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ABSTRACT

We find that test score optional policies harm the likelihood of elite college admission for high achieving applicants from disadvantaged backgrounds. We show that at one elite college campus, SAT (and ACT) scores predict first year college GPA equally well across income and other demographic groups; high school GPA and class rank offer little additional predictive power. Under test score optional policies, less advantaged applicants who are high achieving submit test scores at too low a rate, significantly reducing their admissions chances; such applicants increase their admissions probability by a factor of 3.6x (from 2.9 percent to 10.2 percent) when they report their scores. High achieving first-generation applicants raise admissions chances by 2.4x by reporting scores. Much more than commonly understood, elite institutions interpret test scores in the context of background, and availability of test scores on an application can promote rather than hinder social mobility.

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Introduction

The COVID pandemic uprooted a conventional college admissions policy that required applicants to submit standardized test scores as part of their applications. A test score optional policy began as a response to the closure of testing centers during the pandemic but has evolved into a longer run strategy. Some are concerned about the SAT and ACT being inherently biased towards students from higher-income families who may have more time and resources to prepare (Miller, Claire Cain, and Francesca Paris, 2023). Others are concerned that the language and examples used in the SAT (ACT) could create a bias against students who are underrepresented minorities (URM) or from a lower-income or international background (Micceri, 2009). On the other hand, a foundational purpose of standardized testing is to provide a mechanism for high achieving students, regardless of background, to make themselves known to Admissions Officers. Test scores can allow lower-income high achieving students to stand out regardless of alumni connections, interviewing skills, ability to travel to campus, or the use of admissions counselors (Chetty et al 2023, Leonhardt, 2024 and Lemann, 2000).

To empirically determine the value of the SAT (ACT) in the admissions process, we examine cohorts of applicants and enrolled students at Dartmouth College during test score required versus test score optional policies.[2] We find that test scores are strongly predictive of academic success and are significantly more predictive than other measures, such as high school GPA. Moreover, the relationship between test scores and academic success is similarly strong across income and demographic groups (Friedman et al., 2024). Second, while test score optional years are associated with a larger applicant pool, the makeup of the pool under test score required versus optional is similar as measured by income diversity, first-generation college going status, and level of high school advantage. Third and perhaps most importantly, test score optional policies can be disadvantageous to high achieving lower-income or first-generation college going applicants because they submit their scores at too low a rate and thereby reduce their probability of admission.

[2] For applicants for whom we have ACT and not SAT scores, we convert ACT scores to the SAT scale. In this paper any reference to SAT or test scores refers generically to either exam and uses SAT's 400-1600 scale which sums the score for the Math exam and the Evidence Based Reading and Writing exam.

We find that test scores are highly predictive of academic performance at Dartmouth, and this is consistent with much of the literature (Comeaux and Sánchez, 2020; Bettinger et. al, 2013; Saboe and Terrizzi, 2019). Chetty, Deming, and Friedman (2023) show that in elite institutions, holding family income constant, test scores are also predictive of career success including earnings and attendance at graduate school. Importantly, the relationship between academic performance in college and test scores is quite similar across subgroups including subgroups by income, gender, and more versus less advantaged high school; there is no evidence that underrepresented groups outperform at Dartmouth for a given test score.[3] In contrast Chetty, Deming, and Friedman (2023) show that certain non-test score inputs used in the admissions process (e.g., guidance counselor recommendations) are not predictive of college performance but ***are*** biased towards higher-income students and contribute towards differentially higher admission rates of higher-income students conditional on test scores.

Perhaps surprisingly, we find that 46 percent of Dartmouth applicants choose not to submit a score under the test score optional policy. The rate of score submission rises sharply with the underlying SAT (ACT) score. The likelihood of submitting a score, conditional on the underlying (potentially hidden) SAT score is similar across income bands and demographic groups. For example, about 40% of applicants who score a 1400 submit their scores; this is true across demographic groups whether applicants are high- or low-income, international, first-generation college going, attend a lower test score performing high school, or attend a small high school completely unknown to the Admissions Office. But students' optimal submission policy *should* vary greatly with those characteristics precisely because SAT scores are used within context. For example, a 1400 is a much more positive signal for an applicant from a small rural high school where the 75^{th} percentile of SAT scores is 1200 than it would be for the modal applicant. But applicants are unlikely to have the information needed to calculate their optimal score submitting strategy; Admissions Offices do not broadcast the precise mechanics of using test scores in context. Empirically, under a test score optional policy, high achieving less advantaged applicants submit their scores at too low a rate and significantly reduce their probability of admission. More advantaged, high achieving students are likely easier to evaluate with or without test scores since they frequently attend high schools already known to

[3] We show the same result in a larger sample of IvyPlus schools in Friedman et at (2025).

Admissions Offices, making the high school's grading policies and level of academic rigor better understood.

Our overall conclusion is that SAT and ACT scores are a key method by which elite schools can identify students who will succeed academically, including high achieving students who are from disadvantaged backgrounds or international and may attend high schools for which Dartmouth has limited information to interpret the transcript.

Data and Empirical Framework

Data. We use a data set of all Dartmouth applicants from the application years starting in Fall 2017, 2018 and Fall 2021 and Fall 2022. The first two years are test score required years and the second two years are test score optional years. We omit the two years most affected by the COVID emergency namely 2019 and 2020; in these two years the decision to enroll was greatly impacted by COVID as were grading processes making measurement of first year GPA atypical.

Our data include applicants' gender, SAT or ACT scores, number of AP exams, academic composite, high school GPA, class rank, Pell Eligibility, international student status, first-generation college going status and income percentile of the neighborhood where the student lives. Where the applicant only submits ACT rather than SAT scores, we convert ACT to the SAT scale using the national percentiles for both tests. We also have indicators for recruited athletes and early decision candidates. Student outcome measures include whether the student is admitted, whether the student enrolls, and first year GPA for enrolled students.

We know the applicant's high school and have measures of demographics and test scores for the high school including the median and 75th percentile of SAT scores and family mean and median family income at school level. We also utilize College Board Landscape measures which are among the measures Dartmouth admission uses to examine test scores in context. Specifically, College Board provides a challenge index for the high school which combines median income of students in the neighborhood of the high school (Census' American Community Survey or ACS), crime rates, housing stability (ACS), college attendance for students from the high school (College Board), and education level for adults in the neighborhood of the high school (ACS). In our main analysis we designate high schools as least advantaged if their College Board Challenge Index is in the 20 percent most challenged of all U.S. high schools. We designate high schools in the upper

80 percent as higher advantage high schools. For some analyses (Appendix Figure 1 and Table 3) we also create a separate split of high school advantage that is more evenly distributed across Dartmouth applicants, designating the more challenged 80 percent of high schools as the least to moderately advantaged high schools. Thirty nine percent of Dartmouth applicants come from these least to moderate advantage high schools.

For most of our analyses, we combine three measures of advantage into a single indicator for "less advantaged" applicants (students). This variable "less advantaged" equals one if any of the following conditions are true: the applicant (student) is U.S. first-generation, the applicant is from among the 20 percent of the most challenged high schools, or the applicant is from a neighborhood below the 50th percentile of U.S. neighborhood family income.[4] Using this indicator, twenty-two percent of applicants are less advantaged. We intentionally focus on the most challenged quarter of applicants to Dartmouth; the least advantaged students are where we see the largest drop in admissions probability from failing to submit scores.

Means for our sample are shown in Table 1. We break the sample into the test score required years (Panel A for 2017-2018) and the test score optional years (Panel B for 2021-2022). We further subdivide the panels to show the means for students who apply (the left half of each panel) and students who enroll (the right half of each panel). In panel A we see that over the two years of 2018 and 2019, 42,000 students applied for 2400 spots in the two entering classes. In the test score optional years of 2021 and 2022 (panel B), the number of applicants jumps 35% to 57,000. Despite substantial growth in applicants, characteristics of students applying to Dartmouth remained similar. Academically, high school GPA (3.84 vs. 3.86) and percent taking AP courses (60.2% vs 59.9%) were similar in the two cohorts. The test optional applicants were if anything slightly *less* likely to be disadvantaged (20%) or first gen (14%) than the test required applicants (25% and 16%, respectively). The largest difference was a growth of international applicants from 17% among the test required applicants to 24% among the test optional applicants. Average SAT scores (among applicants reporting scores) rose from 1421 in test required cohorts to 1465 in test optional cohorts, as would be expected if the 46% of students opting to not use their scores had

[4] We do not consider applicants race or ethnicity given recent court rulings prohibiting their use in admissions. However, our results are similar when under-represented minority status is used as an additional indicator of disadvantage.

lower scores. The characteristics of students enrolling at Dartmouth also changed little between the test required cohorts and the test optional cohorts.

Empirical Framework. To evaluate the relationship between first year GPA and SAT scores, we run regressions of first year cumulative GPA (on a 4.0 scale) on the student's combined SAT and other variables using the sample of students who enrolled at Dartmouth. For these regressions we include all students with a test score, pooling students from the test required cohorts with students reporting their SAT in the test optional cohorts (results are very similar if we restrict the sample to the test required cohorts). If anything, we would expect the relationship between first year GPA and test scores to be attenuated among enrolled students because of the positive selection of students who were admitted to Dartmouth with lower test scores.

For students applying under the test optional policy, 46% of applicants requested that admissions not use their scores. We estimate the probability that students in a given SAT bin submit scores. To do this we assume that the underlying distribution of test scores (conditional on whether a student is less advantaged) among applicants is the same during the test score required and test score optional years. While this assumption is not directly testable, it is consistent with the finding in Table 1 that applicants' demographic and other academic characteristics remained similar across the test-required and test-optional periods.

Importantly, for a subset of the students asking that their scores not be used (scores were hidden from admissions officers in these cases), we do have test scores since many students send scores at the time of taking the exam but later opt not to use their scores. This subset of applicants with "hidden scores" is about 19 percent of all applicants asking to not use scores, i.e. after the admissions cycle, we as researchers observe scores for 5,000 of the 26,000 applicants who do not have their scores used in the process.

