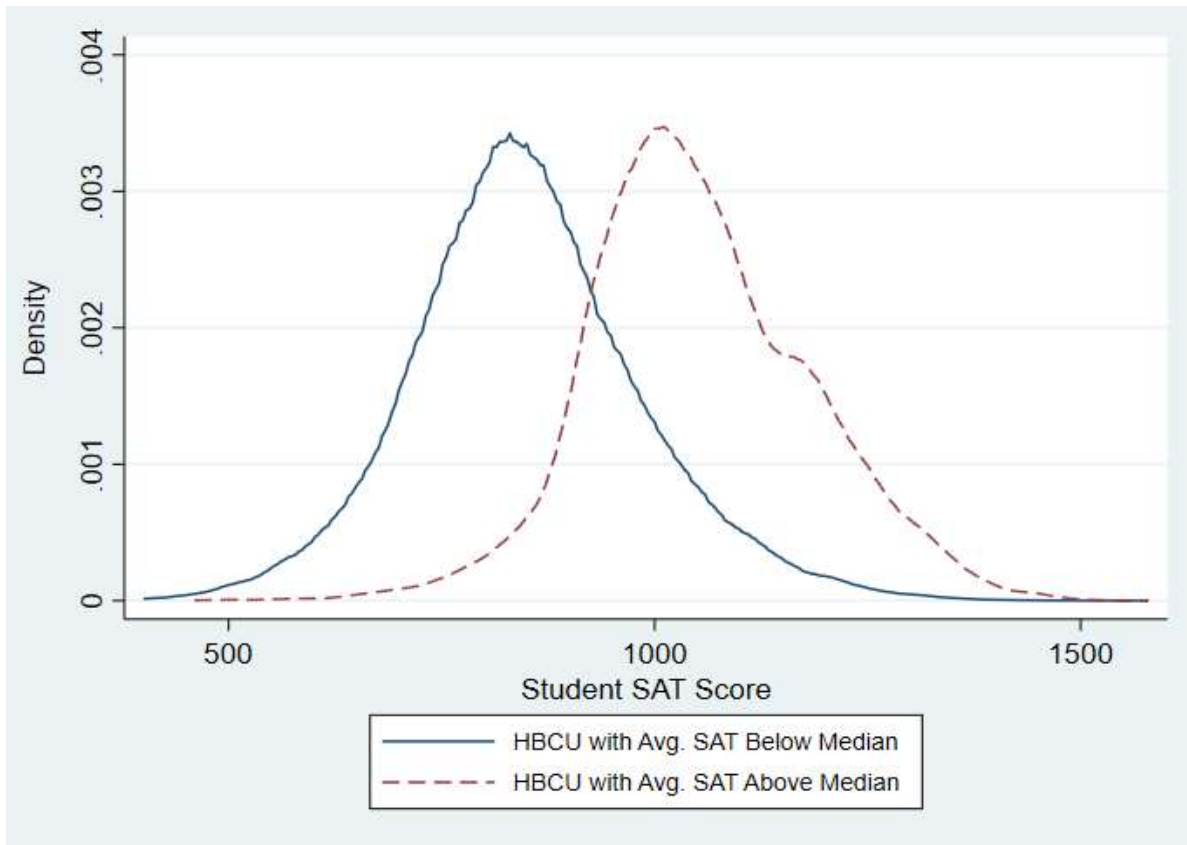
