College Choice in America

Charles F. Manski
and
David A. Wise

College Choice in America

Charles F. Manski / David A. Wise

with contributions by Winship C. Fuller
and Steven F. Venti

Harvard University Press
Cambridge, Massachusetts, and London, England
1983

Printed in the United States of America

Library of Congress Cataloging in Publication Data

Manski, Charles F.
College choice in America.

Bibliography: p.
Includes index.
1. College, Choice of. 2. Universities and colleges—
United States. I. Wise, David A. II. Title.
LB2350.5.M3 1983 378'.198 82-12046
ISBN 0-674-14125-3

To Kitty and Madeline

Acknowledgments

This book is the outgrowth of a large research project on the determinants of college choice in the United States. The work was supported by grants from the Exxon Educational Foundation and the National Center for Educational Statistics. In addition we are especially grateful to Robert Meyer, who was a continual source of input to the project, to Sherwin Rosen, who made many helpful suggestions, and to our colleagues who provided comments on various parts of the book: David Ellwood, Jerry Hausman, Robert Klitgaard, Richard Light, David Mundel, Michael Stoto, and Richard Zeckhauser. Special thanks go to Sally Abbott who typed many drafts of the book.

As the work evolved, several major parts of it became the responsibility of individual participants in the project. Chapters 1, 2, and 3 were written by Charles Manski and David Wise. Chapters 4 and 8 were written by Steven Venti and David Wise and Chapter 5 by Steven Venti. Chapters 6 and 7 were prepared by Win Fuller, Charles Manski, and David Wise.

Some of our findings appear separately in various publications. Versions of the material in Chapters 4 and 8 are presented in David A. Wise and Steven F. Venti, "Test Scores, Educational Opportunities, and Individual Choice," *Journal of Public Economics* 18 (1982): 35–63; and in David A. Wise and Steven F. Venti, "Individual Attributes and Self-Selection of Higher Education: College Attendance versus College Completion," *Journal of Public Economics* 19 (1983), forthcoming. Material in Chapter 6 is incorporated in Winship C. Fuller, Charles F. Manski, and David A. Wise, "New Evidence on the Economic Determinants of Post-Secondary Schooling Choices," *Journal of Human Resources* 17 (Fall 1982): 477–495, copyright © 1982 by the Board of Regents of the University of Wisconsin System.

Contents

Introduction

Postsecondary schooling is a major prerequisite for many careers and has an important bearing on lifestyles, aspirations, and social status in general. Thus, the determinants of postsecondary education contribute significantly to social and economic outcomes in American society. Some American high school graduates attend no postsecondary school, some go to junior colleges or vocational schools, and others attend four-year colleges and universities. About half of all high school graduates make the transition from full-time high school education to full-time employment by acquiring additional schooling; the other half make the transition without additional schooling.

Who obtains higher education? Does low family income prevent some young people from enrolling, or does scholarship aid offset financial need? How important are scholastic aptitude test scores, high school class rank, race, and socioeconomic background in determining college applications and admissions? Do test scores predict success in higher education? In this book, we present an analysis of postsecondary schooling choices with particular emphasis on these major questions. For the sake of completeness and to give a sense of perspective, we shall also present findings concerning the early work experiences of high school graduates.

Although we have tried to give a broad view of the determinants of college-going behavior, our work has been motivated in large part by issues of current policy concern. For example, until the early 1970s the federal government provided very little financial aid to students for higher education. The Basic Educational Opportunity Grant (BEOG) Program was introduced in 1973 and by 1980 had become a major source of aid for low- and middle-income students. The program is now being reduced substantially. One of the goals of our research is to estimate the effect of such aid on college attendance. Perhaps the appropriate question now should be: How will reduction in the program affect attendance?

Also, considerable recent public discussion has been focused on the role of Scholastic Aptitude Test (SAT) scores in the determination of educational opportunities. Both the extent to which the tests are used and their predictive validity have been criticized. The chapters that follow provide substantial information that should help inform future discussion on this subject.

Our analysis is based on data obtained through the National Longitudinal Study (NLS) of the High School Class of 1972. Commissioned by the National Center for Educational Statistics, the study provides a unique source of information on the transition from high school to work or further schooling. Data were obtained on almost 23,000 seniors from over 1,300 high schools, comprising a stratified random sample of all public, private, and church-affiliated schools in the United States. To increase the number of disadvantaged students in the sample, high schools in low-income areas and schools with a high proportion of minority enrollment were sampled at approximately twice the sampling rate used for the other schools. The data were obtained through a series of questionnaires distributed to seniors and to their high schools during the spring of 1972 and through three follow-up surveys, the most recent in October 1976.[1] We were thus able to track the cohort of graduates of the class of 1972 through an important transitional period in their lives.