Having the subset of applicants for whom we know the score but for whom the test score was not used in admissions (by request) allows us to calculate the probability of admissions *conditional on SAT* separately for applicants who use and do not use scores. In other words, we can compare admission rates for students who allowed their scores to be used by admissions to admission rates for students with the same test score but who chose to not let admissions use their scores. We do this comparison for cells defined by 50-point SAT bins, whether the student is less advantaged, and whether the student requested admissions do not use their test scores. The key identifying assumption is that the subset of applicants with "hidden scores" is representative of all applicants asking admissions to not use their scores, conditional on whether the student is less advantaged and their SAT bin.

We construct sampling weights that upweight the applicants with hidden scores to represent the total population of non-score using applicants. In other words, the weight tells us how many non-score-using applicants are represented by each non-score-using applicant for whom the researchers observe the hidden score. A simple solution is to weight each of the 5000 applicants with hidden scores by 26,000/5,000 (or this could be done conditional on observable applicant characteristics using inverse propensity weighting). The simplistic approach assumes that missingness is unrelated to a student's test score, which is a strong assumption. Instead, we rely on the weaker assumption that the underlying distribution of test scores (conditional on whether a student is less advantaged) among all applicants is the same during the test score required and test score optional years. [5]

More specifically, we calculated these sampling weights separately for students who were and were not less advantaged. For each group, we calculated sampling weights as follows:

Sample weight_b = 1 if score was used by admissions

= $(P_{b,pre} * N_{post} - n_{b,post,0})/(n_{b,post,1})$ if score was submitted but not used by admissions

Where:

b is the applicant's SAT bin (50-points wide)

$P_{b,pre}$ is the proportion of all applicants in the test-required regime in SAT bin b

N_{post} is the number of all applicants in the test-optional regime

$n_{b,post,0}$ is the number of score using applicants in test-optional regime in SAT bin b

$n_{b,post,1}$ is the number of non-score using applicants with hidden scores in SAT bin b

[5] In fact, results are qualitatively similar whether we a) assume missingness is random, b) assume that test score distributions are the same in the required and optional periods or c) estimate the propensity to submit scores and use inverse propensity weighting.

Intuitively, the numerator in this expression is the expected number of non score using applicants in score bin b in the optional period. This expectation is based on the proportion of applicants in score bin b in the test required period times the total application pool size in the optional period. The denominator is the number of not used but still observed (to the econometrician) scores in bin b in the optional period. The ratio tells us how many score non-users in bin b are represented by each observed (to the econometrician) score non-user in bin b. We apply these weights to the sample of students with observed (but not necessarily used) SAT scores to estimate the probability of admission given a student's score and submission decision.

In addition to simple plots of the probability of reporting scores and the probability of being admitted conditional on SAT bin, we report coefficients from OLS regressions (weighted by the sample weight defined above) of an indicator variable for admitted on indicators for reporting SAT scores, having SAT scores that are 1420 or higher, and the interaction of the two. Again, this regression is identified since we have the observations for whom we can see the scores ex-post but the scores were not reported to Admissions for use in the application process. For student i we run:

$$Admit_i = \beta 1 * Report_i + \beta 2 * SAT \geq 1420_i + \beta 3 * Report_i * SAT \geq 1420_i$$

To test whether the effects of reporting high scores are statistically significantly different across groups of students (e.g. first-generation and not first-generation), we run fully interacted models in which we obtain the coefficient on the triple interaction of first-gen*reports score*score>=1420. This coefficient represents the differential benefit to first-generation students from reporting their high score, relative to the benefit experienced by non-first-generation students.

Results

Our first result is that SAT (ACT) score strongly and linearly predict first year GPA at an elite institution. In Figure 1 Panel A we show a binned scatter plot of first year cumulative GPA by bin of SAT score. This repeats what we show in Friedman et al (2025) for a larger set of elite schools. We include all enrolled students for whom we have a SAT score and who applied in

2017, 2018, 2021, and 2022. SAT predicts first year GPA linearly and this relationship is constant within fine subsets of GPA. The relationship also remains linear if instead of raw grades we use grades adjusted for the median grade in each course taken (not reported). In a single variable regression, SAT explains 22 percent of the variation in first year GPA (Table 2, column 1). In contrast, high school GPA by itself explains only 9 percent of the variation in first year GPA (column 2). Including both SAT and high school GPA in the regression (column 3) explains only an additional 3 percent of the variation compared to SAT alone. In column 4 we add class rank which only adds an additional .5 percent to the r-squared.[6]

It is true that some of the SAT-college GPA relationship could alternatively be picked up by adding family income or high school fixed effects to the regression. However, this observation is not a useful one for admissions policy; it is unlikely that Admissions Offices would prefer to admit students based largely on having high family income or attending an elite private school while eschewing direct measures of academic preparation like test scores and grades. Of the traditional admissions inputs such as test scores, high school grades, essays, and recommendations, test scores have by far the most predictive power for academic success at Dartmouth.

A common concern about SAT scores is that they are biased against lower-income students and underrepresented students more broadly (Alon & Tienda 2007). These concerns often refer to documented demographic group differences in SAT scores. Our work is not addressing nor debating that point. What our data does show, however, is that as a predictor of academic performance, SATs work equally well across income subgroups or other measures of advantage. Panel B of Figure 1 shows that the SAT-first year GPA relationship is similar for more advantaged and less advantaged students at Dartmouth. This is confirmed by the regressions in Columns 5 and 6 of Table 2.

Our index for less advantaged is an indicator equal to one for any of the following: U.S. first-generation college going, U.S. high school is in the lowest 20 percent of the College Board index for high school advantage, or neighborhood income is in the lowest 50 percent of U.S. neighborhood income. In Appendix Figures A1-A3 we look at additional student subgroups. We

[6] Class rank is not reported by many high schools, so this regression is run a much smaller sample of students.

examine outcomes for students from high- versus low-advantage high schools (A1), or high- versus low-income families (A2), or male versus female students (A3). SAT is strongly predictive of first year GPA in a way that is similar across all the subgroups. Appendix Table A1 shows formal tests of this conclusion. We regress first year GPA on SAT scores, allowing the slopes and intercepts to differ for each subgroup. For example, column 1 shows that for high-income students' first year GPA the coefficient on SAT composite is .0018 and that the slope for low-income students is only .0003 lower.

Our second result is that the switch to a test score optional policy did not necessarily increase the demographic diversity of the applicant pool. As a summary, Appendix Figure 4 shows the share of applicants by neighborhood income decile for the pre and post (test score optional) periods. We use the U.S. decile for the applicant's neighborhood median family income, as opposed to the income decile of the applicant herself. The blue bars in Appendix Figure 4 are for applicants in the test score required period and the red bars are for applicants in the test optional period. In both cases roughly 44 percent of applicants are from the top income decile with an additional 16 percent of applicants from the second income decile.[7] As seen earlier in Table 1, applicants demographic and other academic characteristics remained similar across the test-required and test-optional periods. The largest shift in applicant demographics was a rise in the fraction of applicants who were international students, rising from 17 to 24 percent of the pool from the pre to the post period (Table 1).

Our third result is that despite test scores of applicants being strongly positively correlated with income, the use of test scores in context results in low income applicants having similar average admissions probabilities to high income applicants. That statement is true in the raw data even before we condition on test scores. This is shown in Figure 2. The red line represents the hypothetical relationship between admission probability and neighborhood income decile that would exist if test scores were used in an absolute sense rather than in context. To calculate the red line, we use only applicants from the top decile of neighborhood income. We run a logit regression of a dummy for being admitted on composite SAT. We then compute fitted values for the whole sample. The red line plots the fitted admissions probability by

[7] Presumably the family income distribution of applicants themselves is more skewed than the income distribution of their high schools or neighborhoods.

neighborhood income decile. The steep upward slope with income is generated by the relationship of SATs and admit probability within the top decile of income combined with the fact that applicant SAT scores rise across deciles neighborhood income.

The blue dots in Figure 2 represent the actual raw probability of admission by income decile. The use of scores in context removes the admission-neighborhood income connection that would exist if SATs were used in an absolute rather than a contextual sense.

Our fourth result is that conditional on SAT score, the likelihood that an applicant submits a score (in the test score optional period) is similar across demographic groups. Figure 3 shows our estimated rates of score submission by SAT score bins. We estimate the fraction submitting scores by assuming that distribution of scores by bin and less advantaged status is the same in the test required and test optional period. We show estimated rates of test score submission separately for all applicants and high- and low-income applicants, U.S. first-generation college going and not U.S. first-generation college going applicants, and applicants from more and less advantaged high schools (again using the College Board index of high school advantage). At each level of SAT score, the estimated likelihood of submitting scores is quite similar for each of the subgroups shown. For example, applicants with SAT scores of 1400-1440 submit their scores about 50 percent of the time, regardless of income or level of high school advantage. First-generation college going students (the lowest dashed line) have the lowest rates of submission even at very high levels of SAT score.

The finding that students with different backgrounds submit scores at about the same rate makes sense given the limited information students have on what is interpreted as a competitive score. For example, students likely know from public information that the median SAT score for enrolled students is 1520 and that the 25th percentile is 1440. However, students would not know the method in which the Admissions Office uses SAT scores in context and the degree to which a 1400 might be a very competitive score for an applicant coming from a less resourced high school or a high school with lower test scores or that offers few AP classes.

In reality, students from different backgrounds should not submit scores at the same rates and the fact that they do inherently harms admission probabilities for high achieving disadvantaged students. We make this point using two different related analyses. In Figure 4 we split the data by more and less advantaged students (the upper two panels) and by first-generation and not first-generation students (the lower two panels). In the left panels we show our estimates of score submitting behavior by SAT bin and in the right panels we show the probability of admission by SAT bin. In Figure 4, we estimate the probability of score submission using the pre and post data in the identical way as Figure 3 (see methods section). For the probability of admission by SAT score, we use the test score required cohorts (application years 2017 and 2018) for which we have SATs for every applicant. We calculate the probability of admission by SAT bin separately for more versus less advantaged students (or first-generation versus not).