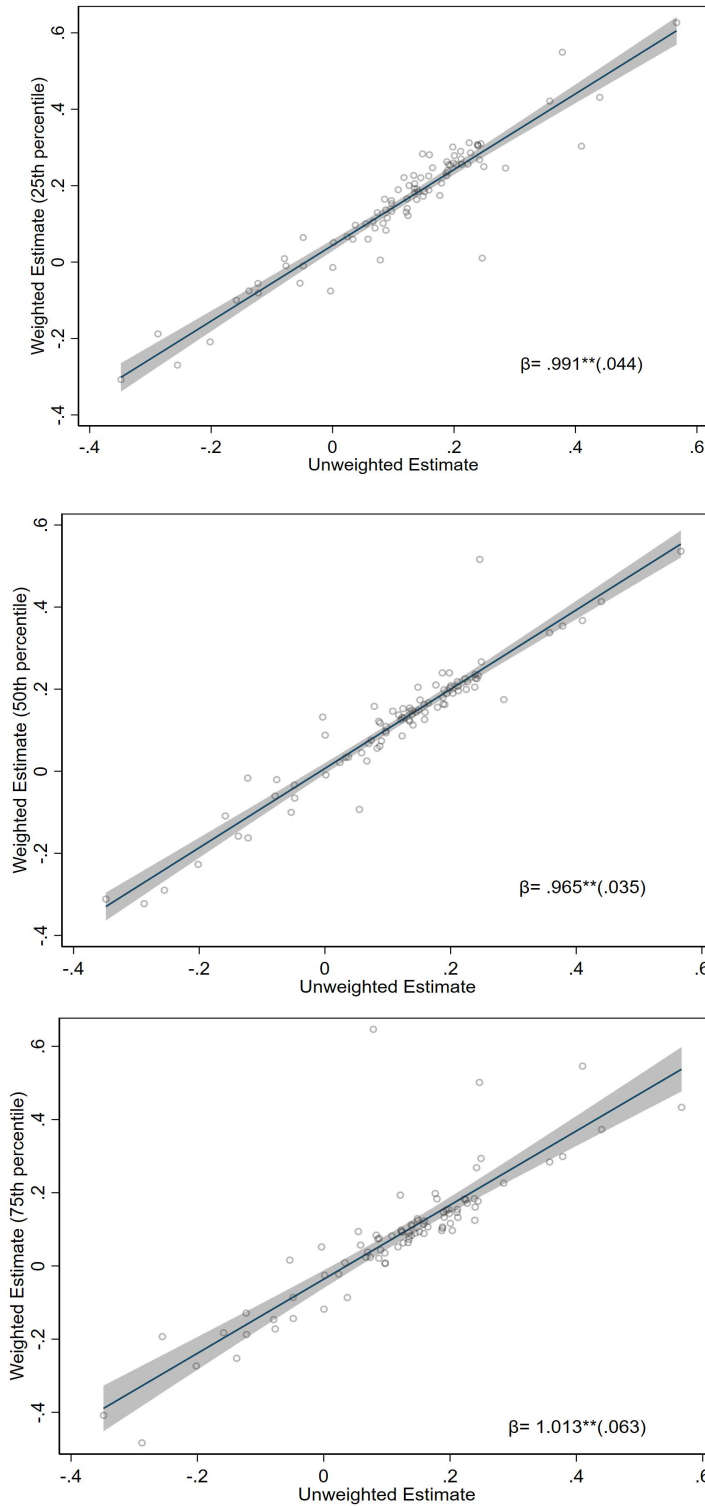


