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ABSTRACT

A study was conducted that focused on 5-year graduation as a criterion for success at a major Eastern university, and a set of predictors for use by those concerned with admissions policy was developed. The best predictors of 5-year graduation were persistence to the second year and first-year cumulative grade-point average. Among pre-college variables, the Scholastic Aptitude Tests (SAT) and high school rank predicted graduation poorly, and the inclusion of achievement test information increased the multiple correlation by only a small amount. Other demographic variables improved the prediction somewhat, with math-related variables contributing the most. The utility and strength of predictor variables differed among gender and racial/ethnic groups. Contains 15 references. (Author/KM)

EXPLORING THE MURKY WORLD OF ADMISSIONS PREDICTIONS

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Teresa Karolewski
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Forum Publications Editorial
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EXPLORING THE MURKY WORLD OF ADMISSIONS PREDICTIONS

Abstract

This study focuses on five-year graduation as a criterion for success at a major Eastern university, and attempts to develop a set of predictors for use by those concerned with admissions policy. The best predictors of five-year graduation were persistence to the second year and first-year cumulative GPA. Among pre-college variables the Scholastic Aptitude Tests (SAT) and high school Rank predicted graduation poorly, and the inclusion of achievement test information increased the multiple correlation by only a small amount. Other demographic variables improved the prediction somewhat, with math-related variables contributing the most. The utility and strength of predictor variables differed among gender and racial/ethnic groups.

EXPLORING THE MURKY WORLD OF ADMISSIONS PREDICTIONS

Introduction

In recent years college admissions tests have been strongly criticized as predictors of success in college. One of the most serious reasons is their alleged bias again women and minorities (e.g., Gonzalez-Tamayo, 1984; Nairn and Associates, 1980). Although several studies have found that women earn higher grades than men in both high school and college (e.g., Kanarek, 1988), it has been well-documented that women score lower than men on the Scholastic Aptitude Tests -- the SATs (Admissions Testing Program, 1967-1988). Gamache and Novick (1985) also found evidence of gender bias in the use of the ACT to predict freshman grades in selected academic areas. According to Rosser (1987), low test scores reduce girls' perceptions of their own abilities, reduce entry into "gifted" programs, and penalize them in certain scholarship programs (such as the National Merit Scholarships).

Other criticisms of the use of the SAT in admissions prediction concern whether the test is really an achievement test (Jencks and Crouse, 1982), and their predictive validity. Humphreys (1968) concluded that the SAT cannot predict grades after the freshman year, but Mauger and Kolmodin (1975) found evidence that the test's validity is high enough "to be of use in predicting how well the typical student would do during the course of his college career." Elliott and Strenta (1988) found that adjusting the criterion variable (total grade-point averaage or course grades) for different departmental grading standards improved the correlation with SAT-Verbal and Math (from .43 to .50). In addition, adjusting the grades slightly increased the amount of overprediction for Black students but decreased the amount of underprediction for women.

Bejar and Blew (1981) found that as grade inflation has reduced the valid-

ity of the high school record, the usefulness of the SAT (as measured by its contribution to multiple correlation) has increased, although its correlation with GPA has fluctuated somewhat. Willingham (1985) found that high school Rank and SAT predicted cumulative GPA about the same as they did first-year grades, but were less able to predict GPA in each of the students' four years. Trusheim and Middaugh (1987) found that "The SAT contributes little to the accuracy of predicting freshman grades beyond the predictiveness of high school."

Willingham (1985), in addition to providing an excellent review of the different approaches to the subject of predicting success in college, undertook a large-scale study to search for useful non-academic variables. Defining "success" in terms of a comprehensive set of academic and non-academic accomplishments (e.g., leadership, college honors, persistence), he found that "productive follow-through" in high school ("Purposeful, continuous commitment to certain types of activities versus sporadic efforts in diverse areas," p. 213) was the best predictor of overall success. He notes, however, that "extracurricular productivity is not a substitute for academic qualification" (p. 173), but is most useful as an additional or complementary qualification. In contrast, Trusheim and Middaugh (1987) found that personal qualities were not related to the prediction of freshman grades. They suggested that "The considerable effort required to collect personal quality information is not justified by the contribution of these measures to the prediction of freshman grades."

