363 (0.508)
Squared Student Math Score	-0.168 (0.352)	-1.544 (1.007)	0.699 (0.507)	-0.309 (0.388)	-0.023 (0.725)	-0.794 (0.537)
School Mean SAT * College Admission Rate	0.013 (0.012)	0.011 (0.025)	0.020 (0.012)	0.040*** (0.012)	0.018 (0.021)	0.031** (0.012)
School Mean SAT * College Admission Rate * Student Math Score	0.008 (0.012)	0.010 (0.029)	0.012 (0.012)	0.018 (0.011)	-0.020 (0.020)	-0.013 (0.014)
School Mean SAT * College Admission Rate * Student GPA	0.021 (0.014)	0.074** (0.033)	0.041*** (0.014)	0.002 (0.012)	0.024 (0.023)	0.004 (0.015)
School Mean SAT * College Admission Rate * Squared Student GPA	-0.020** (0.010)	-0.013 (0.023)	0.003 (0.009)	-0.002 (0.008)	0.020 (0.014)	0.012 (0.009)
School Mean SAT * College Admission Rate * Squared Student Math Score	0.002 (0.008)	-0.022 (0.016)	0.009 (0.007)	-0.005 (0.009)	-0.008 (0.015)	-0.003 (0.009)
School Mean SAT * Squared Student GPA	0.019*** (0.006)	0.008 (0.018)	0.003 (0.007)	0.005 (0.005)	-0.015* (0.008)	-0.009 (0.006)
College Admission Rate * Squared Student GPA	0.654 (0.595)	0.292 (1.780)	-0.711 (0.738)	-0.133 (0.465)	-1.510* (0.908)	-0.442 (0.702)
School Mean SAT * Squared Student Math Score	0.004 (0.005)	0.020 (0.012)	-0.005 (0.006)	0.006 (0.006)	0.001 (0.010)	0.004 (0.006)
College Admission Rate * Squared Student Math Score	-0.250 (0.508)	1.695 (1.253)	-1.060* (0.623)	0.181 (0.572)	0.582 (1.093)	0.921 (0.777)
Constant	2.663*** (0.535)	2.291 (1.465)	2.603*** (0.722)	2.907*** (0.509)	1.843** (0.933)	3.608*** (0.697)
Observations	7893	2175	6733	3266	826	2041

Coefficient Estimates, Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Variables included but not presented: Interactions between Student and Institution Census (4) Region.

Specification (5), however, combines non-Northeast Institution regions to account for relatively few minority students traveling to out-of-state public schools

Table C5: Summary Statistics for Predicted Probability of Admission - NELS 1992 only

	Percentile						Unique Students	Stu x Sch
	min	10th	50th	90th	max	mean		
White/Asian, Public, In-state School	7.5%	59.5%	80.0%	89.4%	99.3%	76.9%	7,478	6,110
White/Asian, Public, Out-of-state School	0.0%	50.5%	77.9%	89.6%	100.0%	73.8%		1,682
White/Asian, Private School	8.2%	46.1%	74.0%	88.9%	99.9%	70.5%		4,848
Minority, Public, In-state School	10.0%	45.5%	70.7%	89.5%	99.6%	68.8%	1,469	1,370
Minority, Public, Out-of-state School	0.0%	24.2%	74.5%	99.5%	100.0%	68.4%		284
Minority, Private School	0.8%	34.5%	60.6%	79.0%	99.7%	58.6%		759
All Races and Schools: Rank by Quartile								
Top Students by Standardized Math Score	0.0%	63.1%	83.3%	92.6%	100.0%	79.8%	1,022	102,200
Bottom Students by Standardized Math Score	0.0%	32.5%	58.9%	79.8%	100.0%	57.3%	1,022	102,200
Top Students by Standardized Grade 12 GPA	0.0%	40.4%	71.5%	92.4%	100.0%	68.4%	1,265	126,500
Bottom Students by Standardized Grade 12 GPA	0.0%	39.8%	69.8%	87.3%	100.0%	66.5%	1,043	104,300
Top Schools by Mean SAT Score	0.0%	28.8%	57.8%	76.8%	100.0%	55.1%	1,038	102,572
Bottom Schools by Mean SAT Score	0.0%	65.1%	84.8%	93.5%	100.0%	81.2%	1,172	117,444
Top Schools by Lowest Admit Rate	0.0%	27.7%	59.1%	83.6%	100.0%	57.2%	1,038	101,734
Bottom Schools by Lowest Admit Rate	0.0%	60.5%	82.1%	92.1%	100.0%	78.6%	1,028	102,781
Top Students (Math) and Top Schools (SAT)	0.0%	41.5%	68.8%	81.3%	100.0%	65.1%	269	25,823
Top Students (Math) and Bottom Schools (SAT)	10.5%	78.2%	89.7%	96.2%	100.0%	88.3%	286	29,289
Bottom Students (Math) and Top Schools (SAT)	0.0%	23.9%	42.2%	64.5%	100.0%	43.7%	257	25,564
Bottom Students (Math) and Bottom Schools (SAT)	0.0%	48.3%	71.6%	84.5%	100.0%	68.3%	280	29,515

