

Early Decision and College Performance

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Abstract

This paper examines the relationship between admission status and college performance. In particular, we analyze admissions data from Hamilton College and find that students who applied through the Early Decision Plan II program have significantly lower GPAs and are less likely to receive departmental honors, fellowships, and outside scholarships than those admitted through the regular decision process. However, the results for Early Decision Plan I students are less consistent. These students have lower outcomes for some measures of academic achievement, but not others, than regular decision students.

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1. Introduction

College admissions staff at highly selective colleges sort through thousands of applications for undergraduate admissions each year in an attempt to identify the best candidates. While there are multiple possible definitions of “success” in college, academic success is certainly one dimension. In this paper, we investigate the relationships between measures of academic success and applicant characteristics, drawing upon the literature in the economics of education and educational psychology about predictors of academic success. Previous research on the determinants of undergraduate GPAs has examined the effects of standardized test scores, high school rank, and personal characteristics. Betts and Morrell (1999) find significant links between family income and secondary school resources and undergraduate GPAs. Cohn et al. (2004) conclude that SAT scores are important predictors of college performance, though Barron and Norman (1992) find that SAT scores do not contribute to the prediction of overall college GPAs once high school rank and achievement test scores are controlled for. Cornwell et al. (2005) and Grove et al. (2006) also find that SAT scores predict academic success in college as measured by GPA. Recent work (Cornwell et al. 2008) examines how well the new SAT exam, particularly the new writing section, predicts college academic achievement. Other studies have looked at the effects of various admissions policies such as making the SAT optional for admission at Mount Holyoke College (Monks and Robinson 2004) and instituting race-neutral admissions standards at the University of Texas (Niu et al. 2006 and Dickson 2006).

We focus, however, on one aspect of an applicant’s profile that has not been previously examined: the early decision status. Specifically, we ask whether there is a relationship between applying early and a student’s college academic performance once we have controlled for other factors. Are students who are admitted as early decision applicants either under- or over-performing compared to students admitted via regular decision? In light of continuing controversy about whether early decision programs are unnecessarily restrictive or unfair to minority and lower-income applicants, this information is potentially of interest to admissions officers assessing their admissions criteria and thinking about admissions policy in general. Although the policy of early admissions to colleges and universities has received considerable attention, researchers have placed most of their emphasis on how early admissions affects the chances of being admitted to a particular school or on how it influences the

composition of an entering class. In this paper, we examine another aspect of early admissions programs: the relationship between admission status (early versus regular admission) and college performance.

Overall, we find that students who are admitted to Hamilton College through the Early Decision Plan II (ED II) program have lower GPAs and are less likely to receive honors, fellowships, and outside scholarships than those admitted through the regular decision process. However, the outcomes for Early Decision Plan I (ED I) students are not statistically different from regular decision candidates. These results hold after controlling for high school aptitude, SAT test scores, and a number of other background characteristics. While the results are fairly robust to a number of specifications, they are somewhat sensitive to the years analyzed. The remainder of the paper is organized as follows. Section 2 explains the two types of early decision programs offered at Hamilton. Section 3 introduces the data and discusses the empirical strategy of the paper. Section 4 presents the results and section 5 concludes.

2. Early Decision

Most colleges and universities offer either an early decision or an early action program. Under “traditional” early decision (ED), a student applies earlier in the application cycle and receives an admission decision considerably before the usual spring notification date. A student applying early decision makes a binding commitment: if accepted by an institution under early decision, he or she must withdraw all other applications and enroll at that institution. Some schools now have two rounds of early decision: ED I is the “traditional” program, with an application deadline in November and notification of the decision in December, and ED II, while also binding on the student, has a later deadline (typically, January 1) and notification of the decision (February). An ED II program thus allows a student who has been rejected or deferred under one school’s ED I program a chance at early decision at a second institution.¹

Early action programs offer students the opportunity to be accepted before the normal spring date, but do not require binding commitments like the early decision programs. These non-binding early action programs are less common among colleges and universities. Presumably one reason that fewer schools offer early action (as

¹ Some students who have been rejected or deferred through early decision will be able to file a new application to a second institution as an ED II candidate. Alternatively, a student can convert a regular decision application that has already been filed into an ED II application.

opposed to early decision) is that early action programs do not offer the benefits to the institutions of managing their enrollments and their yield, which is the percentage of accepted students that eventually matriculate.