Allina (1985) studied seven institutions that have altered their admissions procedures. Bowdoin, for example, has made the submission of the SAT optional. Middlebury will accept SAT scores along with achievement test information (but will also take the ACT or achievement test scores alone). The Massachusetts Institute of Technology weights the scores differently for males

and females. "In addition to those schools, there are many selective colleges and universities, like Hampshire College, which never required such tests and which survive happily without them."

Nevertheless, for those institutions (large universities, in particular) who must process scores of thousands of applications, it has been difficult to discover some basis for admissions decisions that is a practical and superior alternative to some combination of high school performance and traditional admissions tests used to predict freshman grades. Most colleges do, however, consider other factors as well (extracurricular activities, essays, interviews, etc.) in making their decisions.

Background

A large public Eastern university begins its admissions process with the calculation of a so-called Admissions Index, which is a transformation of a predicted freshman-year cumulative grade-point average based upon a combination of SAT-Verbal, SAT-Math, and high school Rank. Although high scores on this index may be used to flag promising applicants, all student folders are individually reviewed using criteria such as courses taken, number of honors or advanced placement courses, grade trends, extracurricular activities, and special circumstances (e.g., race/ethnicity, handicapped status).

The ultimate goal of these reviews is to select students who will be "successful" at the University. However, such success is not operationally defined or quantified. Although freshman GPA is the implied criterion, since it forms the basis of the calculation of the Admissions Index, no predicted grade point average (PGPA) is calculated, and the Admissions Index itself does not translate into an expected level of academic "success." The PGPA is calculated for institutional research purposes, however, both to provide a convenient comparison

with actual freshman performance and to permit comparisons across units of the University.[1]

The University Admissions Office is constantly striving to improve its ability to identify "successful" students, who are usually defined as those earning a satisfactory first-year GPA. In the search for ways to increase the correlation between pre-college academic performance and freshman grades, for example, one internal study found that the addition of the number of honors, advanced placement, or accelerated courses to the equation made very little difference in the multiple R.

The purposes of the present study were to look at one alternative criterion for success in college, namely five-year graduation, and to attempt to develop a set of variables, among those readily available to the Admissions Office, that would do a better job of predicting success than is currently possible.[2]

Method

The original cohort studied consisted of all students entering the University as a new freshman in the fall of 1981, 1982 or 1983. In order to keep the N's at a manageable level, the study group consisted of all Black, Hispanic, and Asian students from the three years and a 30% sample of all the White students. During the analysis phase, data for White students were weighted by a factor of 3.33 to compensate for the sampling. The University's longitudinal files provided data on demographic and academic pre-college variables, as well as college GPA and enrollment/graduation information.[3]

The study concentrated on five-year rather than four-year graduation as the principal criterion of success in college because a large percentage (15-20%) of students require a fifth year to graduate. The University has come to

realize that this is a more realistic time period, especially for minority students. Along the way, the study glanced at the prediction of freshman grades for purposes of comparison. The major analytical tools used in the study were regression analysis and discriminant function analysis. Most non-interval variables were dichotomized.

In addition to SAT and high school Rank, some of the other variables investigated included: parents' education (whether or not at least one parent had a bachelor's or higher degree); score on any CEEB Math achievement test; score on any CEEB English achievement test; gender; race/ethnicity; and predicted grade point average, based on SATV, SATM and Rank.