Table C6: Summary Statistics for Predicted Probability of Admission - ELS 2004 only

	Percentile						Unique Students	Stu x Sch
	min	10th	50th	90th	max	mean		
White/Asian, Public, In-state School	3.8%	59.8%	85.1%	93.7%	99.5%	80.2%	5,737	7,893
White/Asian, Public, Out-of-state School	0.0%	55.4%	86.4%	96.1%	100.0%	80.5%		2,175
White/Asian, Private School	0.3%	41.2%	88.0%	95.9%	100.0%	78.3%		6,733
Minority, Public, In-state School	3.8%	38.5%	74.7%	89.5%	99.7%	69.1%	2,127	3,266
Minority, Public, Out-of-state School	1.8%	39.2%	69.8%	90.3%	100.0%	67.0%		826
Minority, Private School	0.0%	36.1%	78.1%	97.5%	100.0%	71.8%		2,041
All Races and Schools: Rank by Quartile								
Top Students by Standardized Math Score	0.0%	71.3%	91.7%	97.9%	100.0%	86.9%	1,437	143,700
Bottom Students by Standardized Math Score	0.0%	27.5%	66.3%	89.3%	100.0%	62.2%	1,436	143,600
Top Students by Standardized Grade 12 GPA	0.7%	76.2%	92.7%	98.3%	100.0%	88.5%	1,469	146,900
Bottom Students by Standardized Grade 12 GPA	0.0%	27.5%	66.3%	89.2%	100.0%	62.1%	1,477	147,700
Top Schools by Mean SAT Score	0.0%	17.8%	67.8%	95.1%	100.0%	61.9%	1,544	148,711
Bottom Schools by Mean SAT Score	0.0%	67.4%	89.2%	97.6%	100.0%	85.1%	1,411	146,656
Top Schools by Lowest Admit Rate	0.0%	17.0%	68.4%	96.8%	100.0%	62.4%	1,413	143,674
Bottom Schools by Lowest Admit Rate	0.0%	65.4%	88.2%	96.0%	100.0%	84.0%	1,426	142,875
Top Students (Math) and Top Schools (SAT)	0.0%	39.3%	88.2%	98.1%	100.0%	78.3%	368	37,545
Top Students (Math) and Bottom Schools (SAT)	0.3%	76.2%	90.8%	98.7%	100.0%	88.4%	378	36,708
Bottom Students (Math) and Top Schools (SAT)	0.0%	10.9%	42.4%	76.8%	98.0%	43.3%	398	37,025
Bottom Students (Math) and Bottom Schools (SAT)	0.0%	50.5%	80.0%	93.4%	100.0%	75.4%	333	37,049

Table D1. Comparison between Weighted and Simulation-Based Likelihood Value

Estimated prob(admit) (rounded)	Sample in Group			Weighted-Simulation Correlation
	N	Fraction of sample	Cumulative Fraction	
0.00	22,419	0.22	0.22	0.7306
0.05	48,773	0.47	0.69	0.8887
0.10	57,569	0.56	1.24	0.7410
0.15	74,253	0.72	1.96	0.8624
0.20	91,996	0.89	2.85	0.9154
0.25	109,743	1.06	3.91	0.8857
0.30	133,276	1.29	5.20	0.9396
0.35	165,199	1.60	6.79	0.9454
0.40	194,212	1.88	8.67	0.9526
0.45	234,775	2.27	10.94	0.9677
0.50	284,237	2.75	13.69	0.9756
0.55	349,685	3.38	17.06	0.9831
0.60	431,761	4.17	21.24	0.9843
0.65	530,792	5.13	26.36	0.9900
0.70	656,128	6.34	32.70	0.9907
0.75	758,903	7.33	40.04	0.9941
0.80	889,011	8.59	48.62	0.9961
0.85	1,054,220	10.19	58.81	0.9975
0.90	1,214,993	11.74	70.55	0.9984
0.95	1,707,180	16.49	87.04	0.9994
1.00	1,340,990	12.96	100.00	0.9997
All	10,350,115	100		0.9879