In Panel A we again see the result that conditional on SAT, more and less advantaged students are estimated to submit scores at a similar rate. However, in Panel B (using the pre-data), we see that for SAT scores above 1350, less advantaged students have a significantly higher probability of admissions conditional on test score. This is because Admissions Offices use SAT scores within context. At an SAT score of 1400-1440, less advantaged students have an admissions rate of 8.0 percent versus 3.8 percent for more advantaged students. The contrast is similar for first-generation college applicants. At an SAT of 1400-1440, first-generation applicants have 2.2 times the admissions rate of non-first-generation candidates.[8] The use of SAT scores in context means that a score that is at the 25th percentile for enrollees can still be highly competitive and very meaningful for less advantaged students. The import of this fact is that different groups should likely _not_ be submitting scores at the same rate. It seems likely that high achieving less advantaged students should be submitting scores at higher rates to make themselves stand out to admissions officers. We say this because Admissions clearly recognizes that a 1450 is a different signal for different applicants. The use of SAT scores in context also means that Admissions is not merely maximizing first year Dartmouth GPA. Separate from predictions of first year GPA, Admissions can identify something impressive about these applicants who have achieved high scores in spite of challenges. Admissions may also actively seek to increase social mobility and diversify society's leaders.

In Figure 5, we test more directly our theory that high achieving less advantaged applicants submit scores at too low a rate. Here we limit ourselves to the test optional period. We examine score submitting behavior and admissions probabilities using a) applicants who ask

[8] These ratios are calculated from the data underlying the figure.

that their scores be used (the blue lines) and b) applicants who ask that their scores not be used (red line) *but* for whom we the researchers actually know the underlying hidden score. The latter occurs for about 19 percent of the applicants who ask that their scores not be used. This occurs because some students send their score during the test administration, but later decide they do not want the score included as part of their admissions profile. Admissions complies and does not use the score, but in our ex-post analysis we are able to access the hidden scores. As described above, our graphs and regressions weight the observations with hidden scores by the estimated sampling weight that we observe a hidden score for a non-score using applicant.[9]

In Figure 5 the four panels report the probability of admission by score bin and by use of score (blue is use score and red is do not use score) for four different groups: less and more advantaged applicants and first-generation and non-first-generation applicants. We know from Figures 3 and 4 that given a score of 1400, about 40 percent of applicants submit scores and at a score of 1450 about 60 percent of applicants report scores. And these rates of score submitting are relatively constant across demographic groups. However, we can see from Figure 5 that for less advantaged applicants and first-generation applicants with scores of 1400 and higher, admissions probabilities are substantially higher for applicants who submit their scores. Panel C shows the admissions probabilities for first-generation applicants split by using and not using scores. First-generation applicants with a score between 1450 and 1490 have an 8.1 percent probability of admission when they submit their score versus a 2.8 percent probability of admission when they do not use their score. The comparable admissions rates for non-first-generation applicants are 3.6 percent and 2.6 percent for using and not using scores respectively. We see a similar pattern for less advantaged applicants with SAT scores in the 1450-1490 range where the rates of admissions are 7.4 and 2.0 percent for using and not using scores respectively. In the 1400-1440 range only about half of the overall applicants are submitting scores but the data suggest that first-generation and less advantaged applicants should be submitting scores to identify themselves to Admissions Offices. There are also a modest number of first-generation and less advantaged applicants with scores above 1500 and 1550 who do not submit their scores, and thereby severely harm their own admissions chances. In contrast, for more advantaged

[9] Our estimated probability varies across bins of SAT*less advantaged and is constant within a bin. We assume that the underlying distribution of SAT scores is similar in the pre and post data to estimate the number of unobserved scores in a bin.

students and students who are not first-generation, there is no admission advantage from submitting scores; for these students, admissions is able to identify their academic promise based on other components of their application portfolio.

In Table 3 we show OLS regressions that test statistically the intuitions suggested by Figure 5. Specifically, we use the test score optional years and regress a dummy for admission on indicators for reporting SATs for use in admissions, having SATs of 1420 or greater and the interaction of the two. All these regressions are weighted by our sampling weight to account for missing scores among applicants not reporting SATs to admissions (see methods section). We then run this regression for all students (col 1) and for various subgroups including applicants who are: less advantaged (col 2), more advantaged (col 3), first-generation (col 4), not first-generation (col 5) in high schools with least advantage (col 6), in high schools with least to moderate advantage (col 7), high schools with more advantage (col 8), and applicants from higher and lower income neighborhoods (col 9 and 10). The key coefficient is the interaction term in row 3 which tests whether admissions probabilities are higher when a student reports scores *and* those scores are 1420 and above. It's clear that there are statistically significant benefits of reporting for these higher scoring less advantaged and higher scoring first-generation students. In row 3, reporting (versus not reporting) an SAT of 1420 plus raises admissions probabilities for less advantaged students by 8.7 percentage points (col 2) versus 3.7 percentage points for more advantaged students (col 3).

For first-generation students, reporting a score of 1420 or more raises admissions probabilities 7.4 percentage points versus a boost of 4.0 percent for non-first-generation students though this difference across the two groups is not statistically significant. Comparing columns 9 and 10, applicants from lower income neighborhoods increase their admissions probability by 10.3 percentage points when reporting their SAT score of 1420 plus whereas the analogous boost for applicants from higher income neighborhoods is 4.0 percentage points. A similar pattern emerges looking at applicants from least advantaged, least to moderately advantaged, and higher advantage high schools in columns 6-8. Comparing columns 6 to 8, reporting an SAT of 1420 or greater increases admissions probability for applicants in the least advantaged high schools by 18.9 percent (based on a small sample) but increases admissions probability by 4.4 for the applicants from more advantaged high schools. Note in row 2 of the table that the impacts of having an SAT of 1420 or higher (but not reporting it) are mostly small and statistically insignificant for the less advantaged samples, and somewhat more positive and sometimes statistically significant for the more advantaged sample. This suggests that admissions is indeed unaware that less advantaged applicants have these higher scores unless the scores are reported.

Using the coefficients from table 3, we estimate that the overall probability of admission for less advantaged students with high SATs (at or above 1420) but not reporting is 2.9 percent (.0443-.0157), while the probability of admission for less advantaged students with high SAT who do report is 10.2 percent (.0443-.0157 -.0129 + .0865). Thus, reporting increases the probability of admission by 3.6x (10.2/2.9) for less advantaged students with SAT above 1420. Similarly, for first gen students, high SAT students who don't report have a 4.3 percent (.0500-.0073) chance of admission, while those that do report have a 10.0 percent (.0500 - .0073 -.0157 + .0735) chance of admission, implying that submitting scores for high scoring first gen students increases their chances of admission by 2.4x (10/4.3).

High achieving less advantaged students benefit differentially from submitting scores. The test score optional policy has a disparate negative impact on this group of students since many of them fail to submit when they should. But until the writing of this paper, the publicly available information for applicants would not have been nearly enough to allow students to optimize their score submitting behavior. The beneficiaries of this failure to submit scores by high achieving students appear to be lower scoring disadvantaged students who are admitted at *higher* rates when they do not submit their scores and possibly also advantaged students who fill some of the slots that did not go to the high achieving disadvantaged students.

In contrast, in Figure 5, conditional on SAT, more advantaged students and non first-generation students have similar admissions probabilities when they do or do not submit their scores. We interpret this as confirming that Admissions Offices have more information to interpret the high school transcript and infer academic ability for these more advantaged students.

Figure 6 displays the results of Figure 5 and Table 3 in a slightly different way. Instead of computing the raw probability of admission for submitters and non-submitters by SAT bin, we display the benefit from submitting scores (the difference in admission probability between submitters and non-submitters). Panel A cuts the data by less and more advantaged students.

For less advantaged students (the red line), the increase in admissions probability from submitting scores rises steeply with SAT scores. Less advantaged students with scores of 1550 increase their admissions chances by 10 percentage points (from a base of about 2 percentage points) by submitting scores. In contrast, more advantaged applicants (the blue line) see much smaller benefits from submitting scores. We interpret this as saying that the Admissions office has more experience reading the high school transcript and the rest of the application from the more advantaged students.

We add further support to this interpretation in Panel B in which we cut the data by students from high schools that send 10 or fewer applications to Dartmouth (the red line) during the sample period (2017, 2018, 2021, 2022) versus students from high schools that send 11 or more applications during the same period. Again, we see much larger benefits from submitting scores for applicants from schools that send a modest number of applications each year.

Finally in Figure 7 we summarize graphically (and with 95% confidence intervals) how the benefits of reporting in admissions vary by high and low SAT scores and Less Advantaged (left bars) and More Advantaged (right bars) status. The orange bars show the benefits of reporting for students with SATs between 1420 and 1500. For less advantaged applicants with these higher scores, the benefit of reporting is above 5 percentage points in admission probability whereas the analogous benefit of reporting for more advantaged students is much smaller. For applicants with SATs <=1350 and <1420, there are small negative benefits to reporting. That statement is true for both more and less advantaged students.

Discussion

Test scores are significantly predictive of academic success; they are linearly related to first year GPA and have far more predictive power for academic success than other admissions indicators including high school GPA. Importantly, test scores offer the same predictive relationship for all demographic groups we examine, without evidence that scores underpredict performance for less advantaged groups. In the absence of test scores, Admissions Offices are likely to put additional weight on other measures like guidance counselor recommendations and admissions officer ratings. Chetty, Deming and Friedman (2023) show that these other more subjective measures disadvantage less advantaged students and do not predict academic success in college or earnings later in life.

Test score optional policies confer a disadvantage on high achieving less advantaged applicants. In particular, the data suggest that a test score optional policy leads large numbers of disadvantaged students to not submit scores when it would benefit them to do so. Even well-informed students cannot be expected to know how reading SAT scores in context is operationalized. Given a test score of 1400 or more, first-generation applicants can multiply their probability of admission by 2.4 times by submitting scores. More broadly, less advantaged applicants with scores of 1400 and above can boost their probability of admission by 3.6 times by submitting scores. Overall, test required policies increase the likelihood that Admissions will be positioned to identify high achieving students from less advantaged backgrounds.