Debate about early decision continues.² Proponents point out that applying early can increase a student's chance of being admitted, especially to highly selective colleges³, that it can reduce a student's stress during the senior year of high school, and that the program allows colleges to be more thoughtful in choosing an entering class. Opponents worry that the students who apply under early decision programs are disproportionately from wealthier families, and that these families have better access to information and are less likely to need to compare financial aid packages from different institutions than are lower-income families. Additionally, critics argue that some high school seniors feel pressure to apply early decision even when they have not found their best "match." Because of the criticism, a few mostly elite schools such as Yale, Harvard, Princeton, and the University of Virginia have dropped their early decision programs.⁴ However, early decision remains an important part of admissions for many schools and for applicants. Indeed, the most recent data indicate that the number of early decision applications is up compared to previous years at many private institutions. For example, Wesleyan University reported an increase of 40 percent in the number of early decision applications in the fall of 2008 compared to the previous year. Early decision applications increased about 10 percent at Dartmouth, Middlebury, and Bowdoin; Haverford's increase was about 14 percent, while Hamilton also saw an increase of about 8 percent.⁵

Despite the controversy over early decision programs and their importance, no previous research has asked whether application status affects academic performance. It is possible, for example, that a student accepted early is particularly excited about an institution and that this excitement will translate into increased motivation to study, resulting in better academic performance. Another possible story is that a student accepted under ED II is disappointed about having been rejected by a first choice and thus underperforms academically. Or perhaps students who apply early have unobserved quality differences that are not reflected through any application data.

² See Avery et al. (2003) for a comprehensive discussion of the early admissions process.

³ For example, recent data (students entering in fall of 2007) show that the acceptance rate at Williams College for students applying early decision was 40 percent while the acceptance rate for students applying regular decision was 16.5 percent. Similarly, the acceptance rate for ED at Cornell was 36.5 percent compared to 19.7 percent for students applying regular decision.

⁴ Even the colleges that have dropped their early decision programs offer opportunities for some athletes to apply early and to receive notification about whether they are going to get in months in advance of other applicants (Jaschik 2006).

⁵ Numbers compiled from Lewin (2008).

Our dataset allows us to investigate the relationship between application status and academic performance at a highly selective liberal arts college.

3. Empirical Model and Data

We estimate the predictors of college academic performance by using empirical models of the form

$$Y_i = \alpha + \beta X_i + \delta_1 EDI_i + \delta_2 EDII_i + \varepsilon_i$$

where Y is an academic outcome variable and X is a vector of variables including SAT scores, high school rank, demographic characteristics, and financial aid status. EDI is an indicator variable for students who were accepted under Early Decision Plan I and $EDII$ is an indicator variable for Early Decision Plan II students. For some regressions, we also include the admissions committee's summary rating of the student. We focus on undergraduate GPA as the primary academic outcome measure (first term, first year and cumulative), but we also use additional measures including whether an individual receives honors, is inducted into an honors society, or receives a particular academic prize or fellowship.

We begin with a sample of 4,130 students who entered Hamilton College from Fall 1999 through Fall 2007 and have non-missing data. Our data come from the Office of Admission and Financial Aid and the Registrar's Office. Table 1 lists the variables and summary statistics for the variables of interest.

A. Measures of Academic Success

We consider several measures of student performance during college. Three of these measures are based on grades: first-semester GPA, first-year GPA, and cumulative GPA at the time of graduation. The mean first-semester GPA for our sample is 84.99, the mean first-year GPA is 84.59, and the mean cumulative GPA is 86.13.⁶ There are three primary reasons that cumulative GPAs are higher than first term or first year grades. First, some students who do poorly in the first year (or first few years) either transfer or drop out, so they do not complete their degrees. Second, advanced undergraduates may perform better because they are more mature academically.

⁶ Grades at Hamilton are calculated on a 98 point scale. The highest grade of A+ has a point value of 98, a grade of A is assigned a point value of 95 and an A- is assigned a point value of 92. Letter grades in the B, C, and D range are analogously assigned, while an F grade is assigned a point value of 55. Double F grades (FF) are the lowest possible grade and are assigned a value of 40.

Finally, grades in upper level classes tend to be higher than grades in introductory classes, in part because students perform better in courses closer to their specialties.⁷ We use all of these measures as we are interested in predicting both the short run and long run success of enrolled students. First term and first year grades may have more of an idiosyncratic component than cumulative grades at the time of graduation, as students may still be adjusting to school. However, using these variables provides us with more observations: because the latest cohorts have yet to graduate, they do not have four year cumulative GPAs.

While these are the primary measures of success, we also use measures based on receipt of a variety of honors. Included here are: graduating with concentration honors in a particular department; receiving college awards such as fellowships, prize scholarships, and achievement prizes; being elected to academic honor societies such as Phi Beta Kappa or Sigma Xi; and winning a national award such as a Fulbright, a Goldwater Scholarship, or a Watson Fellowship. Table 1 shows that 29 percent of students graduate with honors, 22 percent are inducted into some academic honor society, and 23 percent receive at least some type of other award such as a prize scholarship, fellowship, achievement prize, or national award.

B. Control Variables

Building on previous empirical work, our model controls for a range of pre-college achievement variables, high school information, and personal characteristics. High school academic performance is measured by high school percentile rank; because not all high schools compute rank, we impute rank for those who did not report (about half of the students) using the mean high school rank for all students within a particular entering class, and we include an indicator variable for those with a missing rank. The average student is ranked in the top 12 percent of the high school graduating class. SAT scores also measure pre-college achievement; Table 1 shows that the mean verbal SAT for our sample was 640 with a standard deviation of 75. The mean math SAT score was 641 with a standard deviation of 70. Although the majority of students attended a public high school, roughly one-third of the sample attended a private school (either parochial or non-sectarian).