Appendix Figure 1 - Distribution of Student SAT Score, by Selectivity of College Enrolled



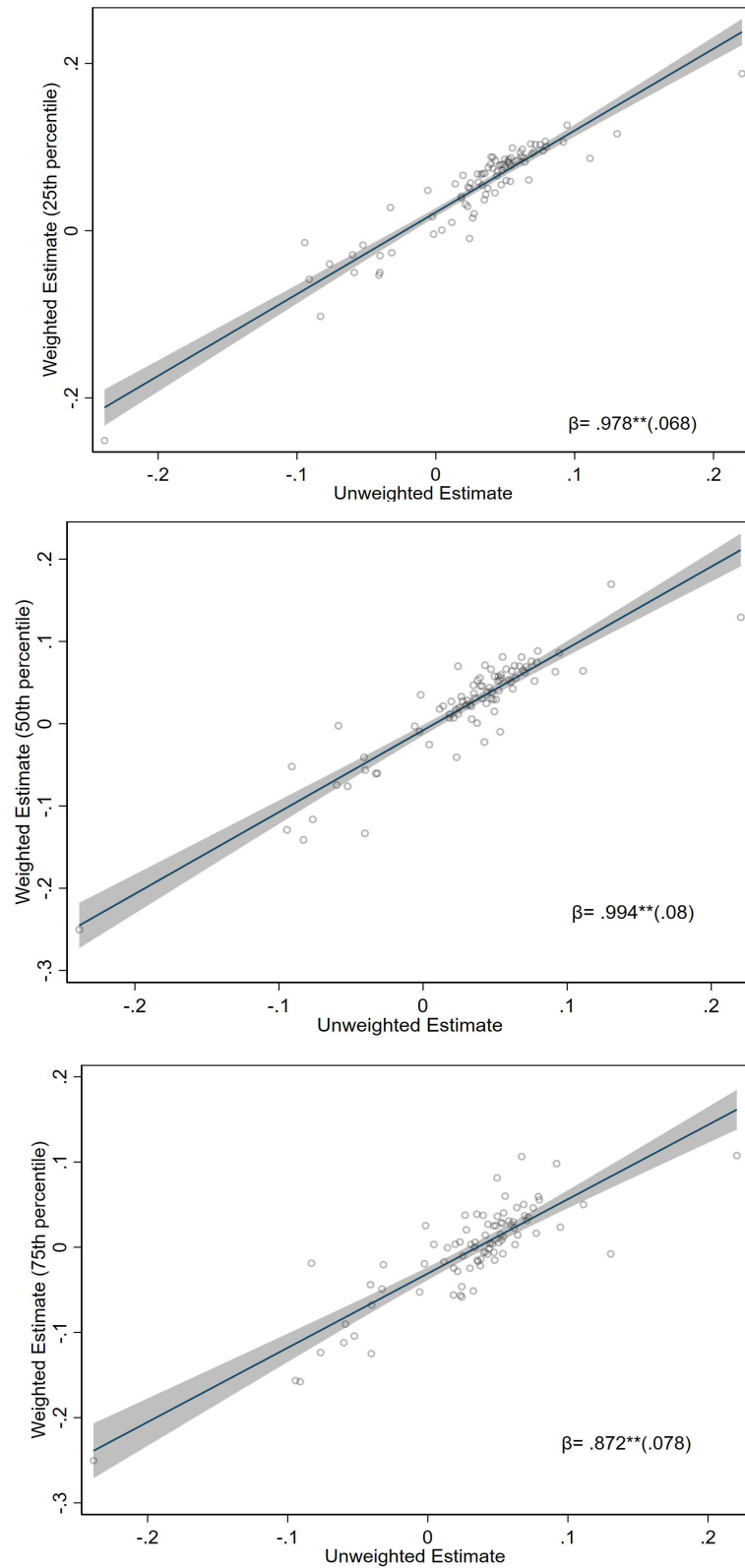
Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Kernel density plots are student SAT super scores. HBCUs are split by the average SAT of enrollees, as reported by IPEDS in 2010.

Appendix Figure 2 - Unweighted Vs. Weighted Individual Coefficient Estimates - Outcome = BA



Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Each dot is the coefficient estimate for an individual HBCU from two separate regressions, weighted and unweighted. We regress BA completion on HBCU fixed effects while controlling for Score Send portfolios interacted with SAT superscore, high school fixed effects, and cohort fixed effects, gender and parental income and education. Weighted regressions are weighted by distance from students' SAT superscore distance from the 25th, 50th, or 75th percentile of the distribution. The solid is the linear prediction and the shaded line is the 95% confidence interval.

Appendix Figure 3 - Unweighted Vs. Weighted Individual Coefficient Estimates - Outcome = Log of Estimated Household Income



Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Each dot is the coefficient estimate for an individual HBCU from two separate regressions, weighted and unweighted. We regress logarithm of estimated household income on HBCU fixed effects while controlling for Score Send portfolios interacted with SAT superscore, high school fixed effects, and cohort fixed effects, gender and parental income and education. Weighted regressions are weighted by distance from students' SAT superscore distance from the 25th, 50th, or 75th percentile of the distribution. The solid is the linear prediction and the shaded line is the 95% confidence interval.