The Student Data Questionnaire (SDQ) portion of the SAT provided additional information for about two-thirds of the cases:[4] the average of the student's most recent high school course grades (self-reported); the most recent self-reported high school grades in English and Math; the number of years of high school Math taken; the student's assessment of his/her ability in mathematics, spoken expression, and written expression (ranging from "Below Average" to "Highest 1%"); participation in certain types of extracurricular activities during high school; and the number of different kinds of extracurricular activities participated in.

A few post-admission variables were also included in some of the analyses: three scores from the state tests of minimum basic skills (given to students attending college in the state) -- English[5], Math Computation, and Elementary Algebra; cumulative GPA at the end of the freshman year (FCUM); and whether or not the student persisted to the second year.

Regression and discriminant function analyses were performed three times for the total group and then separately by race/ethnicity and gender cate-

gories.[6] In the first analysis the only independent variables used were high school Rank, SAT-Verbal, and SAT-Math, the traditional set of predictors. This analysis generally produced the poorest results (lowest correlations, etc.).

The second type of analysis used as many of the independent variables as possible, with the caveat that the available N should be appropriately large (cases were excluded if they were missing any one of the variables). These analyses produced the best results (largest correlations, etc.). However, since the set of predictors included some variables which are not available during the admissions process (specifically the state tests of basic skills, persistence, and college grades), this analysis illuminated the relationships between the variables but did not produce results that would be of practical use in predicting success.

The independent variables used in the third analysis included all those used in the second with the exception of the post-admission basic skills tests and the two college measures (persistence and GPA).

Results

The regression analyses shown in Table 1 indicate that while SATs and Rank do predict first-year GPA moderately well (R=.438), by themselves they predict five-year graduation poorly (R=.289). Of all the variables investigated in this study, persistence to the second year is itself the single best predictor of five-year graduation (the zero order correlation was .488), and the correlation between FCUM and graduation is almost as high (r=.457). These two variables together account for 62% of the multiple correlation.

An attempt to predict second-year enrollment partially supports Willingham's (1985) observation that "persistence to the sophomore year (is) only slightly related to academic performance in college and (is) remarkably unpre-

Table 1

RESULTS OF STEPWISE MULTIPLE REGRESSION ANALYSIS

FIRST-YEAR GPA

Independent Variables (in order of inclusion)	R	Beta WEIGHT	Contribution to R
	.438		
RANK		.206	35.7%
SAT-V		.245	42.3
SAT-M		.127	22.0
	N=11,771		

FIVE-YEAR GRADUATION-I

Independent Variables	R	Beta WEIGHT	Contribution to R
	.289		
RANK		.142	36.9%
SAT-V		.115	29.9
SAT-M		.128	33.2
	N=11,905		

FIVE-YEAR GRADUATION-II

Independent Variables	R	Beta WEIGHT	Contribution to R
	.567		
Persistence		.349	35.1%
FCUM		.268	27.0
SAT-M		.080	8.0
RANK		.072	7.2
Math ability		-.045	4.5
Written Expression ability		-.068	6.8
Total English (Basic Skills)		.053	5.3
Parents' Education		.028	2.8
Spoken Expression ability		.031	3.1
	N=4,728		

dictable on the basis of any preadmissions measure" (p. 6). Including first-year GPA in a discriminant function analysis of second-year enrollment status results in a correct prediction of more than three-fourths of the students, with lambda equal to .846.[7] However, when FCUM is excluded, only 60% are correctly classified (final lambda of .987). Here PGPA contributes 30.6 to a total Rao's V of 52.3 (a large V represents a large difference between group means).

Thus there does not seem to be any way of combining the pre-college variables to produce a surrogate for persistence in the prediction of graduation. Such a surrogate is available, however, for FCUM, and that is the predicted first-year GPA. The correlation between predicted and actual GPA is .455 (that between high school grades and FCUM is .358), so that the efficacy of this surrogate is limited: the correlation between PGPA and five-year graduation is only .268 . Neverthless, PGPA and high school grades together are the best substitute for college grades available during the admission process, and are therefore both included in these analyses.