Postsecondary educational outcomes are the result of a series of decisions made by individuals and by institutions of higher education. Students apply to schools. Admissions and scholarship aid decisions are made by colleges and universities. Students select from the available alternatives. Those who attend either drop out or remain until graduation, largely at their own volition. The core of this book is made up of a set of interrelated behavioral analyses, each focused on a particular aspect of the school attendance process.

The reader unfamiliar with recent econometric methods may find portions of our statistical analyses a bit foreign. In order to infer from the NLS data the magnitudes of partial effects (such as the effect of SAT scores on college admissions conditional on students' race or high school class rank) and in order to answer counterfactual questions (for example: How many people who chose not to enroll in college would have successfully graduated if they *had* enrolled?), we have applied the most appropriate methods at our disposal. Readers will find that they can follow the presentation and discussion of our major findings without completely understanding the methodology. Those who are uninterested in the tech-

nical aspects of our work can obtain a general knowledge of the approach (described informally in Chapter 2) and then focus on the parts of the later chapters that motivate the research and discuss the findings. It is our hope that the results of the book will be accessible to a wide audience, even though the complexities of the issues we address have required technical analysis.

1 Overall Findings

A general summary of the results of our study will serve to acquaint readers with the subject, and will also form a comprehensive base from which to approach the detailed analyses that follow. Because Chapters 4 and 8 afford many parallels for comparison, we group together here the results from those chapters. And although institutional aid awards logically precede student selection of a college, we discuss this topic last. All the points mentioned here will subsequently be examined in greater depth.

Application and Admission to Four-Year Colleges and Universities

Do young men and women go to college largely at the discretion of admission officers, or are attendance decisions largely their own? Admission criteria of colleges and universities often draw public attention, but the choices of individuals are sometimes forgotten. We have found that individual application decisions are much more important than college admission decisions in the determination of attendance. Self-selection is the major determinant of attendance. Approximately 45 percent of 1972 high school graduates did not attend a postsecondary school in the fall of 1972; few, however, would have been unable to gain admission to some four-year college or university of average quality if they had wished to attend.

APPLICATION

Which individual and family background attributes determine application? The likelihood that a person will apply to a four-year college or university increases with high school class rank, SAT scores, parents' education, and, to a lesser extent, parents' income. For example, the probability that a student with a combined SAT score (verbal plus math) one standard deviation above the average score will apply to a four-year

Table 1.1 Effect of changes in four variables on the probability of application.

Specified Change	Probability of application		
	High	Low	Difference
SAT score 1 standard deviation above the mean, versus 1 standard deviation below the mean	.56	.21	.35
High school class rank 1 standard deviation above the mean, versus 1 standard deviation below the mean	.52	.23	.29
Parents' income 1 standard deviation above the mean, versus 1 standard deviation below the mean	.44	.30	.14
Education of mother and father college degree or more, versus education of mother and father less than high school	.52	.23	.29

school is .35 higher than the probability that a student with a score one standard deviation below the mean will apply, assuming that other individual and family background attributes of the two are the same and equal to the average for all youth. That is, the relationship will hold if each has the same high school class rank, the same athletic and leadership experiences in high school, the same proportion of high school classmates attending college, the same family income and comparably educated parents, and the same race and sex, and if each lives in an area with comparable wage and unemployment rates. (In our discussion, "controlling for other variables" and "other things equal" mean that except for the attribute under discussion, the other attributes are the same and equal to their average values in the sample.) Comparable changes for other variables and their effect on the probability of application are shown in Table 1.1. The probability that a person with the average of attributes in our sample will apply to a four-year college is about .40. The probability is .56 for a person with an SAT score one standard deviation above the average (all other attributes average), whereas it is .21 for a person with an SAT score one standard deviation below the average. By these measures, the attributes measured by SAT scores and prior school performance are jointly the most important determinants of college application; but holding constant both SAT score and high school class rank, as well as other variables, high school graduates whose parents are highly educated are much more likely to apply to a college than those whose parents are less well educated. Parents' income is relatively unimportant.

Current federal student aid is based largely on family income and is inversely related to income. Scholarship aid in 1972, although much lower on average than BEOG awards, was also based partly on family income. Even in 1972, then, the relatively small estimated effect of parents' income may have been due in part to the counteracting effect of financial aid. Still, these numbers suggest that even if the effect of family income were completely offset by financial aid, family background would continue to exert substantial influence on college application: the college decisions of youth would still be strongly related to the education of their parents, controlling for other attributes.