Appendix Table 1: College-Level Summary Statistics

	<u>HBCUs (N = 96)</u>	<u>Non-HBCUs (N = 3,650)</u>
<i>All Colleges</i>		
Public	0.52	0.55
Four-Year College	0.89	0.53
First-time, full-time undergrad enrollment	601.94	690.34
Total full-time undergrad enrollment	2452.43	2815.77
Open Access	0.33	0.36
Graduation Rate w/i 150% Time	0.31	0.47
Instructional expenditures per FTE student	7063.99	9097.15
Student services expenditures per FTE student	2381.58	2434.72
Academic and institutional support expenses per FTE student	9568.07	8432.21
Total instructional, student service, and support expenses per FTE student	18733.21	19650.87
Percent Black	0.85	0.11
Percent URM	0.87	0.25
<i>Four-Year Colleges</i>	(N = 85)	(N = 1,943)
Avg. SAT of Enrollees	863.63	1072.22
Number of Applications	4578.39	4909.94
Acceptance Rate	0.51	0.66
Yield Rate	0.35	0.42
Six-Year Graduation Rate	0.32	0.52
Instructional expenditures per FTE student	7290.18	10658.58
Student services expenditures per FTE student	2473.99	3124.32
Academic and institutional support expenses per FTE student	10072.95	10791.36
Total instructional, student service, and support expenses per FTE student	19498.44	24071.87

Notes: Data from 2010 IPEDS. Excludes for-profit colleges.

Appendix Table 2: Comparing College Board to Nationally Representative Data, 2004 Cohorts

	<u>CB SAT Takers</u>	<u>Educational Longitudinal Study</u>	
		<u>SAT Takers</u>	<u>All</u>
Female	0.572	0.524	0.488
Parental Education			
Parent No College	0.217	0.196	0.274
College No BA	0.330	0.407	0.414
College BA Plus	0.335	0.397	0.311
College Missing	0.118	0.000	0.000
Parental Income			
Income Less Than \$50K	0.407	0.631	0.737
Income \$50K - \$100K	0.186	0.294	0.213
Income Greater than \$100K	0.071	0.074	0.051
Income Missing	0.336	0.000	0.000
Number of SAT Score Sends/Api	4.304	2.736	1.755
Enrolled in College	0.893	0.797	0.650
Enrolled in Four-Year College	0.601	0.556	0.298
AA Degree	0.056	0.096	0.076
BA Degree	0.339	0.375	0.203
N	1,020,687	958	2,020

Notes: Uses College Board SAT-takers in the 2004 high school graduating cohorts who identify as Black. College outcomes for CB data measured six years after high school graduation through National Student Clearinghouse. Educational Longitudinal Study is a nationally representative sample from the U.S. Department of Education's National Center for Education Statistics. We only use students who graduated high school on time in 2004.

Appendix Table 3: Covariate Balance Test

	Outcome = Predicted BA Degree	Outcome = Predicted Log Estimated Household Income
Enrolled in HBCU	0.020** (0.001)	0.0072** (0.0003)
Observations	308027	294433
R-squared	0.502	0.668

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Outcome is from an initial prediction of BA degree (and log estimated household income). Initial prediction regresses BA Degree (or log estimated household income) on all covariates (sex, parental income and education, initial SAT scores, cohort and high school fixed effects). The above coefficients are from regressions of the predicted outcome on HBCU enrollment and the students' application portfolio variables. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 4 - Robustness Tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		<u>Non-linear # of</u> <u>HBCU, Non-</u>	<u>Col 2 + Mean,</u>	<u>Col 3 + Student</u>	<u>Col 4, Only Obs</u>	<u>Portfolio Fixed</u> <u>Effects - Only</u>	<u>Col 4, Only Obs</u>	<u>Portfolio Fixed</u> <u>Effects - Only Obs</u>
	<u># of HBCU, # of</u>	<u>linear # of Non-</u>	<u>Min, and Max</u>	<u>SAT Interactions</u>	<u>with Exact</u>	<u>Obs with Exact</u>	<u>with Exact Portfolio</u>	<u>with Exact Portfolio</u>
	<u>Non-HBCU,</u>	<u>HBCU, Fraction</u>	<u>Avg SAT of</u>	<u>(Main</u>	<u>Portfolio</u>	<u>Portfolio</u>	<u>Interacted with</u>	<u>Interacted with</u>
Portfolio Controls:	<u>Fraction HBCUs</u>	<u>HBCUs</u>	<u>Colleges</u>	<u>Specification)</u>	<u>Match</u>	<u>Match</u>	<u>Student SAT Match</u>	<u>Student SAT Match</u>
<i>Outcome = BA Degree</i>								
Enrolled in HBCU	0.163** (0.002)	0.163** (0.002)	0.149** (0.002)	0.146** (0.002)	0.174** (0.004)	0.141** (0.004)	0.185** (0.007)	0.166** (0.011)
Observations	432,888	432,888	432,888	432,888	81,811	81,185	22,453	21,173
R-squared	0.200	0.201	0.208	0.220	0.240	0.435	0.277	0.606
<i>Outcome = Log Estimated Household Income</i>								
Enrolled in HBCU	0.057** (0.001)	0.057** (0.001)	0.051** (0.001)	0.050** (0.001)	0.065** (0.002)	0.047** (0.003)	0.061** (0.005)	0.038** (0.007)
Observations	411,584	411,584	411,584	411,584	77,459	75,889	21,238	19,494
R-squared	0.187	0.187	0.190	0.198	0.221	0.419	0.291	0.632