In the discriminant function analysis of five-year graduation, use of the traditional predictors results in a correct classification rate of 64%, with lambda at .916. When the total set of predictors is used (analysis II in Table 2), 79% are correctly assigned (lambda=.640). Note, however, that this set of variables does a much better job of predicting who will graduate than it does for students who have not graduated within five years.

Freshman GPA and persistence apart, five of the variables that contribute to the prediction of five-year graduation are related to mathematics: SAT-Math, self-rating of math ability, expected years of high school math, most recent grade in high school math, and the basic skills test of Elementary Algebra.[8] Only two of the remaining contributors are specifically related to verbal skills:

Table 2

RESULTS OF STEPWISE DISCRIMINANT FUNCTION ANALYSIS

FIVE-YEAR GRADUATION-II

Independent Variables (in order of inclusion)	Lambda	Change in Rao's V
FCUM	.791	971.2
Persistence	.697	621.0
SAT-M	.685	89.5
RANK	.682	26.0
Math ability	.678	35.7
Expected yrs of math	.676	10.5
Total English (Bas. Sk.)	.675	10.2
Written Expression ability	.674	9.6
PGPA	.673	5.8
Most recent Math grade	.673	4.2
High school grades	.671	12.8
Elem. Algebra (Bas. Sk.)	.671	3.5
Parents' education	.670	1.5

N (unweighted) 1,915
N (weighted) 3,667

Classification results:

		Predicted Not Grad.	Predicted Graduated
Actual	Not Graduated	61.7%	38.3%
	Graduated	12.1%	87.9%

Total correctly classified: 78.6%

FIVE-YEAR GRADUATION-III

Independent Variables	Lambda	Change in Rao's V
PGPA	.938	261.9
High school grades	.928	46.6
SAT-M	.920	36.3
Math ability	.906	67.6
Most recent Math grade	.903	11.0
Parents' education	.902	6.3
SAT-V	.901	5.7
RANK	.899	9.2
Written Expression ability	.898	4.5
Expected yrs. of math	.898	2.5
Sex	.898	1.2

N (unweighted) 2,091
N (weighted) 3,960

Classification results:

		Predicted Not Grad.	Predicted Graduated
Actual	Not Graduated	60.1%	39.9%
	Graduated	32.4%	67.6%

Total correctly classified: 64.8%

the English basic skills score and self-rating on Written Expression.

The analysis which uses only pre-admission variables (Table 2, analysis 3) results in a slightly better lambda (.897) than did SATs and Rank alone. The correct classification rate is almost identical (65%), however, and does not represent a strong relationship.

For those students submitting achievement test scores, the addition of the scores to the SAT-Rank regression equations does increase the multiple R, but by less than 7% for GPA (or an increase of 2.2% in the amount of variance explained) and 9% for five-year graduation (see Table 3).

Table 3

COMPARISON OF REGRESSION RESULTS USING

SATS AND ACHIEVEMENT TEST SCORES

	Criterion:	
	First-year GPA	Five-Year Graduation
R using SATs and Rank only	.395	.196
R, Rank + achieve. only	.414	.211
R, Rank + SAT + achieve.	.422	.214

Achievement test scores are not required for admission to the University and only about one-fifth of the students entering in 1981-1983 took any achievement test. Since those who did take any test differed significantly from those who did not on all other admissions credentials, no generalizations were made about the value of achievement tests as predictors of first-year GPA or graduation from this University.