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Table 1: Summary Stats

A. Test Score Required Cohorts

	Applications			Enrolled		
	Mean	Std Dev	N	Mean	Std Dev	N
	(1)	(2)	(3)	(1)	(2)	(3)
Cumulative First Year GPA				3.53	0.36	2,345
Scaled High School GPA	3.84	0.26	37,298	3.86	0.21	2,296
SAT Composite	1420.68	123.01	41,725	1462.86	104.8	2,379
Opt No Score	0	0	41,142	0	0	2,386
Recruited Athlete	0.02	0.13	42,124	0.16	0.37	2,386
First Gen	.16	.37	42,142	.11	.31	2,386
Less Advantaged	.24	.43	42,142	.16	.37	2,386
Income Decile	8.05	2.54	34,283	8.58	2.29	2,039
International	.17	.37	42,142	.1	.3	2,386
Admitted	0.1	0.29	42,142	1	0	2,386
Accepted	0.06	0.23	42,142	1	0	2,386
Application Year	2017.52	0.5	42,142	2017.5	0.5	2,386
Above High Schools 75th percentile SAT	0.53	0.5	29,968	0.53	0.5	1,880
Overall High School Income Decile	8.11	2.44	31,299	8.64	2.2	1,964
Percent Taking AP Courses	60.18	23.43	29,388	64.09	23.98	1,813
High Schools 75th percentile SAT	1316.67	138.12	29,968	1354.82	131.52	1,880

B. Test optional Cohorts

	Applications			Enrolled		
	Mean	Std Dev	N	Mean	Std Dev	N
	(1)	(2)	(3)	(1)	(2)	(3)
Cumulative First Year GPA				3.64	0.33	2,315
Scaled High School GPA	3.86	0.25	49,865	3.91	0.16	2,286
SAT Composite	1465.19	108.30	35,083	1494.11	94.72	1,732
Opt No Score	0.46	0.50	56,897	0.31	0.46	2,353
Recruited Athlete	0.01	0.10	56,856	0.16	0.36	2,327
Admitted	0.06	0.24	56,897	1	0	2,353
Accepted	0.04	0.20	56,897	1	0	2,353
Application Year	2021.50	0.50	56,897	2021.48	0.5	2,353
First Gen	0.14	0.35	56,897	.12	.33	2,353
Less Advantaged	0.20	0.40	56,897	.18	.38	2,353
Income Decile	8.10	2.53	42,189	8.38	2.5	1,904
International	0.24	0.43	56,897	.14	.35	2353
Above High Schools 75th percentile SAT	0.58	0.49	25,845	0.59	0.49	1,392
Overall High School Income Decile	8.10	2.45	40,283	8.33	2.42	1,918
Percent Taking AP Courses	59.91	23.55	37,564	62.88	24.85	1,766
High Schools 75th percentile SAT	1342.05	128.53	25,845	1364.33	120.61	1,392

Notes: This table provides means, standard deviations, and number of observations for each applicant and enrolled student. Panel A uses data for years 2017-2018 and B uses data for years 2021-2022.

Table 2: Value of High School GPA and the SAT Composite in Predicting Cumulative First-Year GPA at Dartmouth

	(1) First Year GPA	(2) First Year GPA	(3) First Year GPA	(4) First Year GPA	(5) First Year GPA Less Adv	(6) First Year GPA More Adv
SAT Composite Score	0.00158***		0.00139***	0.00140***	0.00129***	0.00158***
	(4.64e-05)		(4.88e-05)	(6.56e-05)	(0.000132)	(5.31e-05)
HS GPA		0.550***	0.322***	0.220***		
		(0.0261)	(0.0263)	(0.0485)		
Class Rank				-0.490***		
				(0.124)		
Constant	1.271***	1.447***	0.304***	0.703***	1.630***	1.275***
	(0.0687)	(0.101)	(0.103)	(0.197)	(0.185)	(0.0794)
Observations	4,051	4,507	3,937	1,920	580	3,471
R-squared	0.222	0.090	0.255	0.260	0.141	0.203

Notes: This table uses data for enrolled Dartmouth students who applied in 2017-2018 (test-required) or 2021-2022 (test-optional). We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: The SAT Composite offers more predictive power for first-year GPA at Dartmouth than high school GPA.*

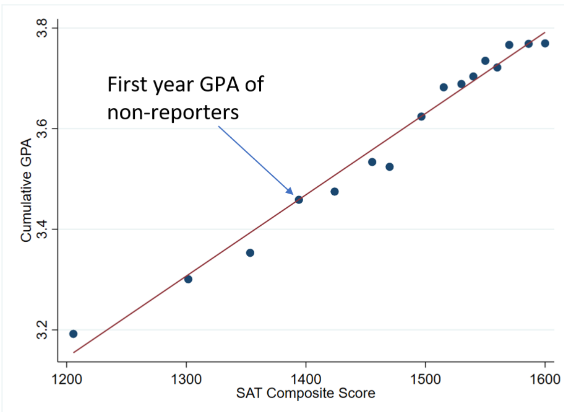
Table 3: Analysis of SAT Reporting in The Admission Decision: Test Optional Period

	(1) Admitted 21-22 All Students	(2) Admitted 21-22 Less Adv Students	(3) Admitted 21-22 More Adv Students	(4) Admitted 21-22 First Gen Students	(5) Admitted 21-22 Not First Gen Students	(6) Admitted 21-22 Least HS Advantage	(7) Admitted 21-22 Low-Moderate HS Advantage	(8) Admitted 21-22 Higher HS Advantage	(9) Admitted 21-22 Lower Income	(10) Admitted 21-22 Higher Income	(11) Admitted 21-22 School w Few Applicants	(12) Admitted 21-22 School w More Applicants
Reported SAT	-0.00475	-0.0129*	-0.000763	-0.0157*	-0.00115	-0.0395**	-0.0102*	-0.00323	-0.00940	-0.00517	-0.00463	-0.00454
	(0.00358)	(0.00713)	(0.00389)	(0.00917)	(0.00368)	(0.0177)	(0.00605)	(0.00614)	(0.00863)	(0.00472)	(0.00463)	(0.00563)
SAT 1420 or Higher	0.0166**	-0.0157	0.0285***	-0.00734	0.0242***	-0.0715***	0.0122	0.0269**	-0.0327***	0.0259**	-0.00410	0.0242**
	(0.00784)	(0.0160)	(0.00870)	(0.0234)	(0.00825)	(0.0146)	(0.0150)	(0.0125)	(0.0114)	(0.0103)	(0.00950)	(0.0105)
Report SAT * SAT 1420 or higher	0.0450***	0.0865***	0.0365***	0.0735***	0.0403***	0.189***	0.0506***	0.0435***	0.103***	0.0403***	0.0504***	0.0417***
	(0.00837)	(0.0177)	(0.00926)	(0.0254)	(0.00879)	(0.0299)	(0.0160)	(0.0134)	(0.0151)	(0.0109)	(0.0104)	(0.0114)
Constant	0.0272***	0.0443***	0.0178***	0.0500***	0.0197***	0.0715***	0.0379***	0.0245***	0.0421***	0.0266***	0.0260***	0.0285***
	(0.00269)	(0.00548)	(0.00288)	(0.00703)	(0.00272)	(0.0146)	(0.00462)	(0.00455)	(0.00649)	(0.00357)	(0.00353)	(0.00412)
Observations	34,680	5,748	28,932	3,639	31,041	910	8,756	17,784	3,533	24,133	11,562	23,118
R-squared	0.014	0.014	0.016	0.009	0.016	0.019	0.012	0.014	0.016	0.014	0.011	0.012

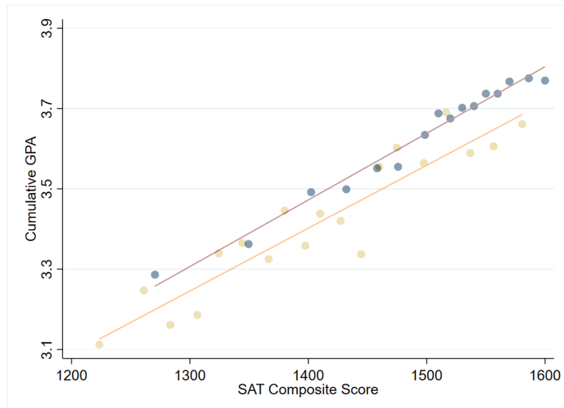
Notes: This table uses data for Dartmouth applicants who applied in years 2021-2022. We define “less-advantaged” students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define “least”, “least-moderate”, & “higher” high school advantage as being in the bottom 2 deciles (least), the bottom 8 deciles (least-moderate) and the top 2 deciles (higher) of the College Board Landscape index of challenges. We define “higher income” & “lower income” as neighborhood income above or below the US 50th percentile. We define “school with few applicants” & “school with more applicants” as having fewer or more than 10 applicants from the applicants’ school. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: Dartmouth applicants who use scores of 1420 or higher are admitted at varying rates across subgroups.*

Figure 1:Relationship Between Cumulative First-Year GPA and Composite SAT Scores: Dartmouth Students