⁷ Prather et al. (1979) find evidence that increasing cumulative grade point average at a public university is due to students moving away from traditional curricula into courses and degree programs with grading standards reflecting their abilities and/or interests.

Available demographic characteristics include whether a student is female, the student's ethnicity (Caucasian, African-American, Hispanic, Native American, or Asian-American), and whether a student is from a foreign country. In our sample 51 percent are female, 4 percent African-American, 4 percent Hispanic, 6 percent Asian-American, and less than 1 percent Native American. Five percent of the students are foreign. Table 1 also indicates that 52 percent of our sample receives at least some form of financial aid. We include this as a control variable, hypothesizing that students who receive financial aid may differ in underlying motivation—and thus in academic performance in college—from students who do not receive financial aid. In addition, students receiving financial aid are more likely to be involved in campus work-study jobs, which may draw from available studying time.

We also have data on the admissions committee's overall rating of each student. Each application file is initially read by two members of the admissions staff and given a numerical rating. This variable is a summary statistic for each student, reflecting the admissions office staff's assessment of each student's file. This rating takes into account both information we have in our data, such as SAT scores and high school rank, and other information that we do not have in the data, including a subjective measure of high school quality, the student's admissions interview, letters of recommendation, extracurricular activities, and the personal essay.

The final two variables in Table 1 are of particular interest to us: variables indicating whether students were admitted under an early decision program. As shown, 25 percent of our sample was accepted under Early Decision Plan I (ED I) and an additional 17 percent enrolled as ED II students. The remaining students were accepted under regular decision.

4. Results

Table 2 presents the results of estimations investigating the relationships between applicant characteristics and measures of grades for the entire sample. Columns (1), (3), and (5) report the baseline specification for first-semester GPA, first-year GPA, and cumulative GPA at the time of graduation.⁸ As expected, the estimated effects of SAT verbal and math scores on GPA are positive and statistically significant. The coefficients on

⁸ Because we have grades from academic year 1999-2000 through 2007-08, the sample sizes differ for the different measures of GPA. We have nine years of observations for first-semester and first-year GPA but only six years of data for cumulative GPA.

verbal and math SAT in the first column of Table 2 imply that a 100-point increase in verbal SAT is associated with a 1.8 point increase in first-term GPA and a 100-point increase in math SAT is associated with a 1.2 increase in first term GPA (both on a 98-point scale), all else constant. Students with better high school rankings (lower rank signifies a better ranking) have higher first term, first year and cumulative grades. Recall that because many students do not report a high school rank, we imputed the average value for these students, but also included an indicator variable for those with imputed (missing) values. We find that those that do not report a high school rank have significantly lower grades than those that report a rank.

The results also show that ethnicity, gender, and high school type are significant predictors of academic achievement. In particular, notice that female students have GPAs that are between 1-2 points higher than male students, and those who attended a private non-sectarian high school have lower grades than other students. Interestingly, each of the coefficients on the indicator variable for receiving financial aid is positive, though only the one in the regression for first year grades is statistically significant (and only at the 10 percent level). Recall that a priori, it was unclear what the sign of this variable should be. On the one hand, students receiving financial aid may be more likely to have campus jobs that take away from potential studying time. On the other hand, those receiving financial aid may be more motivated and hard-working than others and may more greatly appreciate the value of their education. Our empirical result here suggests that the latter effect slightly dominates the former one.⁹

Our principal question is whether having been accepted under an early decision program is correlated with academic performance. The results in Table 2 show some evidence that students accepted ED I perform worse than would be predicted based on other characteristics, especially in their first semester and the first year. First term and first year GPAs for students admitted under ED I are about 0.5 points below those admitted under regular decision. Over the longer term, the difference is a bit smaller and not statistically significant. But the strongest effect—both in terms of statistical significance and estimated magnitude—is for students admitted under ED II. In these regressions, we find that students that were accepted under ED II have GPAs that are between 0.9-1.2 points below regular decision students, depending on the specific measures of grades used.

⁹ One might also argue that financial aid status proxies for family income, which might be correlated with student performance.

In Columns (2), (4), and (6), we add an additional predictor variable, the admissions committee's rating of an applicant, to the baseline specification for each of the measures of GPA. Note that because admissions committee ratings were not available for the classes entering in 1999 or 2000, we have two fewer years of data for these regressions than for the baseline regressions. For each measure of GPA, the estimated effect of the rating is positive and statistically significant at the 1 percent level, indicating that the rating includes useful information not captured by the other observable information. However, we still find that a number of the other variables are significant predictors of GPAs. SAT scores continue to predict first term (both verbal and math) and first year grades (verbal only), even after controlling for the admissions committee's ratings, though they are not significant in the cumulative GPA regression. Other demographic and high school characteristics are also still significant, though financial aid status is no longer significant for any of the outcomes.