Further analysis by gender and by race/ethnicity revealed some interesting patterns. Table 4 shows the means for most of the variables included in the analysis grouping the students by race/ethnicity, gender, and the different

Table 4

MEASURES OF ACADEMIC PERFORMANCE IN HIGH SCHOOL AND COLLEGE -- Part I

Classified by Race/Ethnicity and Gender

	SATV	SATM	TOTAL SAT	RANK	ENGLISH ACHV	MATH ACHV	MOST RECENT HIGH SCHOOL GRADES (SELF REPORTED) TOTAL	ENGL	MATH	EXPECTED YRS HS MATH
TOTAL	462	516	978	81.1	500	568	3.31	3.35	3.21	3.8
Male	468	546	1015	79.1	487	587	3.27	3.26	3.24	3.8
Female	456	488	944	82.9	516	546	3.34	3.42	3.18	3.7
White	496	552	104[illegible]	83.6	520	583	3.38	3.41	3.29	3.8
Black	386	406	792	73.2	420	453	2.98	3.11	2.76	3.7
Hispanic	397	433	831	77.1	448	502	3.26	3.31	3.08	3.7
Asian	411	538	949	80.7	461	586	3.31	3.23	3.46	3.8
White Male	496	576	1072	81.4	504	600	3.33	3.33	3.30	3.9
White Female	495	527	1023	86.0	540	561	3.44	3.51	3.28	3.8
Black Male	394	428	823	70.0	397	473	2.93	3.00	2.80	3.8
Black Female	381	394	775	74.9	437	440	3.01	3.16	2.75	3.6
Hispanic Male	406	463	869	73.9	432	514	3.21	3.24	3.03	3.7
Hispanic Female	390	408	798	80.0	469	482	3.30	3.37	3.13	3.6
Asian Male	406	556	963	78.9	442	599	3.27	3.07	3.51	3.8
Asian Female	415	521	936	82.3	476	573	3.35	3.37	3.43	3.9

Black, Hispanic, Asian students entering 1981-83; 30% of White students entering 1981 83; means involving White students are weighted

* 1=Below Average 2=Average 3=Above Average 4=Highest 10% 5=Highest 1%

Table 4

MEASURES OF ACADEMIC PERFORMANCE IN HIGH SCHOOL AND COLLEGE -- Part II

Classified by Race/Ethnicity and Gender

	SELF-RATE MATH ABILITY*	SELF-RATE WRITTEN EXPRESSION*	STATE TESTS OF BASIC SKILLS* ENGLISH	COMPUTATION	ALGEBRA	PREDICTED FRESHMAN GPA	ACTUAL FRESHMAN GPA	% GRAD IN FIVE YEARS
TOTAL	3.43	3.24	171.4	173.5	178.4	2.31	2.34	61.5
Male	3.61	3.19	170.9	174.7	179.5	2.26	2.29	60.2
Female	3.26	3.29	171.8	172.3	177.5	2.35	2.40	62.8
White	3.56	3.33	173.9	175.4	180.6	2.45	2.54	69.6
Black	2.83	3.12	166.0	166.9	170.2	1.94	1.77	39.5
Hispanic	3.09	3.00	167.1	169.3	173.1	1.96	2.04	40.0
Asian	3.78	3.05	166.6	175.1	182.4	2.21	2.27	59.9
White Male	3.71	3.25	173.1	176.1	180.9	2.39	2.46	68.4
White Female	3.40	3.41	174.7	174.6	180.1	2.53	2.63	70.9
Black Male	3.01	3.12	165.4	168.6	171.5	1.87	1.64	32.8
Black Female	2.75	3.12	166.2	166.0	169.5	1.97	1.84	43.2
Hispanic Male	3.24	2.97	166.8	170.7	174.6	1.91	1.94	33.7
Hispanic Female	2.96	3.02	167.4	168.1	171.6	2.01	2.13	45.6
Asian Male	3.89	2.89	164.9	176.6	182.7	2.15	2.22	56.2
Asian Female	3.69	3.18	168.2	174.7	182.1	2.27	2.32	63.5

Black, Hispanic, Asian students entering 1981-83; 30% of White students entering 1981-83; means involving White students are weighted

* Mean=165, S.D.=10

gender/race cells. Note that compared to actual FCUM the PGPA overpredicts only for Black students, both male and female.