a. All Dartmouth Students

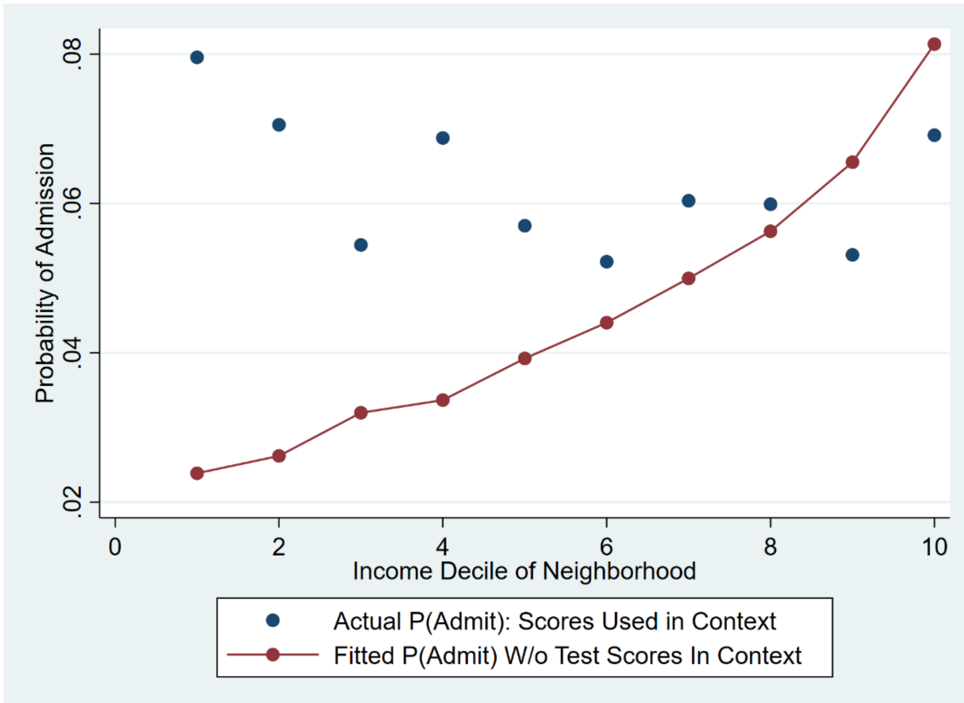


b. Less- versus More-Advantaged Dartmouth Students



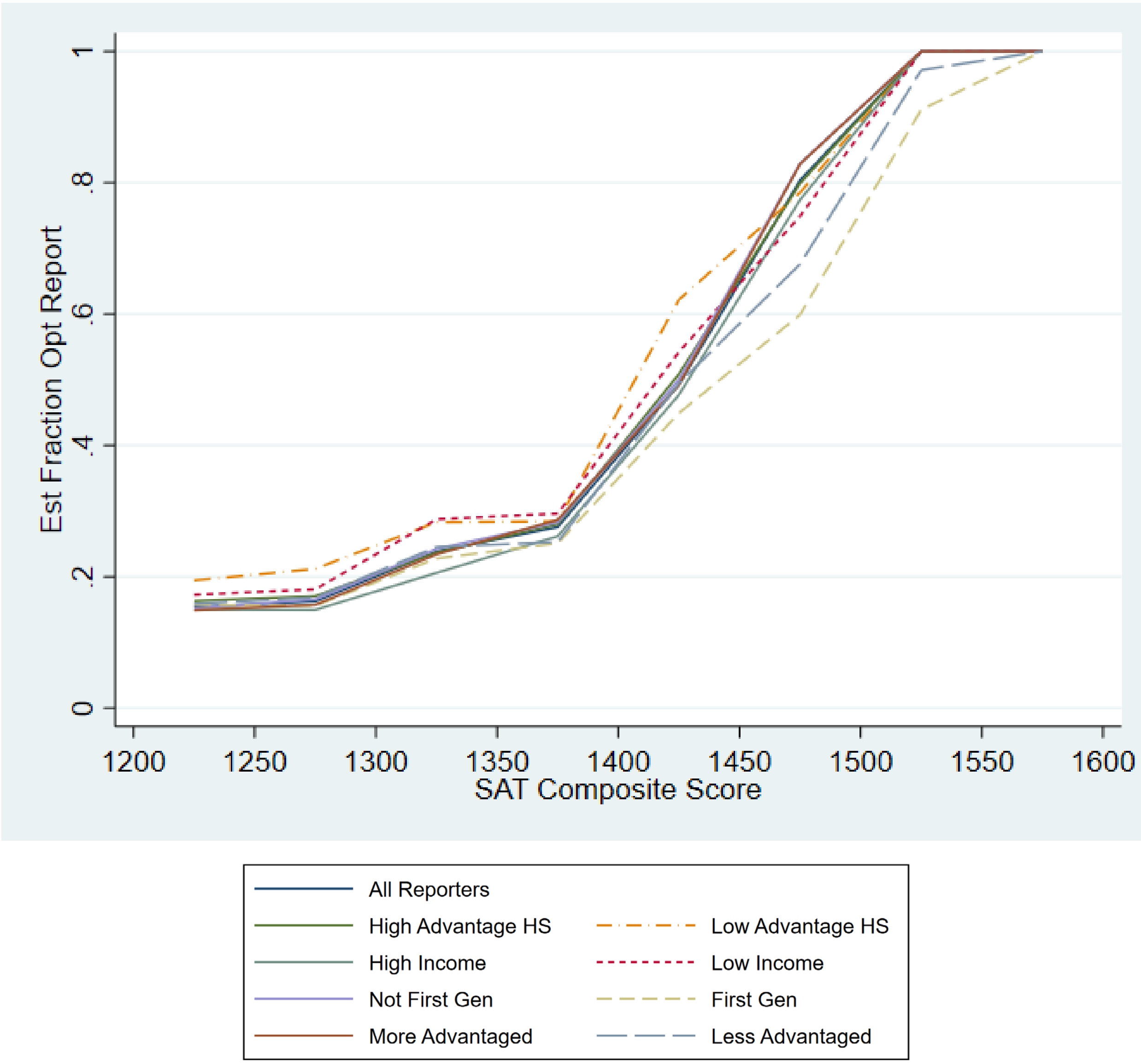
Notes: Figure a displays bin scatter plot of cumulative first-year GPA against the SAT for 16 equal-sized bins of SAT for enrolled Dartmouth students in the 2017-2018 (test-required) and 2020-2021 (test-optional) cohorts. Figure b displays bin scatter plot of cumulative first-year GPA against the SAT for 16 equal-sized bins of SAT for enrolled Dartmouth students in the 2017-2018 (test-required) and 2020-2021 (test-optional) cohorts. Separate bin scatters are shown for less-advantaged (yellow) and more-advantaged (navy) students. We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *Key takeaway: The linear relationship between cumulative first-year GPA and SAT score is similar across more- and less-advantaged Dartmouth students.*

Figure 2: Estimated Probability of Admissions With and Without Using Score in Context



Notes: Blue dots display raw admissions probability by U.S. income decile of neighborhood. Red line shows the hypothetical admit rate predicted simply from SATs and if SATs were not used in context. Red line is estimated from the SAT-admit relationship for applicants in the highest decile of neighborhood income.

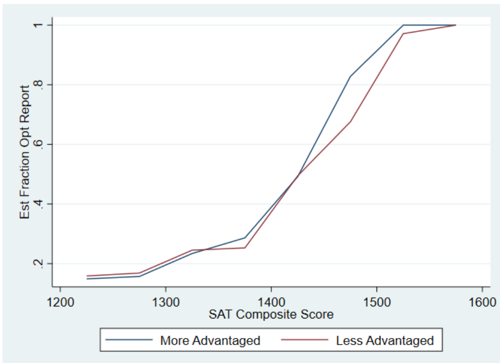
Figure 3: Estimated Fraction of Dartmouth Applicants Reporting Scores Under Test Optional Policy, by SAT Score: Overall and by Subpopulation



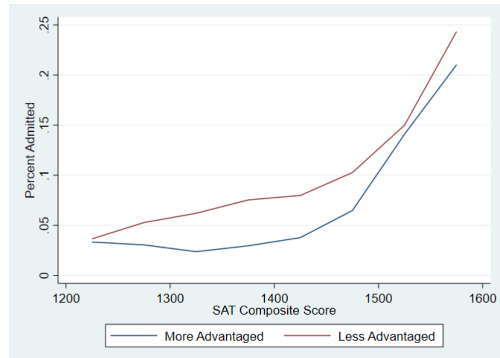
Notes: Chart displays estimates of the fraction of applicants opting to report scores in the test-optional period, separately for 50-point bins of the SAT composite score. Analysis uses data for Dartmouth applicants in years 2017-2018 (test-required) or 2021-2022 (test-optional). The SAT composite is included for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. Estimates are derived by dividing the number of scores for the test-optional cohorts by the number of scores for the test-required cohorts (scaled up for the increase in applications in the later period), separately by bin. 46% of test-optional applicants opted not to submit a score. Low (high) advantage HS=U.S. high school in top 20% (bottom 80%) of the College Board's index for challenge; low (high) income=neighborhood median income below (at or above) the U.S. 50th percentile; less advantaged=U.S. first-generation college-going or low advantage HS or low income; more advantaged=not U.S. first-generation college-going and high advantage HS and high income. *Key takeaway: The likelihood of reporting a given SAT score appears similar across groups of Dartmouth applicants.*

Figure 4: Score Reporting and Admissions By SAT: Split By Advantage and First Gen Status

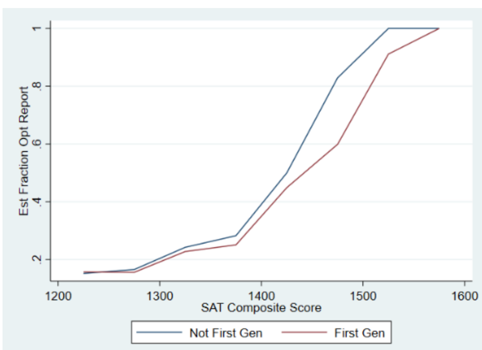
a. Est. Freq of score reporting



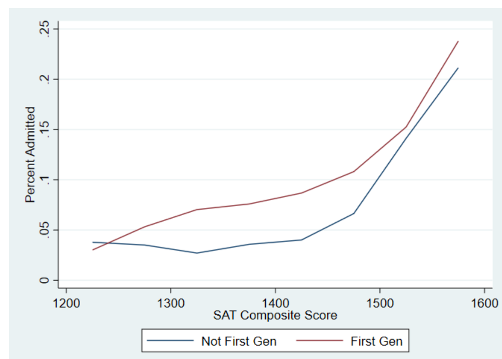
b. Freq of Admission



c. Est. Freq of score reporting



d. Freq of Admission

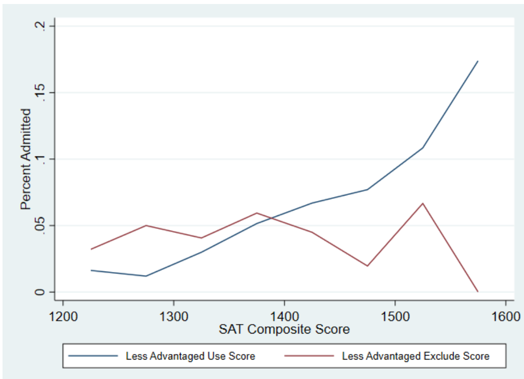


Notes: Panels a and c display estimates of the fraction of applicants opting to report scores in the test-optional period, separately for 50-point bins of the SAT composite score. Estimates are calculated as described in the notes to Figure 2. Analysis uses data for Dartmouth applicants in years 2017-2018 (test-required) or 2021-2022 (test-optional). Panels b and d display the probability of admission for the test-required cohorts, separately for 50-point bins of the SAT score. The SAT composite is included for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. We define "less-advantaged" students (panels a and b) as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define "first generation" as U.S. first generation (panels c and d). *Key takeaway: Under test-optional, less-advantaged and U.S. first-generation college-going students with SAT scores around 1400 and below are more likely to be admitted to Dartmouth but not more likely to submit scores than their more-advantaged counterparts.*