After controlling for the admissions committee's rating, the coefficient on ED I status in the regression for first term grades is now only significant at the 10 percent level, and ED I no longer predicts first year or cumulative grades. Early Decision II, however, continues to be significant in all of the regressions, though the magnitude of the coefficients decreases: those admitted under ED II have GPAs that are between 0.6-0.8 points lower than those admitted under regular decision. Given the ongoing discussion about early decision programs and their importance for many institutions, these results warrant further exploration. Might admissions staff systematically overestimate the expected performance of applicants admitted under early decision or are other determinants (which admissions staff are aware of) responsible for the estimated effects?

One possibility is that recruited athletes apply early decision, with encouragement from coaches who need to fill their teams, especially at schools which do not offer athletic scholarships. In an interview, Christopher Avery (co-author of *The Early Admissions Game: Joining the Elite*) notes, "The general phenomenon is that athletics is always connected to the early programs. That's a place where the numbers of students really matters..." Jaschik (2006). Bowen and Levin (2003) find evidence that in many schools, recruited athletes underachieve in their college grade point averages. If a disproportionate number of recruited athletes are applying early decision (and especially ED II), this may explain our findings. Also, many legacies apply early decision; some schools, such as the University of Pennsylvania, publicly state that legacies receive "maximum consideration" as early decision applicants. One study of Duke University students shows that legacies have

lower grades in the first year of college, though no significant academic underperformance is evident in subsequent semesters (Martin and Spenner 2009).

In order to investigate these possibilities, we excluded both recruited athletes and legacies from our sample and re-estimated the specifications; Table 3 reports the results for this sub-sample. This table shows that the earlier results for SAT scores, personal characteristics, high school type, and high school rank also hold for this sample. As before, receiving financial aid is positively related to GPA, but this effect is not statistically significant once the admission committee rating is included. The estimated effect of the admission committee rating is again positive and statistically significant.

Our main focus is on the estimated effects of the early decision dummy variables for this restricted sample. After recruited athletes and legacies have been excluded, none of the estimated coefficients for ED I is statistically significant (although the signs of these coefficients remain negative). However, the estimated coefficients of the ED II dummy variable are still negative and statistically significant, both for the baseline regressions and for those including the admissions committee rating. The magnitude of this effect ranges from a lowering of cumulative GPA by 0.8 points to a decrease of 1.5 points for first-year GPA. In this sample also, students admitted under ED II are earning lower grades than would have been predicted by their other characteristics, and the magnitude of this differential is actually larger in the sample of non-recruited athletes and non-legacies.

So what accounts for the result that students admitted under ED II are underperforming in their grades relative to other students who are otherwise similar? And why is there a difference between those admitted under ED I versus those admitted under ED II? Perhaps EDII students are weaker along some dimension that we have not controlled for in our regressions. Recall that not all of the information available to an admissions committee is available in our data. However, these results persist even after controlling for the admissions committee's ratings. It is reasonable to expect that these subjective ratings are a good summary of all information that is available in an application file. The fact that ED II students have lower grades even after controlling for the committee ratings suggests that these potential differences in student quality are not being observed by admissions staff.

Another possibility is that those who are admitted under ED II are not as satisfied with their college experience and do not perform as well academically. While those who apply and are admitted under ED I might view Hamilton as a first-choice school, those admitted under ED II might comprise a number of students who initially applied early decision to another school and were rejected or deferred to the regular decision pool. After being rejected or deferred from their first-choice institution, some students may choose to “lock in” to another school by applying EDII; this EDII school might be viewed as a backup or a second-choice school. There is some weak evidence of this from a survey that Hamilton administers to graduating seniors. For the classes of 2004-2008, 30 percent of regular decision students and 32 percent of ED 1 students state they would “definitely” choose Hamilton if they had the chance to relive their college experience, while only 26 percent of students who were admitted under ED 2 make the same claim. However, these differences in means are not statistically significant, so this theory is merely speculative. More research is needed to explore these different hypotheses.

To test the robustness of our results, we investigated the effects of application status on academic performance in two additional ways. First, we estimated the regressions separately for each entering class, using first-year GPA as the dependent variable. The results of these yearly regressions are shown in Table 4. Not surprisingly, some of the relationships found in the larger samples do not hold for every individual year. However, the ED II results are fairly consistent except for the most recent classes, admitted in 2006 and 2007. It will be interesting to see what happens to this relationship as these students continue in college.¹⁰

Our final estimations examine alternative measures of academic success. Specifically, we looked at the receipt of a variety of honors and prizes at the time of graduation. Some of these are honors awarded by the college, such as departmental concentration honors and prize scholarships, and some are national awards, such as the Thomas Watson Fellowship or the Fulbright Scholarship. In addition to looking at receipt of each of these honors individually, we created indicator variables for the receipt of at least one honor or award in each category. Table 5 shows the marginal effects for various probit regressions.¹¹ The evidence of a relationship between early decision status and academic performance is striking. ED II students are significantly less likely to receive

¹⁰ We also estimated these individual year regressions using cumulative GPA as the dependent variable, and the EDII results are very consistent. The most recently admitted classes, however, have not completed their degrees and do not have cumulative GPAs.