Each group of men scored higher than the corresponding group of women on test variables (SATs, Basic Skills tests, achievement tests). On the other hand, women scored higher than men on measures relating to actual high school and college performance (total high school grades, Rank, PGPA, FCUM, and five-year graduation). Men rated their own Math ability higher than did the women, but the reverse was true for self-rating of Written Expression. Black students showed means consistently lower than those of the other groups.

These gender and racial/ethnic differences also surfaced in discriminant function analyses of five-year graduation. Table 5 shows, for example, that while PGPA provides the largest original decrease in lambda for White students, when other variables are included PGPA actually decreases the strength of the function. PGPA is therefore removed, leaving SAT-M as the strongest contributor. The best prediction occurs for Asians (lambda=.822). Most recent high school grades represent the most important predictor for Hispanic and Asian students, as does PGPA for Blacks.

While the classification percentages for the four groups are similar overall (ranging from 60% for Black students to 65% for Asians), interesting cell differences occur. The classification analysis for Black students was the only instance where the function did not predict graduating students better than non-graduates (60.2% for non-graduates, 59.5% for graduates). In contrast, more than 70% of the graduating Asians were correctly classified.

The discriminant function for women produces a slightly better lambda (.883) than the one for men (.895), and the most important contributor to each function is quite different for the two groups (see Table 6). The overall

Table 5

STEPWISE DISCRIMINANT FUNCTION ANALYSIS (III) BY RACE/ETHNICITY

Independent variables (in order of inclusion)	Lambda	Change in Rao's V
WHITE		
PGPA	.988	60.5
Math ability	.972	15.6
High school grades	.965	21.0
SAT-M	.955	29.8
Parents' education	.051	11.1
RANK	.947	10.4
(PGPA removed)	.948	-1.0
Expected yrs. of Math	.946	3.8
Most recent Math grade	.945	4.1
Written Expression ability	.944	3.7
SAT-V	.943	2.4
Sex	.943	1.1
BLACK		
PGPA	.942	34.8
High school grades	.928	8.8
Most recent Math grade	.921	5.0
SAT-V	.915	3.7
Written Expression ability	.914	1.2
HISPANIC		
High school grades	.948	20.6
SAT-V	.919	12.3
Sex	.914	2.4
Most recent Math grade	.989	1.9
SAT-M	.904	2.4
Written Expression ability	.901	1.5
Spoken Expression ability	.887	6.3
Most recent English grade	.886	1.4
PGPA	.882	1.3
ASIAN		
High school grades	.889	29.8
RANK	.866	7.2
SAT-V	.853	4.4
PGPA	.846	2.4
SAT-M	.837	2.9
Math ability	.826	3.7
Sex	.822	1.5

Classification Results:

		Predicted Not Grad.	Predicted Graduated
Actual	Not Grad.	57.6%	42.4%
	Graduated	37.1%	62.9%

Total correctly classified: 61.3%

N (weighted): 2,671

		Predicted Not Grad.	Predicted Graduated
Actual	Not Grad.	60.2%	39 8%
	Graduated	40.5%	59.5%

Total correctly classified: 59.8%
N = 568

		Predicted Not Grad.	Predicted Graduated
Actual	Not Grad.	62.2%	37.8%
	Graduated	33.2%	66.8%

Total correctly classified: 64.2%
N = 376

		Predicted Not Grad.	Predicted Graduated
Actual	Not Grad.	57.1%	42.9%
	Graduated	29.4%	70.6%

Total correctly classified: 65.1%
N = 242

classification rate for women is also somewhat better (66.5% vs. 63.5%), especially for students who did not graduate (61% of the not graduating women were correctly classified, compared to 55% of the not graduating men).