Notes: Probability of admission is estimated flexibly as described in Appendix C. Final column depicts the simple correlation between the predicted choice probability implied by the weighting-based procedure and the predicted choice probability implied by the simulation-based procedure with 100 replications. Choice probabilities are calculated assuming the parameter estimates of specification (2) in Table 5. These correlations are reported separately for individual-school observations in each admissions probability group.

Table E1: OLS Estimation for Predicted Price Ratios - NPSAS

	1996						2004					
	White or Asian			All Others			White or Asian			All Others		
	Public	Private	Both	Public	Private	Both	Public	Private	Both	Public	Private	Both
	In State (1) price_ratio	Out of State (2) price_ratio	Both (3) price_ratio	In State (4) price_ratio	Out of State (5) price_ratio	Both (6) price_ratio	In State (1) price_ratio	Out of State (2) price_ratio	Both (3) price_ratio	In State (4) price_ratio	Out of State (5) price_ratio	Both (6) price_ratio
Student Standardized Math Score	-0.166*** (0.0327)	-0.287*** (0.0669)	-0.184*** (0.0378)	-0.121 (0.0744)	-0.0718 (0.208)	-0.199*** (0.0632)	-0.139*** (0.0455)	-0.342*** (0.124)	-0.159*** (0.0390)	-0.108 (0.0753)	0.0381 (0.239)	0.0510 (0.0676)
Student Standardized Income	0.194*** (0.0321)	0.118** (0.0516)	0.278*** (0.0327)	0.234*** (0.0887)	0.0650 (0.194)	0.259*** (0.0718)	0.194*** (0.0387)	-0.0717 (0.0862)	0.140*** (0.0260)	0.412*** (0.0778)	0.0669 (0.202)	0.104* (0.0556)
Mean College SAT Score	0.0103*** (0.00280)	0.0148** (0.00646)	-0.00677* (0.00354)	0.00480 (0.00475)	0.0324* (0.0171)	0.0134*** (0.00388)	0.0184*** (0.00461)	0.0162 (0.0104)	-0.0145*** (0.00308)	0.00941* (0.00495)	0.0156 (0.0170)	-0.00722* (0.00408)
Student Math * School Mean SAT	0.00160*** (0.000510)	0.00364*** (0.00101)	0.00157*** (0.000526)	0.000982 (0.00102)	0.00204 (0.00291)	0.00268*** (0.000841)	0.00102 (0.000760)	0.00434** (0.00208)	0.00120* (0.000614)	0.000731 (0.00116)	0.000959 (0.00361)	-0.00104 (0.000974)
Student Math * Student Income	-0.0364*** (0.00806)	0.00668 (0.0151)	0.000529 (0.00610)	-0.0884*** (0.0295)	-0.113* (0.0621)	-0.00275 (0.0221)	-0.0337*** (0.00955)	-0.0207 (0.0200)	-0.00608 (0.00636)	0.0137 (0.0257)	-0.0434 (0.0790)	-0.0228 (0.0167)
School Mean SAT * Student Income	0.0000422 (0.000493)	0.000224 (0.000758)	-0.00161*** (0.000415)	0.00134 (0.00120)	0.00258 (0.00284)	-0.000210 (0.000976)	0.00119* (0.000629)	0.00238* (0.00138)	0.000158 (0.000376)	-0.00142 (0.00122)	0.00253 (0.00326)	0.00158* (0.000839)
Squared Student Math Score	-0.0309*** (0.00573)	-0.0594*** (0.0128)	-0.0150** (0.00593)	-0.00681 (0.0133)	0.0164 (0.0396)	-0.00533 (0.0140)	-0.0217*** (0.00741)	-0.0353* (0.0197)	-0.0172** (0.00727)	-0.0168 (0.0155)	0.0219 (0.0710)	0.0245* (0.0129)
Squared Student Income	-0.00597*** (0.000442)	-0.00829*** (0.00127)	-0.00406*** (0.000314)	-0.0215*** (0.00345)	-0.0374 (0.0301)	-0.0202*** (0.00563)	-0.0420*** (0.00341)	-0.00830 (0.00654)	-0.0160*** (0.00168)	-0.0469*** (0.00719)	-0.0638 (0.0474)	-0.0277*** (0.00437)
Squared School Mean SAT	-8.42e-05*** (2.24e-05)	-9.02e-05* (5.03e-05)	7.31e-05*** (2.55e-05)	-4.62e-05 (3.68e-05)	-0.000260** (0.000130)	-0.000117*** (3.05e-05)	-0.000164*** (3.89e-05)	-0.000124 (8.96e-05)	0.000148*** (2.45e-05)	-0.000115*** (4.18e-05)	-0.000164 (0.000160)	5.65e-05* (3.34e-05)
Constant	0.336*** (0.0847)	0.175 (0.203)	0.641*** (0.120)	0.346** (0.154)	-0.250 (0.531)	0.132 (0.121)	0.0535 (0.134)	0.233 (0.301)	0.757*** (0.0948)	0.282* (0.149)	0.377 (0.438)	0.620*** (0.123)
Observations	4679	781	3436	1029	121	646	2886	384	2507	788	87	569