¹¹ These regressions are based on the classes entering in 1999 through 2004, because later classes have yet to graduate.

concentration honors, become a member of an academic honors society, and receive fellowships or achievement prizes. The size of the marginal effects are remarkable: ED II students are 12 percent less likely to receive departmental honors, 8.3 percent less likely to be in an honors society, and 7.5 percent less likely to receive some other type of prize or award. There is also some evidence that ED I students are less likely to receive honors or other awards upon graduation, though the magnitude and significance of these effects are smaller. Overall, the results using alternative measures of academic success support our earlier findings: students admitted under early decision II have lower overall academic performance than otherwise similar students.

5 Conclusion

This paper represents the first analysis of the relationship between early decision status and college academic performance. By investigating this relationship, we contribute to the on-going discussion of early decision policies. In addition to thinking about the effect of early admissions policies on aspects of a student body such as ethnic composition and income status, admissions staff and educational researchers should consider whether applying under an early decision program is related to subsequent performance.

Using a variety of measures of academic success for a multi-year sample, we find that students admitted under the Early Decision Plan II perform worse academically than would have been predicted given their other characteristics. Although these effects vary a bit over time, they are fairly consistent and hold for a variety of outcomes including grades and academic honors and prizes. Interestingly, our results hold even after we include a control for ratings by the admissions committee. Students admitted under the Early Decision Plan I have somewhat lower outcomes, though the magnitude and significance of these effects is not as great.

While we do not have a definitive explanation for our results, it is possible that application status (early versus regular) may be correlated with unobserved motivation or ability. In addition, many students who apply under ED II may have initially applied to another institution under ED I and been rejected by that institution. Consequently, these students might be less enthusiastic than regular decision students. Students who applied regular decision most likely had choices and enrolled at a given institution as the best option from their choices, but the students who applied ED II might have acted strategically at a time when they were still disappointed about their rejection from another institution. In any case, our results suggest that admissions staff might think

about students applying ED II and consider whether to adjust their ratings or their decisions to account for what appears to be a systematic overestimation of students' expected performance. Alternatively, colleges may want to closely examine their policies of multiple rounds of early decision, considering the potential costs as well as the benefits. A comprehensive analysis of the relationships among applicant characteristics, student satisfaction, and academic performance is something worthy of further research.

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Table 1: Summary Statistics

| Variable | Mean | Std. Dev. |
|---|--------|-----------|
| First Term GPA | 84.99 | 6.16 |
| First Year GPA | 84.59 | 7.44 |
| Cumulative GPA | 86.13 | 5.47 |
| Concentration Honors | 0.29 | 0.46 |
| Honor Society | 0.22 | 0.42 |
| Achievement Prize | 0.17 | 0.40 |
| Fellowship | 0.03 | 0.17 |
| Prize Scholarship | 0.09 | 0.28 |
| National Award | 0.02 | 0.13 |
| Any Award (excluding honors, honor society) | 0.23 | 0.39 |
| Verbal SAT | 639.68 | 75.27 |
| Math SAT | 640.77 | 70.25 |
| Foreign | 0.05 | 0.21 |
| African American | 0.04 | 0.20 |
| Hispanic | 0.04 | 0.19 |
| Asian American | 0.06 | 0.23 |
| Native American | 0.01 | 0.08 |
| Female | 0.51 | 0.50 |
| Private Non-Sectarian School | 0.32 | 0.47 |
| Parochial School | 0.02 | 0.14 |
| HS Rank (Percentile) | 12.61 | 4.41 |
| Missing Rank | 0.54 | 0.50 |
| Receive Financial Aid | 0.52 | 0.50 |
| Admissions Committee Rating | 11.43 | 2.96 |
| Early Decision 1 | 0.25 | 0.43 |
| Early Decision 2 | 0.17 | 0.37 |
| Observations | 4,130 | |

Table 2: Applicant Characteristics and Grades
 Dependent Variable is GPA (First term, First year, Cumulative)