Notes: Data include all self-identified Black SAT takers in the 2004-2010 high school graduating cohorts who send at least one SAT score to an HBCU. Regressions include controls for sex, parental income and education, SAT, SAT attempts, AP exams taken, cohort and high school fixed effects, and controls for score sending portfolio interacted with SAT scores. Estimated household income measured in 2017. Standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 5: Impact of College Level and Selectivity

	<u>Any Degree</u>	<u>BA Degree</u>	<u>Estimated Household Income</u>	<u>Credit Score > 600</u>	<u>Student Loan Balance</u>	<u>Has a Mortgage</u>
Two-Year College	0.195** (0.003)	0.080** (0.003)	0.005** (0.002)	0.043** (0.003)	4,968.710** (314.439)	0.007** (0.002)
Four-Year College	0.298** (0.003)	0.292** (0.003)	0.088** (0.002)	0.041** (0.004)	17,308.420** (360.204)	0.008** (0.002)
Avg. SAT of Enrolled College	0.032** (0.001)	0.036** (0.001)	0.012** (0.001)	0.026** (0.001)	719.285** (83.720)	0.005** (0.000)
Observations	432,888	432,888	411,584	418,317	412,519	422,754
R-squared	0.237	0.278	0.215	0.120	0.141	0.060

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Each regression has fixed effects for the Score Send portfolio interacted with SAT superscore, high school fixed effects, and cohort fixed effects, There are also controls for gender and parental income and education. No college is omitted and there is a dummy variable if average SAT of enrolled college is missing. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 6: Impact of Enrolling in HBCU on Student Loans

	<u>Positive</u> <u>Student Loan</u> <u>Balance</u> (1)	<u>Positive</u> <u>Government</u> <u>Loan Balance</u> (2)	<u>Positive</u> <u>Private Loan</u> <u>Balance</u> (3)	<u>Student Loan</u> <u>Balance</u> (4)	<u>Government</u> <u>Student Loan</u> <u>Balance</u> (5)	<u>Private</u> <u>Student Loan</u> <u>Balance</u> (6)
Enrolled in HBCU	0.101** (0.002)	0.094** (0.002)	0.037** (0.001)	11,900** (173)	10,356** (159)	1,544** (61)
Observations	412,519	412,519	412,519	412,519	412,519	412,519
R-squared	0.101	0.097	0.060	0.128	0.117	0.054

Notes: Data include all self-identified Black SAT takers in the 2004-2010 high school graduating cohorts who send at least one SAT score to an HBCU. Regressions include controls for sex, parental income and education, SAT, SAT attempts, AP exams taken, cohort and high school fixed effects, and controls for score sending portfolio interacted with SAT scores. Outcomes from TransUnion credit bureau, measured in 2017. Standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 7: Impact of Enrolling in HBCU on Post-College Outcomes

	<u>Credit Score</u>	<u>Past Due</u> <u>Credit Card</u>	<u>Log(% Zip</u> <u>Who Are</u>	<u>Log(% Zip</u> <u>With College</u>	<u>Log(Labor</u> <u>Force</u> <u>Participation</u>	<u>Log(Unempl</u> <u>ymment Rate)</u>	<u>Log(Zip's</u> <u>Upward</u> <u>Income</u> <u>Mobility Index)</u>
	<u>> 700</u>	<u>Debt</u>	<u>Black)</u>	<u>Degree)</u>	<u>Rate)</u>	<u>ymment Rate)</u>	<u>Mobility Index)</u>
	(1)	(2)	(4)	(5)	(6)	(7)	(8)
Enrolled in HBCU	-0.016** (0.001)	0.040 (0.227)	0.049** (0.003)	0.011** (0.001)	0.001* (0.000)	0.001 (0.001)	-0.001** (0.000)
Observations	418,317	421,529	417,938	418,050	418,121	417,567	414715
R-squared	0.100	0.022	0.282	0.248	0.255	0.233	0.314