Table 6

DISCRIMINANT FUNCTION RESULTS BY GENDER

	Top 3 variables	Lambda	Change in V
Women	PGPA	.917	190.3
	High school grades	.904	33.1
	SAT-M	.892	16.9
Men	SAT-M	.949	99.4
	Recent English grd	.934	32.1
	Math ability	.919	32.0

Discussion

The study showed that five-year graduation is difficult to predict on the basis of pre-college variables. Certainly there is almost no relationship between graduation and SATs and Rank by themselves, but there are some variables that do increase the predictability of graduation. It was also helpful to learn that different variables are of greater value for certain gender and racial/ethnic subgroups.

While the study was unable to arrive at a perfect set of predictors, it did provide much-needed information on the relationship between graduation and the variables currently in use, while at the same time identifying other variables worthy of further research. For example, PGPA does seem to have some value in predicting graduation, although in certain cases most recent high school grades seem more valuable. The state tests of basic skills also seem to have

some relationship to graduation, and it might be worthwhile to explore giving the test to high school seniors, rather than only to students attending college in the state. The self-rating on Math (from the SDQ) seems to be another useful source of information.

While the University is not ready to require that all applicants bear the expense of achievement tests, further research on the relationship between achievement tests and graduation is clearly warranted. Given the finding that students who do submit achievement tests to the University at the present time are better prepared anyway, it would be interesting to know whether schools such as those studied by Allina (1985), which are generally quite selective, find the tests to be equally useful for educationally disadvantaged students.

The information on high school activities that is available from the SDQ is not sufficient to test Willingham's (1985) proposals. Each activity has three codes: 1) participated in high school, plan to participate in college; 2) participated in high school, do not plan to participate in college; 3) did not participate in high school, plan to participate in college. There is thus no way to evaluate "purposeful, continuous commitment." The number of activities participated in during high school was not related to any of the dependent variables in this study.

There is a fundamental problem with this type of research, namely that trying to predict academic success on the basis of academic variables does not touch the other things that college education is about: autonomy, maturity, and so forth. Certainly there has been much written about the influence of the college environment -- climate, social support, "critical mass" -- on student persistence, particularly for minority students (see, e.g., Crosson, 1986; Mallinckrodt, 1988; and Richardson, Simmons, and de los Santos, 1987). Colleges

that are currently focussing their attention on the issues involved in student retention must surely be aware that persistence is more than a matter of maintaining minimum academic standards--and that academic performance may often be strongly influenced by what happens outside the classroom.

All this is to say that there is only so much one could expect to "increase a multiple R" in predicting success, whether it is defined as freshman GPA or graduation. To the extent that graduation is considered an important criterion of success in college, the role of standardized tests as predictors requires serious reevaluation, in that the SATs in particular do not predict graduation well. This study has shown that enrollment in the third semester is strongly related to graduation, but none of the academic pre-college variables currently available can predict that enrollment. Now that we have determined that there are a few additional pieces of information that we might look at to select the students, we must turn our full attention to what happens after they enroll.

NOTES

1. While a PGPA of 2.5, for example, means the same thing for all the colleges, an Admissions Index of 18 does not.

2. This definition of success is limited to graduation from the University, as there is very sketchy information as to the graduation rate of students who leave the University prior to completion.

3. Other information from a student's admissions folder, such as high school transcript and specific extracurricular activities, would be available to the admissions staff, but is not stored in computer-readable form.

4. Not all SDQ information was complete for all cases. There was more missing information for minority students than for White students.

5. The total English score is a composite of multiple-choice tests of reading comprehension and grammar, plus the score on a reader-graded essay.

6. Originally, discriminant function analyses were performed on a 50% sample of each group, in order to estimate the functions' effectiveness for cases not included in the model. The results for the test group were consistently close to the original classification rates, and the analyses were eventually redone to include all cases.

7. The smaller the value of lambda, the greater the difference between the group means.

8. It is interesting that the basic skills test of Math Computation is a contributor to the prediction of four-year graduation. In this case the

criterion is probably not so much graduation vs. non-graduation as whether or not the student finishes in four years: students with poor computational ability would have a lot of remedial work to do, which would slow their progress.

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