| Explanatory Variable | <u>First Term</u> | | <u>First Year</u> | | <u>Cumulative</u> | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Verbal SAT | 0.018*** (0.001) | 0.010*** (0.001) | 0.014*** (0.002) | 0.006*** (0.002) | 0.012*** (0.001) | 0.002 (0.002) |
| Math SAT | 0.012*** (0.001) | 0.004** (0.002) | 0.011*** (0.002) | 0.003 (0.002) | 0.008*** (0.001) | -0.002 (0.002) |
| Foreign | 1.740*** (0.402) | 0.911** (0.430) | 1.279*** (0.485) | 0.197 (0.559) | 1.243*** (0.439) | -0.032 (0.517) |
| African American | -1.307*** (0.493) | -0.524 (0.551) | -2.136*** (0.602) | -1.236* (0.728) | -2.905*** (0.523) | -2.657*** (0.653) |
| Hispanic | -1.467*** (0.447) | -1.093** (0.494) | -1.489*** (0.541) | -0.894 (0.645) | -1.019** (0.475) | -1.137* (0.582) |
| Asian American | -0.728** (0.355) | -0.677* (0.377) | -0.710* (0.429) | -0.748 (0.492) | -0.123 (0.389) | -0.114 (0.450) |
| Female | 1.563*** (0.167) | 1.295*** (0.183) | 1.503*** (0.202) | 1.215*** (0.239) | 2.077*** (0.173) | 1.706*** (0.206) |
| Private Non-Sectarian School | -0.668*** (0.205) | -0.588*** (0.222) | -0.824*** (0.248) | -0.815*** (0.290) | -0.512** (0.215) | -0.452* (0.254) |
| Parochial School | -0.459 (0.572) | -0.801 (0.652) | -0.918 (0.691) | -0.236 (0.851) | -0.668 (0.573) | -0.844 (0.720) |
| HS Percentile Rank | -0.086*** (0.009) | -0.052*** (0.010) | -0.090*** (0.011) | -0.053*** (0.013) | -0.075*** (0.008) | -0.040*** (0.009) |
| Missing Rank | -1.549*** (0.195) | -1.199*** (0.217) | -1.213*** (0.236) | -0.756*** (0.283) | -1.083*** (0.203) | -0.734*** (0.246) |
| Receive Financial Aid? | 0.264 (0.182) | -0.060 (0.198) | 0.425* (0.220) | 0.192 (0.259) | 0.128 (0.187) | -0.193 (0.220) |
| Early Decision 1 | -0.526*** (0.197) | -0.397* (0.213) | -0.518** (0.239) | -0.361 (0.278) | -0.323 (0.208) | -0.271 (0.242) |
| Early Decision 2 | -0.936*** (0.230) | -0.557** (0.247) | -1.229*** (0.279) | -0.824** (0.322) | -1.136*** (0.245) | -0.770*** (0.282) |
| Admissions Committee Rating | ... | 0.558*** (0.049) | ... | 0.554*** (0.064) | ... | 0.538*** (0.057) |
| Constant | 66.460*** (1.066) | 70.569*** (1.222) | 69.191*** (1.291) | 73.350*** (1.599) | 74.244*** (1.102) | 80.830*** (1.438) |
| Observations | 4,128 | 3,105 | 4,118 | 3,100 | 2,749 | 1,727 |
| R-squared | 0.25 | 0.27 | 0.16 | 0.15 | 0.24 | 0.25 |

Notes: All regressions include year dummies. Standard errors are in parentheses
 * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3: Applicant Characteristics and Grades
Sample of Non-Recruited Athletes and Non-Legacies
Dependent Variable is GPA (First term, First year, Cumulative)

| Explanatory Variable | <u>First Term</u> | | <u>First Year</u> | | <u>Cumulative</u> | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Verbal SAT | 0.015*** (0.002) | 0.008*** (0.002) | 0.012*** (0.002) | 0.005* (0.003) | 0.010*** (0.001) | 0.005*** (0.002) |
| Math SAT | 0.013*** (0.002) | 0.006*** (0.002) | 0.011*** (0.002) | 0.005* (0.003) | 0.010*** (0.001) | 0.004* (0.002) |
| Foreign | 1.180** (0.460) | 0.269 (0.504) | 1.367** (0.562) | 0.317 (0.687) | 0.707* (0.386) | -0.276 (0.434) |
| African American | -1.717*** (0.581) | -1.178* (0.679) | -2.680*** (0.715) | -1.915** (0.936) | -2.941*** (0.486) | -2.730*** (0.584) |
| Hispanic | -1.929*** (0.522) | -1.813*** (0.600) | -1.880*** (0.637) | -1.309 (0.817) | -1.815*** (0.436) | -2.208*** (0.516) |
| Asian American | -0.891** (0.406) | -0.987** (0.450) | -0.767 (0.496) | -0.949 (0.613) | -0.968*** (0.340) | -1.305*** (0.388) |
| Female | 1.339*** (0.206) | 1.001*** (0.238) | 1.155*** (0.252) | 0.704** (0.325) | 1.751*** (0.174) | 1.361*** (0.205) |
| Private Non-Sectarian School | -0.691*** (0.260) | -0.669** (0.298) | -0.990*** (0.318) | -1.242*** (0.407) | -0.521** (0.219) | -0.525** (0.257) |
| Parochial School | -0.038 (0.732) | -0.094 (0.937) | -0.918 (0.894) | 0.535 (1.277) | -0.289 (0.617) | -0.180 (0.809) |
| HS Rank (imputed) | -0.082*** (0.011) | -0.052*** (0.012) | -0.092*** (0.013) | -0.060*** (0.017) | -0.083*** (0.009) | -0.048*** (0.010) |
| Missing Rank | -1.306*** (0.239) | -1.102*** (0.280) | -1.001*** (0.293) | -0.591 (0.382) | -1.055*** (0.201) | -0.837*** (0.241) |
| Receive Financial Aid? | 0.553** (0.224) | 0.305 (0.257) | 0.642** (0.274) | 0.444 (0.350) | 0.346* (0.188) | 0.217 (0.221) |
| Early Decision 1 | -0.331 (0.255) | -0.307 (0.290) | -0.313 (0.312) | -0.273 (0.395) | -0.205 (0.214) | -0.233 (0.250) |
| Early Decision 2 | -0.937*** (0.310) | -0.784** (0.350) | -1.505*** (0.378) | -1.330*** (0.476) | -0.899*** (0.259) | -0.760** (0.300) |
| Admissions Committee Rating | ... | 0.427*** (0.066) | ... | 0.436*** (0.090) | ... | 0.357*** (0.055) |
| Constant | 67.599*** (1.298) | 72.387*** (1.603) | 70.087*** (1.585) | 74.204*** (2.186) | 74.735*** (1.091) | 78.585*** (1.380) |
| Observations | 2,838 | 1,931 | 2,832 | 1,929 | 2,842 | 1,935 |
| R-squared | 0.24 | 0.23 | 0.16 | 0.13 | 0.23 | 0.22 |