Notes: Data include all self-identified Black SAT takers in the 2004-2010 high school graduating cohorts who send at least one SAT score to an HBCU. Regressions include controls for sex, parental income and education, SAT, SAT attempts, AP exams taken, cohort and high school fixed effects, and controls for score sending portfolio interacted with SAT scores. Outcomes from TransUnion credit bureau, measured in 2017. Zip code outcomes come from the American Community Survey (2017), national crime statistics, and Opportunity Insights and are merged onto the zip code of residence as of November 2017. Standard errors in parentheses. **p<0.01, * p<0.05.

Appendix Table 8: Heterogeneous Effects, by Counterfactual Enrollment, Net of College Characteristics

	<u>Any Degree</u>	<u>BA Degree</u>	<u>Estimated Household Income</u>	<u>Credit Score > 600</u>	<u>Student Loan Balance</u>	<u>Has a Mortgage</u>
<i>A. College Application Portfolio Below Median Portfolio Selectivity</i>						
Enrolled in HBCU	0.045** (0.003)	0.043** (0.003)	0.011** (0.002)	-0.017** (0.003)	5,457.879** (246.398)	-0.008** (0.001)
<i>B. College Application Portfolio Above Median Portfolio Selectivity</i>						
Enrolled in HBCU	0.001 (0.003)	-0.001 (0.002)	-0.003* (0.002)	-0.028** (0.003)	5,551.401** (313.099)	-0.009** (0.002)
<i>C. Applied to One 4-Year College</i>						
Enrolled in HBCU	0.010 (0.008)	-0.001 (0.007)	-0.000 (0.006)	-0.023** (0.009)	6,196.273** (918.924)	0.001 (0.005)
<i>D. Applied to at Least Two 4-Year Colleges</i>						
Enrolled in HBCU	0.017** (0.002)	0.014** (0.002)	0.002* (0.001)	-0.026** (0.002)	5,214.011** (203.746)	-0.010** (0.001)
<i>E. Applied to at Least Four 4-Year Colleges</i>						
Enrolled in HBCU	0.016** (0.003)	0.015** (0.002)	0.000 (0.002)	-0.028** (0.003)	5,324.946** (262.604)	-0.011** (0.001)
<i>F. Predicted Probability of Enrolling in 4-Year College Less Than 50%</i>						
Enrolled in HBCU	0.037** (0.005)	0.033** (0.004)	0.020** (0.004)	-0.011* (0.006)	5,139.791** (400.337)	-0.010** (0.003)
<i>G. Predicted Probability of Enrolling in 4-Year College More Than 50%</i>						
Enrolled in HBCU	0.014** (0.002)	0.011** (0.002)	0.001 (0.001)	-0.026** (0.002)	5,402.892** (223.804)	-0.008** (0.001)
<i>H. Predicted Probability of Enrolling in 4-Year College More Than 90%</i>						
Enrolled in HBCU	0.004 (0.004)	-0.003 (0.004)	-0.002 (0.003)	-0.023** (0.005)	6,095.941** (662.147)	-0.001 (0.003)

Notes: Uses College Board test-takers in the 2004–2010 high school graduating cohorts who identify as Black. Each regression has fixed effects for the Score Send portfolio interacted with SAT superscore, high school fixed effects, and cohort fixed effects. There are also controls for gender and parental income and education. College characteristics are indicators for 2-year and 4-year college and the average SAT of college enrollees. College application portfolio selectivity is the average selectivity across all colleges in the portfolio and selectivity is the average SAT of first-time enrollees as reported in IPEDS. Predicted probability of enrolling in a 4-year college is from a regression of enrolling in any 4-year college on all pre-college academic, demographic, and application portfolio measures. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 9: Impact of Enrolling in HBCU on College Major by Probability of 4-Year Enrollment