Figure 5: Admissions Rates For Those Submitting and Not Submitting Scores By SAT Bin: Split by Advantage and First Gen Status

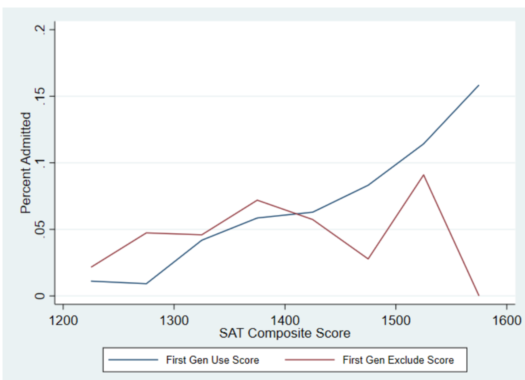
All data from test score optional years '21 and '22. The Blue Line is for applicants using scores. Red Line Uses Sample of Applicants With Test Score BUT Who Opted Not to Use Them in Admission

a. Less Advantaged Applicants

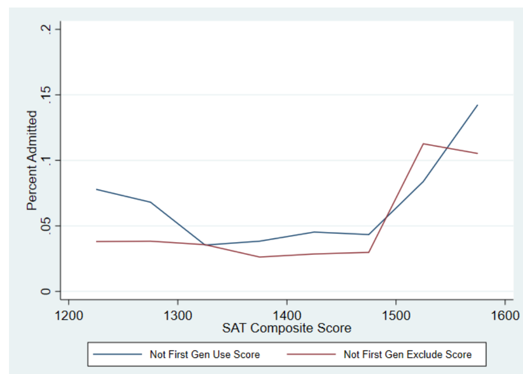


b. More Advantaged Applicants

c. First Gen Applicants



d. **Not First Gen Applicants**

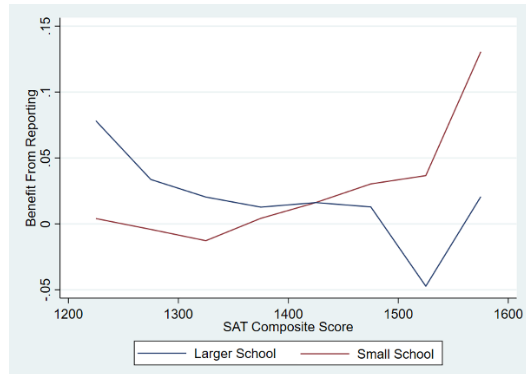


Notes: Charts display admission rates by whether applicants opted for SAT scores to be considered in the application decision, separately for 50-point bins of the SAT composite score. Analysis uses data from Dartmouth applicants in the test-optional years, 2021-2022. For these cohorts, we have SAT scores both for students who submitted scores (blue lines) and for a small sample (19%) of applicants who chose to exclude their score from the admission decision but for whom we observe their scores ex post (red lines). The SAT composite is included for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. We define "less-advantaged" students (panels a and b) as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define "first generation" (panels c and d) as U.S. first-generation college-going students. *Key takeaway: High-achieving less-advantaged and U.S. first-generation college-going applicants lowered their Dartmouth admissions probabilities by opting not to submit a score.*

Figure 6: Admissions Benefit From Reporting Scores By SAT Bin: Split by Advantage and Number of Applications From High School

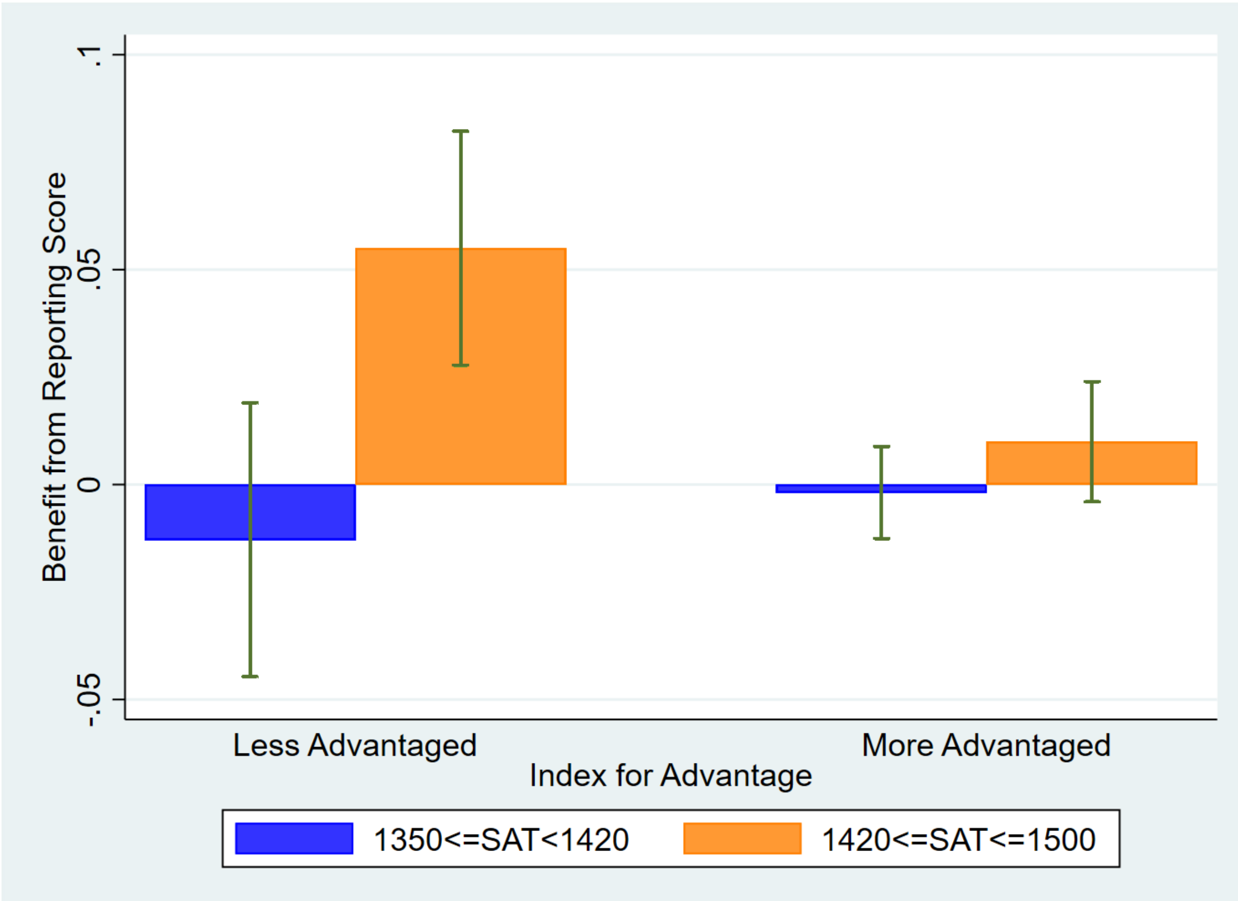
a. **Split: Advantaged Applicants**

b. **Split: Schools Application Number**



Notes: Charts display benefit from reporting SAT scores. We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define "small schools" & "larger schools" as having fewer or more than 10 applicants from the applicants' school.

Figure 7: Benefit in Admit Probability From Reporting Scores : By High Versus Low SATs and By Less Advantaged Status



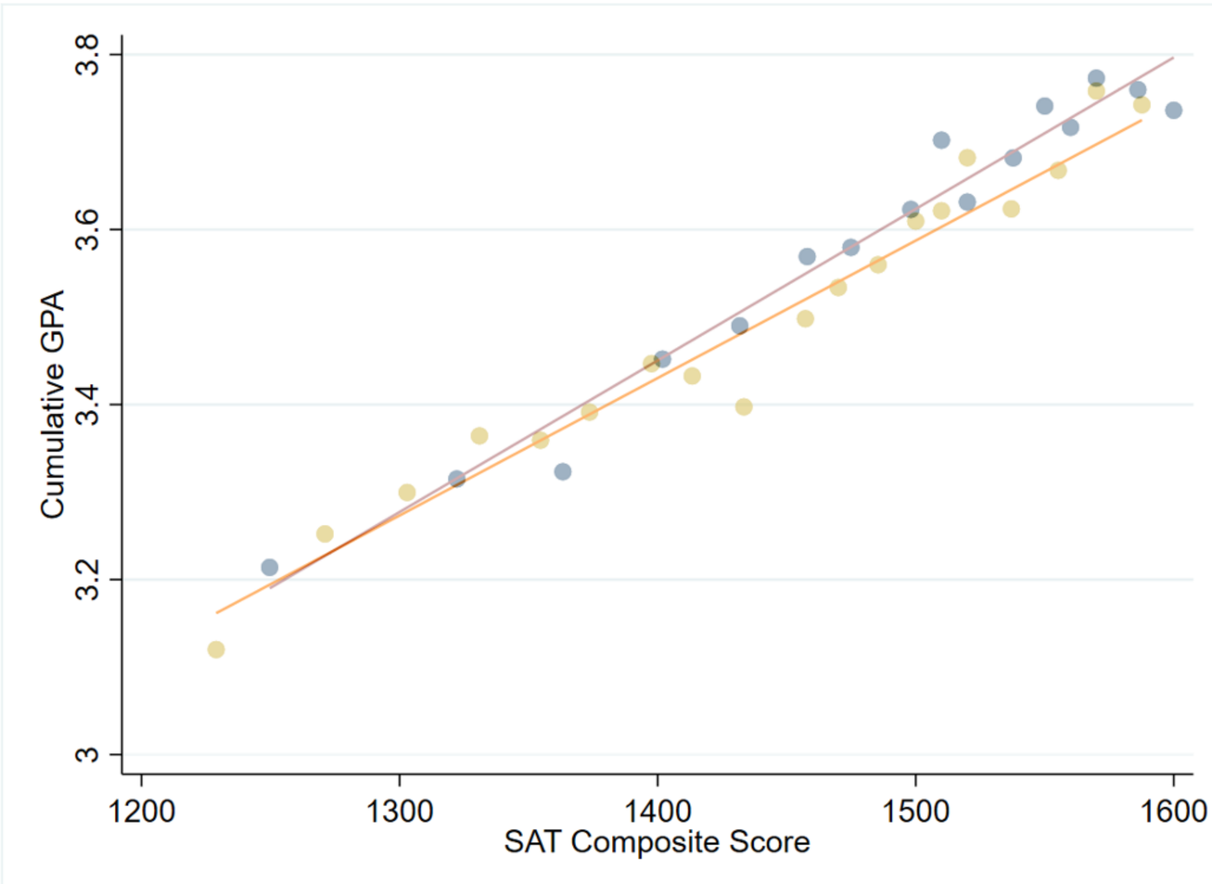
Notes: Charts display benefit from reporting SAT scores. We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We show coefficients from simple OLS regressions that interact dummies for being in each of the two SAT categories with dummies for less advantaged status. Regressions are weighted by the inverse of estimated probability we observe the score of an applicant not using the score in admissions (see text).