ADMISSION

Are students who apply admitted? Informal observation and recent public discussion suggest that most people view colleges and universities as quite selective. Our results imply the contrary, however: although a few schools reject a large proportion of applicants, most applicants are admitted to their first-choice schools. Moreover, even most high school graduates who don't apply would have a high probability of admission to a college of average quality (that is, a college where the mean SAT score of entering freshmen is equal to the average of these means over all colleges). For example, consider a group of high school graduates all with individual and family background attributes equal to the average, except that they differ in SAT scores and high school class rank. Table 1.2 shows the probabilities of application to a four-year college and probabilities of admission to an average-quality college for students with selected SAT scores and class rank percentiles. People at the twenty-fifth percentile level in class rank and with verbal and math SAT scores totaling a mere

Table 1.2 Probabilities of application and admission, given selected SAT scores and class rank percentiles.

	Class rank percentile	
Combined SAT score	25	100
	Probability of application	
700	.14	.49
1,300	.64	.92
	Probability of admission to average-quality college	
700	.74	.93
1,300	.94	.99

700 have only a .14 probability of applying to a four-year college, but would nonetheless have a .74 probability of admission to an average-quality school, were they to apply. In other words, if a person who does not apply were to apply, he would have a good chance of admission at an average-quality college. A low likelihood of application is thus not simply a reflection of a low likelihood of admission.

We have also found that men and women with a low probability of application would have a low probability of obtaining a college degree, were they to attend. That is, youth who don't attend college would be likely to drop out without a degree if they did attend. We believe that this is a more likely explanation of their low probability of application.

While public discussion has tended to stress the effect of SAT scores on admission decisions, their relationship to individual application decisions is often overlooked. We have found that high school class rank is just as important as SAT scores in admission decisions, and that these two measures are more strongly related to individual application decisions than to college admission decisions. Both conclusions are supported by the changes in application and admission probabilities at four-year colleges and universities that are associated with two standard deviation shifts in SAT score and high school class rank (holding other variables constant). This is shown in Table 1.3, where the probabilities of admission pertain

Table 1.3 Effect of changes in SAT score and class rank on the probabilities of application and admission.

	Probability of application			Probability of admission		
Specified change	High	Low	Difference	High	Low	Difference
SAT score 1 standard deviation above the mean, versus 1 standard deviation below the mean	.56	.21	.35	.93	.81	.12
High school class rank 1 standard deviation above the mean, versus 1 standard deviation below the mean	.52	.23	.29	.93	.80	.13

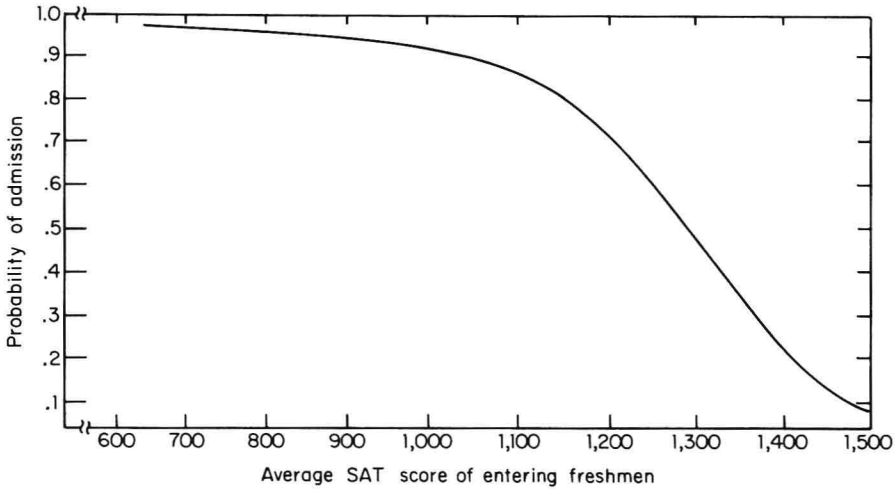

Figure 1.1 Probability of admission for an average person at colleges of different quality.

to the likelihood of admission to a college of average quality; the application probabilities are the same as those shown in Table 1.1. By these measures, SAT scores do not, on average, dominate admission decisions. Given their performance in predicting college completion, test scores also are not accorded undue weight relative to high school class rank in admission decisions.

Although most people are admitted to their first-choice four-year college or university, this is not to say that most would be admitted to every school. Most *would* be admitted to a college of average or lower quality; but certainly admission to some schools—relatively few—is very selective. An indication of the selectivity of schools is given in Figure 1.1, which shows, for an applicant with average individual and family background characteristics, the probability of admission to colleges of different quality, as measured by the average SAT score of entering freshmen. Whereas a two-standard-deviation shift in either student SAT score or high school class rank is associated with approximately a .12 change in the probability of admission, a two-standard-deviation shift in the quality of the first-choice college reduces the probability of admission by −.15, according to our estimates (evaluated at the mean of all individual attributes).[1] In this sense, the most important determinant of admission from

Table 1.4 Race-region effects on the probabilities of application and admission and on college quality.