Notes: All regressions include year dummies. Standard errors are in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Applicant Characteristics and Grades
 Separate Regressions By Year of Entry
 Dependent Variable is First Year GPA

| Explanatory Variable | Year Entered College | | | | | | | | |
|------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Verbal SAT | 0.020*** (0.005) | 0.022*** (0.004) | 0.013** (0.005) | 0.013*** (0.004) | 0.011** (0.004) | 0.014*** (0.005) | 0.015*** (0.005) | 0.016*** (0.005) | 0.007* (0.004) |
| Math SAT | 0.009* (0.005) | 0.010** (0.004) | 0.004 (0.006) | 0.007* (0.004) | 0.010* (0.005) | 0.008 (0.005) | 0.008 (0.005) | 0.012* (0.006) | 0.021*** (0.004) |
| Foreign | 7.442*** (1.816) | 2.938** (1.246) | 3.097 (1.920) | 2.209 (1.416) | 1.091 (1.240) | 1.513 (1.482) | -1.278 (1.328) | 1.666 (1.680) | -2.159* (1.208) |
| African American | -1.106 (1.513) | -4.098*** (1.423) | -0.146 (2.487) | 0.289 (1.761) | -4.957*** (1.714) | -6.184*** (2.221) | -2.756 (1.708) | 0.141 (2.134) | 0.918 (1.762) |
| Hispanic | 0.433 (1.481) | -2.048 (1.336) | -4.833** (2.131) | -1.136 (1.474) | -0.221 (1.861) | -1.209 (1.558) | -3.577** (1.627) | 1.192 (2.020) | -2.687** (1.312) |
| Asian American | 1.137 (1.353) | 1.755 (1.134) | 1.749 (1.583) | -1.128 (1.180) | -1.093 (1.420) | -1.764 (1.208) | -1.299 (1.171) | -1.338 (1.597) | -2.040** (1.009) |
| Female | 0.701 (0.585) | 1.340*** (0.510) | 1.846*** (0.684) | 1.291** (0.513) | 1.529** (0.609) | 1.773*** (0.621) | 1.506** (0.592) | 1.278 (0.805) | 2.032*** (0.548) |
| Private Non-Sect. SS | -1.296* (0.762) | 0.246 (0.646) | -1.665* (0.848) | -0.536 (0.641) | -0.089 (0.735) | -2.162*** (0.743) | -1.344* (0.723) | 0.412 (0.948) | -0.924 (0.647) |
| Parochial SS | 1.367 (1.964) | -4.835*** (1.344) | 1.549 (2.165) | 1.672 (2.059) | -3.339 (2.109) | -1.458 (2.356) | 1.090 (1.709) | 0.019 (3.695) | -1.618 (2.478) |
| HS Rank (imputed) | -0.130*** (0.029) | -0.141*** (0.028) | -0.061*** (0.021) | -0.079*** (0.030) | -0.101*** (0.038) | -0.041 (0.043) | -0.078* (0.044) | -0.054 (0.053) | -0.152*** (0.042) |
| Missing Rank | -1.529** (0.713) | -1.489** (0.599) | -0.348 (0.821) | -2.182*** (0.608) | -1.824*** (0.704) | -0.125 (0.696) | -0.049 (0.697) | -1.599* (0.922) | -2.445*** (0.628) |
| Receive Financial Aid? | -0.165 (0.636) | 0.839 (0.545) | 0.497 (0.734) | -0.461 (0.542) | 0.223 (0.683) | 0.094 (0.658) | 1.298** (0.656) | 0.928 (0.854) | -0.149 (0.631) |
| Early Decision 1 | 0.636 (0.736) | -0.422 (0.618) | -0.436 (0.836) | -1.259** (0.586) | -0.363 (0.738) | -1.715** (0.714) | -0.855 (0.703) | -0.217 (0.904) | -0.006 (0.619) |
| Early Decision 2 | -0.496 (1.032) | -1.688** (0.718) | -1.372 (0.937) | -1.111 (0.737) | -2.088** (0.837) | -2.133*** (0.810) | -2.575*** (0.753) | -0.461 (1.055) | 0.343 (0.741) |
| Constant | 67.521*** (3.399) | 66.213*** (3.166) | 74.605*** (4.425) | 74.469*** (3.560) | 73.910*** (4.266) | 72.309*** (4.049) | 71.646*** (3.901) | 67.156*** (5.070) | 69.912*** (3.542) |
| Observations | 480 | 451 | 445 | 478 | 443 | 439 | 481 | 466 | 435 |
| R-squared | 0.21 | 0.35 | 0.13 | 0.16 | 0.16 | 0.19 | 0.19 | 0.07 | 0.25 |