Appendix

A.1: Relationship Between Cumulative First-Year GPA and Composite SAT Scores: High (Navy) versus Low(Yellow) Levels of Advantage At High School (sample split into equal halves)

Notes: Figure shows a binned scatter plot of cumulative first-year GPA against the SAT for 16 equal-sized bins of SAT for enrolled Dartmouth students in the 2017-2018 (test-required) and 2020-2021 (test-optional) cohorts. Separate bin scatters are shown for low levels of high school advantage (yellow) and high levels of high school advantage (navy) students. High school advantage is measured using the College Board Landscape index of challenges for the high school which include family income, college going rates for students from the high school, crime rates in the area, housing stability, education levels of the adults in the area, and family structure in the area. For this graph we use an alternative definition of less advantaged high school. We split high school advantage into the lower 80 percent of high school advantage and the upper 20 percent which splits the Dartmouth enrolled sample roughly in half. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *Key takeaway: The linear relationship between cumulative first-year GPA and SAT score is similar across Dartmouth students with high versus low-high school advantage.*

A.2: Relationship Between Cumulative First-Year GPA and Composite SAT Scores: High (Navy) versus Low (Yellow) Family Neighborhood Income (sample split into equal halves)

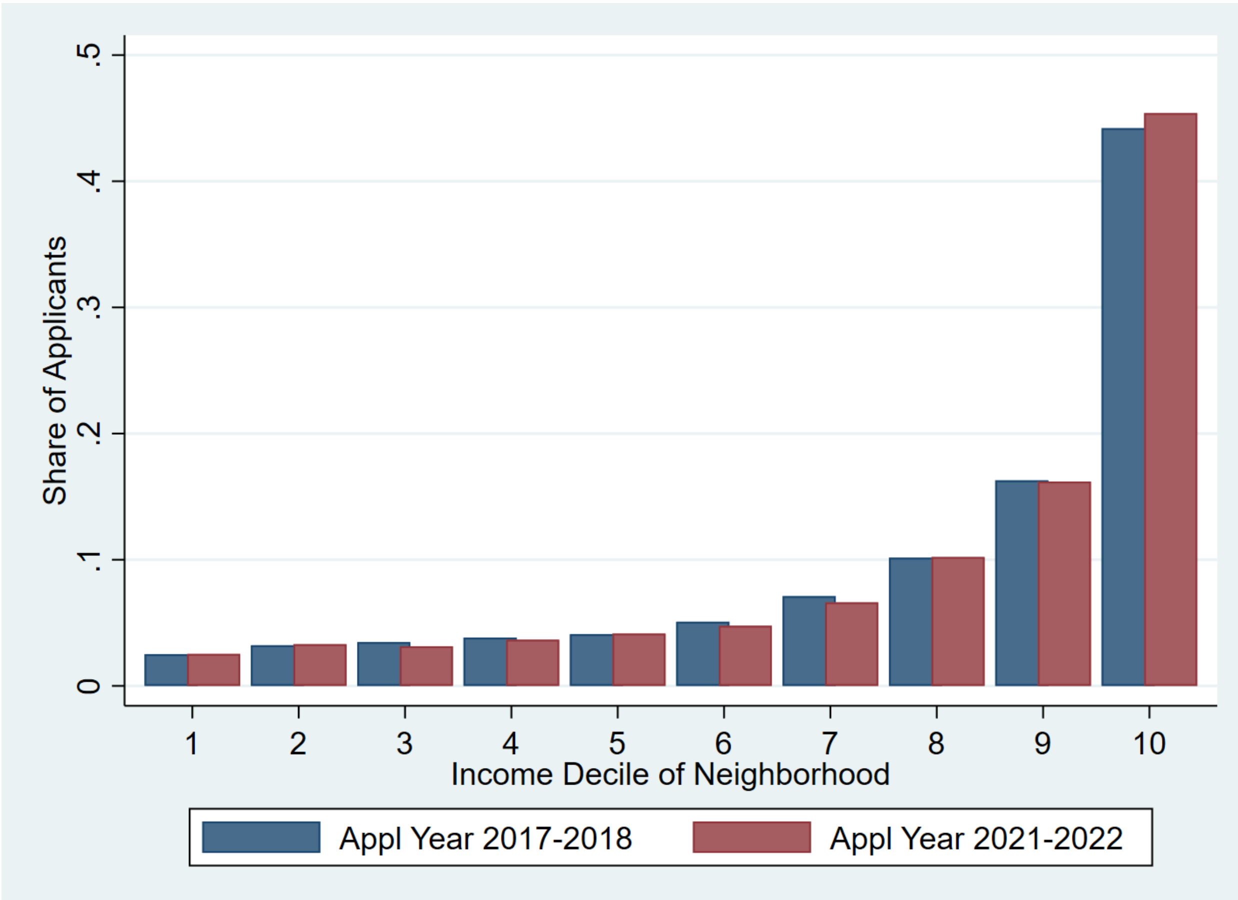


Notes: Figure displays bin scatter plot of cumulative first-year GPA against the SAT for 16 equal-sized bins of SAT for enrolled Dartmouth students in the 2017-2018 (test-required) and 2020-2021 (test-optional) cohorts. Separate bin scatters are shown for students from low median neighborhood income (yellow) and high median neighborhood income (navy). For this graph we use an alternative definition of high-low median neighborhood income. We define "high income" as neighborhood income above the US 85th percentile which splits the sample of enrolled students roughly in half. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *Key takeaway: The linear relationship between cumulative first-year GPA and SAT score is similar across Dartmouth students from high- and low-income neighborhoods.*

A.3: Relationship Between Cumulative First-Year GPA and Composite SAT Scores: Male (Navy) versus Female (Yellow) Dartmouth Students

Notes: Figure displays bin scatter plot of cumulative first-year GPA against the SAT for 16 equal-sized bins of SAT for enrolled Dartmouth students in the 2017-2018 (test-required) and 2020-2021 (test-optional) cohorts. Separate bin scatters are shown for female (yellow) and male (navy) students. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *Key takeaway: The linear relationship between cumulative first-year GPA and SAT score is similar across male and female Dartmouth students.*

A.4: Applications by Neighborhood Income Decile Pre and Post Test Optional



Notes: This figure uses data for Dartmouth applicants in years 2017-2018 (test-required) or 2021-2022 (test-optional). The two test-optional cohorts are on average 35% larger than the two test-required cohorts (see Table 2). *Key takeaway: The neighborhood income distribution of Dartmouth applicants looks similar for the test-required and test-optional cohorts.*

A.1: Regression of SAT Composite on Cumulative First Year GPA: Tests for Equality of Slopes

	(1) First Year GPA (Split By HS Challenge)	(2) First Year GPA (Split by Less Advantaged)	(3) First Year GPA (Split by First Gen)	(4) First Year GPA (Split by Gender)	(5) First Year GPA (Split By Family Income)
HS Disadvantage	-0.0577***				
Dummy	(0.0124)				
SAT Composite	0.00177***	0.00161***	0.00161***	0.00149***	0.00161***
(Centered at 1500)	(6.54e-05)	(5.39e-05)	(5.02e-05)	(6.18e-05)	(7.92e-05)
Low-Moderate Income *	-0.000300***				
SAT Composite (Centered at 1500)	(0.000102)				
Less Advantaged		-0.0993***			
		(0.0161)			
Less Advantaged * SAT		-0.000362***			
Composite (Centered at 1500)		(0.000108)			
First Generation			-0.139***		
			(0.0207)		
First Generation * SAT			-0.000565***		
Composite (Centered at 1500)			(0.000129)		
Male				-0.0320***	
				(0.00912)	
Male * SAT				0.000269***	
Composite (Centered at 1500)				(8.75e-05)	
Low Family Income					-0.0403***
					(0.0141)
Low Family Income * SAT					-0.000240**
Composite (Centered at 1500)					(0.000112)
Constant	3.636***	3.637***	3.635***	3.644***	3.621***
	(0.00568)	(0.00482)	(0.00471)	(0.00663)	(0.00825)
Observations	4,149	4,972	4,972	4,970	2,955
R-squared	0.235	0.220	0.221	0.218	0.213

Notes: This table uses data for enrolled Dartmouth students who applied in 2017-2018 (test-required) or 2021-2022 (test-optional). We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define "low income" as neighborhood income below the US 85th percentile. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: The linear relationship between SAT Composite and first-year GPA at Dartmouth varies little among subgroups.*

A.2: Analysis of High School GPA & SAT In Predicting 1st Year GPA: Full Sample With Dummies for Missing Values