Coefficient Estimates, Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

TableE2: Summary Statistics for Predicted Price Ratio - NELS 1992 and ELS 2004

	1992						2004					
	Percentile						Percentile					
	min	10th	50th	90th	max	mean	min	10th	50th	90th	max	mean
White/Asian, Public, In-state School	0.0%	41.1%	61.9%	81.3%	100.0%	61.5%	0.0%	21.9%	53.5%	75.7%	100.0%	50.9%
White/Asian, Public, Out-of-state School	0.0%	42.5%	68.2%	86.9%	100.0%	66.0%	0.0%	32.0%	62.4%	80.0%	98.1%	58.8%
White/Asian, Private School	0.0%	34.2%	57.0%	74.7%	100.0%	55.5%	0.0%	25.1%	45.5%	67.5%	100.0%	45.8%
Minority, Public, In-state School	0.0%	0.0%	39.0%	71.9%	100.0%	37.6%	0.0%	0.0%	42.7%	78.0%	100.0%	40.5%
Minority, Public, Out-of-state School	0.0%	18.1%	68.4%	92.0%	100.0%	61.8%	0.0%	30.9%	74.3%	93.0%	100.0%	68.0%
Minority, Private School	0.0%	1.6%	42.9%	72.7%	100.0%	40.8%	0.0%	11.3%	45.0%	63.8%	96.6%	41.5%
All Races and Schools: Rank by Quartile												
Top Students by Standardized Math Score	0.0%	22.9%	48.3%	73.5%	100.0%	48.4%	0.0%	22.7%	48.2%	73.4%	100.0%	48.3%
Bottom Students by Standardized Math Score	0.0%	21.4%	59.8%	82.9%	100.0%	56.0%	0.0%	22.0%	59.8%	82.9%	100.0%	56.1%
Top Students by Standardized Grade 12 GPA	0.0%	25.5%	53.8%	79.1%	100.0%	52.8%	0.0%	23.4%	51.3%	77.0%	100.0%	50.6%
Bottom Students by Standardized Grade 12 GPA	0.0%	27.0%	59.0%	82.1%	100.0%	56.4%	0.0%	29.1%	58.7%	81.5%	100.0%	56.6%
Top Schools by Mean SAT Score	0.0%	36.5%	64.7%	83.3%	100.0%	61.7%	0.0%	33.5%	61.9%	82.3%	100.0%	59.3%
Bottom Schools by Mean SAT Score	0.0%	22.0%	49.3%	74.7%	100.0%	48.7%	0.0%	19.8%	47.3%	73.2%	100.0%	46.9%
Top Students (Math) and Top Schools (SAT)	0.0%	45.2%	65.2%	81.3%	100.0%	64.0%	0.0%	39.0%	61.4%	79.2%	100.0%	60.1%
Top Students (Math) and Bottom Schools (SAT)	0.0%	11.4%	35.7%	60.8%	100.0%	36.4%	0.0%	7.0%	32.6%	58.7%	100.0%	33.2%
Bottom Students (Math) and Top Schools (SAT)	0.0%	12.1%	60.7%	82.8%	100.0%	54.9%	0.0%	15.1%	59.3%	82.4%	100.0%	54.4%
Bottom Students (Math) and Bottom Schools (SAT)	0.0%	26.4%	61.0%	80.9%	100.0%	57.2%	0.0%	27.4%	60.3%	79.3%	100.0%	56.6%