Notes: Standard errors are in parentheses
 * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Applicant Characteristics and Other Outcome Measures
Marginal Effects of Probit Regressions

| Explanatory Variable | <u>Received following prizes or honors upon graduation</u> | | | | | | |
|------------------------|--|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|
| | Conc. Honors | Honor Soc. | Ach. Prize | Fellowship | Prize Scholar | Nat'l. Award | Any Award |
| Verbal SAT | 0.001*** (0.000) | 0.001*** (0.000) | 0.001*** (0.000) | 0.000 (0.000) | 0.000 (0.000) | 0.000* (0.000) | 0.001*** (0.000) |
| Math SAT | 0.000** (0.000) | 0.001*** (0.000) | 0.000 (0.000) | 0.000*** (0.000) | 0.000* (0.000) | 0.000 (0.000) | 0.000 (0.000) |
| Foreign | 0.081 (0.050) | 0.102** (0.049) | 0.149*** (0.047) | -0.001 (0.013) | 0.133*** (0.040) | -0.009* (0.005) | 0.139*** (0.049) |
| African American | -0.045 (0.057) | -0.150*** (0.036) | 0.065 (0.055) | 0.021 (0.030) | -0.008 (0.030) | -0.004 (0.010) | 0.076 (0.058) |
| Hispanic | -0.129*** (0.045) | -0.097** (0.039) | 0.052 (0.048) | -0.006 (0.015) | 0.022 (0.033) | -0.005 (0.009) | 0.043 (0.050) |
| Asian American | -0.001 (0.042) | 0.024 (0.038) | 0.010 (0.035) | -0.005 (0.010) | -0.030 (0.018) | 0.002 (0.009) | -0.028 (0.036) |
| Female | 0.126*** (0.018) | 0.074*** (0.017) | 0.019 (0.015) | 0.013** (0.005) | 0.013 (0.010) | 0.007 (0.004) | 0.041** (0.017) |
| Private Non-Sect. SS | -0.043* (0.023) | -0.013 (0.021) | -0.044** (0.018) | -0.002 (0.007) | -0.012 (0.013) | -0.004 (0.005) | -0.049** (0.021) |
| Parochial SS | -0.041 (0.060) | -0.014 (0.057) | -0.092*** (0.035) | -0.011 (0.013) | 0.033 (0.041) | 0.001 (0.014) | -0.092** (0.045) |
| HS Rank (imputed) | -0.004*** (0.001) | -0.003*** (0.001) | -0.003*** (0.001) | -0.000 (0.000) | -0.000 (0.000) | 0.000 (0.000) | -0.003*** (0.001) |
| Missing Rank | -0.056*** (0.022) | -0.096*** (0.020) | -0.043** (0.017) | -0.002 (0.006) | -0.025** (0.012) | -0.005 (0.005) | -0.052*** (0.020) |
| Receive Financial Aid? | 0.020 (0.020) | 0.017 (0.018) | 0.028* (0.016) | 0.006 (0.006) | 0.050*** (0.011) | 0.015*** (0.005) | 0.062*** (0.018) |
| Early Decision 1 | -0.043** (0.021) | -0.047** (0.019) | 0.009 (0.018) | -0.013** (0.005) | -0.000 (0.012) | -0.006 (0.004) | -0.007 (0.020) |
| Early Decision 2 | -0.120*** (0.024) | -0.083*** (0.021) | -0.073*** (0.018) | -0.013** (0.006) | -0.011 (0.014) | -0.006 (0.005) | -0.075*** (0.022) |
| Observations | 2,776 | 2,776 | 2,776 | 2,776 | 2,776 | 2,776 | 2,776 |
| Pseudo R-squared | 0.083 | 0.083 | 0.064 | 0.090 | 0.074 | 0.079 | 0.061 |

Notes: All regressions include year dummies. Standard errors are in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%