	Log (Major's 25th % tile Earnings)	Log (Major's 50th %-tile Earnings)	Log (Major's 75th %-tile Earnings)	STEM Major
Less than 50% Prediction of 4-Yr Enrollment				
Enrolled in HBCU	0.057** (0.001)	0.091** (0.002)	0.122** (0.003)	0.011** (0.001)
Observations	65,604	65,604	65,604	65,604
R-squared	0.130	0.128	0.126	0.074
50% or Greater Prediction of 4-Yr Enrollment				
Enrolled in HBCU	0.060** (0.001)	0.094** (0.001)	0.124** (0.002)	0.034** (0.001)
Observations	303,373	303,373	303,373	303,373
R-squared	0.107	0.120	0.124	0.077
90% or Greater Prediction of 4-Yr Enrollment				
Enrolled in HBCU	0.064** (0.002)	0.097** (0.004)	0.126** (0.005)	0.073** (0.003)
Observations	62,074	62,074	62,074	62,074
R-squared	0.131	0.143	0.146	0.127

Notes: Data include all self-identified Black SAT takers in the 2005-2010 high school graduating cohorts who send at least one SAT score to an HBCU. Regressions include controls for sex, parental income and education, SAT, SAT attempts, AP exams taken, cohort and high school fixed effects, and controls for score sending portfolio interacted with SAT scores. College majors only reported for degree completers. CIP code 25th, 50th, and 75th percentile earnings come from Post-Secondary Employment Outcomes data from Census Bureau. Non-enrollees and non-completers assigned no degree and the lowest CIP code median earnings. Predicted probability of enrolling in a 4-year college is from a regression of enrolling in any 4-year college on all pre-college academic, demographic, and application portfolio measures. Standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 10: Impact of Enrolling in HBCU, by Predicted Prob. of Enrolling in a Selective College and SAT

	<u>Any Degree</u>	<u>BA Degree</u>	<u>Estimated Household Income</u>	<u>Credit Score > 600</u>	<u>Student Loan Balance</u>	<u>Has a Mortgage</u>
<i>(a) Less than 50% Probability of Selective 4-Yr Enrollment w/ SAT Below Median</i>						
Enrolled in HBCU	0.174** (0.002)	0.212** (0.002)	0.081** (0.001)	0.018** (0.003)	15,694.993** (194.378)	-0.004** (0.001)
<i>(b) 50% or Greater Probability of Selective 4-Yr Enrollment w/ SAT Below Median</i>						
Enrolled in HBCU	0.112 (0.097)	0.100 (0.098)	-0.067 (0.060)	0.091 (0.105)	-6,917.748 (11,157.780)	-0.030 (0.057)
<i>(c) Less than 50% Probability of Selective 4-Yr Enrollment w/ SAT Above Median</i>						
Enrolled in HBCU	0.084** (0.003)	0.107** (0.003)	0.030** (0.002)	-0.018** (0.003)	8,845.732** (296.804)	-0.004** (0.002)
<i>(d) 50% or Greater Probability of Selective 4-Yr Enrollment w/ SAT Above Median</i>						
Enrolled in HBCU	0.001 (0.005)	0.005 (0.005)	-0.014** (0.004)	-0.027** (0.005)	6,544.453** (835.716)	-0.002 (0.004)

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Each regression has fixed effects for the Score Send portfolio interacted with SAT superscore, high school fixed effects, and cohort fixed effects. There are also controls for gender and parental income and education. College characteristics are indicators for 2-year and 4-year college and the average SAT of college enrollees. College application portfolio selectivity is the average selectivity across all colleges in the portfolio and selectivity is the average SAT of first-time enrollees as reported in IPEDS. Predicted probability of enrolling in a selective 4-year college is from a regression of enrolling in any 4-year college with avg. SAT > 1000 on all pre-college academic, demographic, and application portfolio measures. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 11: Impact of Enrolling in HBCU, by College Attributes