	(1) First Year GPA	(2) First Year GPA	(3) First Year GPA	(4) First Year GPA Less Adv	(5) First Year GPA More Adv	(6) First Year GPA
SAT Composite Score	0.00158***		0.00138***	0.00129***	0.00158***	0.00135***
	(4.84e-05)		(5.00e-05)	(0.000133)	(5.49e-05)	(5.04e-05)
HS GPA		0.550***	0.331***			0.320***
		(0.0262)	(0.0254)			(0.0265)
Class Rank						-0.472***
						(0.107)
Missing SAT	-0.138***		-0.138***	-0.210***	-0.0731***	-0.134***
	(0.0136)		(0.0134)	(0.0342)	(0.0152)	(0.0134)
Missing HS GPA		0.00474	0.0447*			0.0417*
		(0.0273)	(0.0252)			(0.0252)
Missing Class Rank						0.00683
						(0.00935)
Constant	1.271***	1.447***	0.281***	1.630***	1.275***	0.374***
	(0.0716)	(0.102)	(0.103)	(0.186)	(0.0820)	(0.109)
Observations	4,662	4,662	4,662	788	3,874	4,662
R-squared	0.200	0.086	0.229	0.116	0.183	0.232

Notes: This table uses data for enrolled Dartmouth students who applied in 2017-2018 (test-required) or 2021-2022 (test-optional). We define "less-advantaged" students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: The SAT Composite offers more predictive power for first-year GPA at Dartmouth than high school GPA while including missing values.*

A.3: Analysis of SAT Reporting in The Admission Decision With Controls

	(1) Admitted 21-22 Less Adv Students	(2) Admitted 21-22 More Adv Students	(3) Admitted 21-22 First Gen Students	(4) Admitted 21-22 Not First Gen Students	(5) Admitted 21-22 Least HS Advantage	(6) Admitted 21-22 Low-Moderate HS Advantage	(7) Admitted 21-22 Higher HS Advantag e	(8) Admitted 21-22 Lower Income	(9) Admitted 21-22 Higher Income
Reported SAT	-0.0112	0.00604	-0.0124	0.00323	-0.0373*	-0.00921	0.00687	-0.00943	0.00256
	(0.00858)	(0.00734)	(0.0103)	(0.00666)	(0.0191)	(0.00800)	(0.0108)	(0.0104)	(0.00779)
SAT 1420 or Higher	-0.0295	0.0186*	-0.0233	0.0125	-0.0518	0.00461	0.00613	-0.0365	0.00993
	(0.0201)	(0.00968)	(0.0243)	(0.00921)	(0.0699)	(0.0157)	(0.0135)	(0.0269)	(0.0107)
Uses SAT * SAT of 1420 or Higher	0.0977***	0.0357***	0.0880***	0.0418***	0.171**	0.0547***	0.0496***	0.104***	0.0437***
	(0.0215)	(0.0110)	(0.0262)	(0.0104)	(0.0732)	(0.0171)	(0.0156)	(0.0286)	(0.0122)
Admissions Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.0296***	0.00113	0.0322***	0.00530	0.0518***	0.0247***	0.00481	0.0299***	0.00961*
	(0.00595)	(0.00541)	(0.00702)	(0.00488)	(0.0131)	(0.00564)	(0.00775)	(0.00722)	(0.00560)
Observations	5,773	29,311	3,648	31,436	913	8,812	18,070	3,550	24,457
R-squared	0.098	0.109	0.099	0.108	0.127	0.097	0.114	0.094	0.106

Notes: This table uses data for Dartmouth applicants who applied in years 2021-2022. We define “less-advantaged” students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define “least”, “least-moderate”, & “higher” high school advantage as being in the bottom 1 decile (least), the bottom 8 deciles (least-moderate) and the top 2 deciles (higher) of the College Board Landscape index of challenges. We define “higher income” & “lower income” as neighborhood income above or below the US 85th percentile which splits the sample of enrolled students roughly in half. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: Dartmouth applicants who use scores of 1420 or higher are admitted at varying rates across subgroups while controlling for early decision and recruited athlete applicants.*

A.4: Analysis of SAT Reporting in The Admission Decision Simple Weighting

	(1) Admitted 21-22 All Students	(2) Admitted 21-22 Less Adv Students	(3) Admitted 21-22 More Adv Students	(4) Admitted 21-22 First Gen Students	(5) Admitted 21-22 Not First Gen Students	(6) Admitted 21-22 Least HS Advantage	(7) Admitted 21-22 Low-Moderate HS Advantage	(8) Admitted 21-22 Higher HS Advantage	(9) Admitted 21-22 Lower Income	(10) Admitted 21-22 Higher Income	(11) Admitted 21-22 School w Few Applicants	(12) Admitted 21-22 School w More Applicants
Reported SAT	-0.00567	-0.0105	-0.000592	-0.0116	-0.00190	-0.0339**	-0.0103*	-0.00319	-0.00847	-0.00498	-0.00567	-0.00546
	(0.00358)	(0.00675)	(0.00386)	(0.00856)	(0.00370)	(0.0164)	(0.00593)	(0.00609)	(0.00832)	(0.00465)	(0.00463)	(0.00564)
SAT 1420 or Higher	0.00820	-0.0161	0.0203***	-0.00668	0.0155**	-0.0659***	0.0101	0.0139	-0.0290**	0.0167**	-0.00628	0.0135
	(0.00618)	(0.0137)	(0.00675)	(0.0202)	(0.00643)	(0.0130)	(0.0138)	(0.00918)	(0.0136)	(0.00802)	(0.00854)	(0.00830)
Report SAT * SAT 1420 or higher	0.0534***	0.0869***	0.0447***	0.0728***	0.0490***	0.183***	0.0528***	0.0565***	0.0989***	0.0495***	0.0526***	0.0524***
	(0.00684)	(0.0156)	(0.00745)	(0.0225)	(0.00711)	(0.0291)	(0.0149)	(0.0103)	(0.0168)	(0.00883)	(0.00955)	(0.00937)
Constant	0.0281***	0.0419***	0.0177***	0.0459***	0.0204***	0.0659***	0.0381***	0.0245***	0.0412***	0.0264***	0.0271***	0.0294***
	(0.00269)	(0.00498)	(0.00284)	(0.00622)	(0.00275)	(0.0130)	(0.00446)	(0.00449)	(0.00608)	(0.00348)	(0.00354)	(0.00414)
Observations	34,680	5,748	28,932	3,639	31,041	910	8,756	17,784	3,533	24,133	11,562	23,118
R-squared	0.015	0.013	0.017	0.009	0.017	0.014	0.012	0.016	0.013	0.015	0.010	0.013

Notes: This table uses data for Dartmouth applicants who applied in years 2021-2022. We define “less-advantaged” students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define “least”, “least-moderate”, & “higher” high school advantage as being in the bottom 2 deciles (least), the bottom 8 deciles (least-moderate) and the top 2 deciles (higher) of the College Board Landscape index of challenges. We define “higher income” & “lower income” as neighborhood income above or below the US 50th percentile. We define “school with few applicants” & “school with more applicants” as having fewer or more than 10 applicants from the applicants’ school. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: Dartmouth applicants who use scores of 1420 or higher are admitted at varying rates across subgroups.*

A.5: Analysis of SAT Reporting in The Admission Decision Propensity Score Weighting

	(1) Admitted 21-22 All Students	(2) Admitted 21-22 Less Adv Students	(3) Admitted 21-22 More Adv Students	(4) Admitted 21-22 First Gen Students	(5) Admitted 21-22 Not First Gen Students	(6) Admitted 21-22 Least HS Advantage	(7) Admitted 21-22 Low-Moderate HS Advantage	(8) Admitted 21-22 Higher HS Advantage	(9) Admitted 21-22 Lower Income	(10) Admitted 21-22 Higher Income	(11) Admitted 21-22 School w Few Applicants	(12) Admitted 21-22 School w More Applicants
Reported SAT	-0.00186	-0.0124*	0.00291	-0.0134	0.00214	-0.0366**	-0.0109*	-0.00331	-0.00985	-0.00483	5.65e-05	-0.00465
	(0.00337)	(0.00699)	(0.00352)	(0.00883)	(0.00338)	(0.0170)	(0.00603)	(0.00614)	(0.00850)	(0.00466)	(0.00417)	(0.00563)
SAT 1420 or Higher	0.00957	-0.0149	0.0202***	-0.00670	0.0169***	-0.0686***	0.00982	0.0163*	-0.0298**	0.0179**	7.67e-05	0.0123
	(0.00598)	(0.0154)	(0.00632)	(0.0214)	(0.00613)	(0.0138)	(0.0140)	(0.00971)	(0.0142)	(0.00824)	(0.00913)	(0.00815)
Report SAT * SAT 1420 or higher	0.0520***	0.0856***	0.0448***	0.0728***	0.0476***	0.186***	0.0530***	0.0541***	0.0997***	0.0482***	0.0462***	0.0536***
	(0.00666)	(0.0172)	(0.00707)	(0.0236)	(0.00685)	(0.0295)	(0.0151)	(0.0108)	(0.0173)	(0.00903)	(0.0101)	(0.00924)
Constant	0.0243***	0.0438***	0.0142***	0.0477***	0.0164***	0.0686***	0.0386***	0.0246***	0.0425***	0.0262***	0.0213***	0.0286***
	(0.00240)	(0.00530)	(0.00236)	(0.00658)	(0.00230)	(0.0138)	(0.00460)	(0.00455)	(0.00632)	(0.00349)	(0.00290)	(0.00412)
Observations	34,680	5,748	28,932	3,639	31,041	910	8,756	17,784	3,533	24,133	11,562	23,118
R-squared	0.017	0.013	0.020	0.009	0.020	0.016	0.012	0.015	0.014	0.015	0.013	0.014

Notes: This table uses data for Dartmouth applicants who applied in years 2021-2022. We define “less-advantaged” students as those who are any of: U.S. first-generation college going, from a neighborhood with median income below the 50th percentile for the U.S., or attended a U.S. high school in the top 20% of the College Board's index for challenge. We define “least”, “least-moderate”, & “higher” high school advantage as being in the bottom 2 deciles (least), the bottom 8 deciles (least-moderate) and the top 2 deciles (higher) of the College Board Landscape index of challenges. We define “higher income” & “lower income” as neighborhood income above or below the US 50th percentile. We define “school with few applicants” & “school with more applicants” as having fewer or more than 10 applicants from the applicants’ school. The SAT Composite is used for all applicants where reported. Where only ACT is available, scores are rescaled to the SAT scale. *** Statistically significant at the 1% level. *Key takeaway: Dartmouth applicants who use scores of 1420 or higher are admitted at varying rates across subgroups.*