	<u>Any Degree</u>	<u>BA Degree</u>	<u>Estimated Household Income</u>	<u>Credit Score > 600</u>	<u>Student Loan Balance</u>	<u>Has a Mortgage</u>
Enrolled in Public HBCU	0.117** (0.002)	0.147** (0.002)	0.047** (0.001)	0.003 (0.002)	9,615** (192)	-0.002* (0.001)
Enrolled in Private HBCU	0.123** (0.002)	0.144** (0.002)	0.056** (0.002)	-0.015** (0.003)	17,117** (259)	-0.010** (0.001)
Enrolled in Two-Year HBCU	0.067** (0.012)	-0.175** (0.011)	0.013 (0.008)	-0.014 (0.013)	6,405** (1,263)	0.004 (0.007)
Enrolled in Four-Year HBCU	0.120** (0.002)	0.150** (0.002)	0.050** (0.001)	-0.002 (0.002)	11,960** (173)	-0.005** (0.001)
Enrolled in HBCU w/ Avg SAT < 1000	0.122** (0.002)	0.149** (0.002)	0.050** (0.001)	-0.002 (0.002)	11,479** (177)	-0.004** (0.001)
Enrolled in HBCU w/ Avg SAT > 1000	0.090** (0.004)	0.111** (0.004)	0.044** (0.003)	-0.011* (0.005)	16,401** (460)	-0.013** (0.002)

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. For each outcome (columns), each panel is a single regression. Each regression has fixed effects for the Score Send portfolio interacted with SAT superscore, high school fixed effects, and cohort fixed effects, There are also controls for gender and parental income and education. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 12: Impact of Enrolling in HBCU, by College Selectivity and Student SAT Score

	<u>Any Degree</u>	<u>BA Degree</u>	<u>Estimated Household Income</u>	<u>Credit Score > 600</u>	<u>Student Loan Balance</u>	<u>Has a Mortgage</u>
<i>All Students</i>						
Enrolled in HBCU w/ Avg SAT < 1000	0.122** (0.002)	0.149** (0.002)	0.050** (0.001)	-0.002 (0.002)	11,479** (177)	-0.004** (0.001)
Enrolled in HBCU w/ Avg SAT > 1000	0.090** (0.004)	0.111** (0.004)	0.044** (0.003)	-0.011* (0.005)	16,401** (460)	-0.013** (0.002)
<i>Students with SAT Scores Below Median</i>						
Enrolled in HBCU w/ Avg SAT < 1000	0.174** (0.002)	0.212** (0.002)	0.080** (0.001)	0.017** (0.003)	15,619.723** (194.645)	-0.004** (0.001)
Enrolled in HBCU w/ Avg SAT > 1000	0.199** (0.020)	0.249** (0.018)	0.113** (0.013)	0.065** (0.022)	24,064.406** (1,694.317)	-0.006 (0.010)
<i>Students with SAT Scores Above Median</i>						
Enrolled in HBCU w/ Avg SAT < 1000	0.068** (0.003)	0.089** (0.003)	0.019** (0.002)	-0.020** (0.003)	7,390.429** (302.316)	-0.002 (0.002)
Enrolled in HBCU w/ Avg SAT > 1000	0.066** (0.005)	0.081** (0.005)	0.032** (0.003)	-0.019** (0.005)	14,077.615** (573.338)	-0.013** (0.003)

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. For each outcome (columns), each panel is a single regression. Each regression has fixed effects for the Score Send portfolio interacted with SAT superscore, high school fixed effects, and cohort fixed effects, There are also controls for gender and parental income and education. Robust standard errors in parentheses. ** p<0.01, * p<0.05

Appendix Table 13: Share of Rejected t-tests on Individual HBCU Fixed Effects - Unweighted Vs. Weighted Regressions

	<u>Any</u>		<u>Estimated</u>	<u>Credit</u>	<u>Student</u>	
	<u>Degree</u>	<u>BA Degree</u>	<u>Household</u>	<u>Score ></u>	<u>Loan</u>	<u>Has a</u>
			<u>Income</u>	<u>600</u>	<u>Balance</u>	<u>Mortgage</u>
Avg - 25th	0.372	0.430	0.447	0.176	0.400	0.024
Avg - 50th	0.058	0.070	0.059	0.024	0.024	0.000
Avg - 75th	0.395	0.454	0.471	0.106	0.341	0.012

Notes: Uses College Board test-takers in the 2004-2010 high school graduating cohorts who identify as Black. Each share compares the 86 individual HBCU fixed effects in a weighted versus unweighted regression. The columns show each outcome and controls include Score Send portfolios interacted with SAT superscore, high school fixed effects, and cohort fixed effects, gender and parental income and education. Weighted regressions are weighted by distance from are students' SAT superscore distance from the 25th, 50th, or 75th percentile of the distribution. T-tests are calculated at the 5% level.