Comparison	Probability of application	College quality[a]	Probability of admission
Black in the South	.78	731	.87
White in the South	.33	813	.87
Black in the non-South	.78	895	.91
White in the non-South	.32	837	.88

a. As measured by the average SAT score of entering freshmen.

the point of view of the applicant is the quality of the college or university to which application is made.

Race has little effect on admission but a substantial effect on application. A comparison of application and admission probabilities by race and region, assuming other individual attributes at their sample means, reveals these findings. (See Table 1.4, which also shows race-region effects on the quality of colleges to which students apply.) There is little difference between the application probabilities of whites by region or of blacks by region. However, whereas a white with average attributes in the non-South would apply to a four-year school with probability .31, the probability that a black with average attributes would apply is much higher, .78, representing a difference of .47. That is, a black student with *average* attributes is more than twice as likely as a white student with these same attributes to apply to a four-year college or university. It is important to remember that these comparisons are based on similar black and white youth: they control for individual and family background attributes. Not controlling for these attributes, blacks are on average less likely than whites to apply to a four-year college.

Holding other attributes constant, there is little difference in admission probabilities by race and region of the college. Apparently, in 1972 affirmative action policies had not led to dissimilar admission chances for like blacks and whites. Affirmative action practices may, however, have had an impact on applications. These results are also consistent with the relatively greater returns to higher education for blacks than for whites.

As shown in Table 1.4, blacks in the South go to lower-quality schools than do similar whites in the South, whereas blacks in the non-South go to somewhat higher-quality schools than do whites in the non-South. For example, a black student in the non-South with a given SAT score and

other attributes would be likely to apply to a slightly higher-quality college than would a white student in the non-South with the same SAT score and other attributes. The difference in the quality of schools applied to by blacks and whites in the South is undoubtedly related to the existence of predominantly black schools in the South. Our research indicates greater persistence to graduation of blacks in the South than in the non-South—possibly a reflection of the differences in the colleges attended by the two groups.

Attendance and Dropout

The occupational, monetary, and other societal rewards to higher education are in large part conditional on earning a degree. Therefore, an important measure of successful performance in higher education is whether a degree is obtained. This is not to say that those who attend and fail to obtain a degree have not benefited. Like trial and error in the job market, postsecondary education may for many young people be part of the search process that leads to discovery of what they like and don't like and of which occupations are compatible with their interests and abilities. To this extent, students may derive informational value from attendance, even if they drop out. And, of course, traditional benefits in the form of learning are not entirely lost just because a student drops out before obtaining a degree. Nonetheless, we take successful completion of a degree program to be a major indicator of individual performance in higher education and of potential benefit from college.

Are individual college attendance decisions consistent with likely benefits from attendance? We emphasized above that individual application decisions, not admissions decisions, are the most important determinants of college attendance; particularly significant is the relationship between high school class rank, SAT scores, and other individual attributes on the one hand and college applications on the other. Are test scores also accurate predictors of success in college? Given high school class rank, for example, is there further information in the test scores? Critics of the use of test scores in the college attendance process argue that the additional information is minimal. In general, are people who are likely to attend also likely to succeed? What about those who don't attend? Are attendance choices "correct," or would those who choose not to attend be well advised to go to college?

We have found that most young people who do not attend college

Table 1.5 Probability of dropout for selected probabilities of application and attendance.

Probability of		Probability of	
Application	Dropout	Attendance	Dropout
.05	.81	.05	.75
.10	.72	.10	.65
.50	.42	.50	.30
.90	.16	.90	.10

would be very unlikely to obtain degrees if they were to attend. Suppose we consider a group who didn't go to college and ask whether they would have graduated if they had. In most cases the answer would be no. More generally, those who are unlikely to attend would be unlikely to obtain degrees if they were to go to college, while those who are most likely to attend would also be most likely to obtain degrees.

For each student in our sample we have estimated the probability of application and attendance as well as the probability of dropping out without a degree, should he attend. For those with a given probability of application, we have calculated the average probability of dropping out. Also, for those with a given probability of attendance we have calculated the average probability of dropping out. Selected values are as shown in Table 1.5. For example, youth with personal and family background attributes associated with only a .05 probability of application would have on average a .81 chance of dropping out without a degree if they attended. On the other hand, youth with a .90 probability of application would have only a .16 probability of dropping out without a degree. Analogous results apply to attendance versus dropout. Given all the attributes that determine attendance, those who are most likely to apply and to attend are also most likely to benefit from college education by obtaining a degree.

What is the partial effect of individual attributes? Again, we can discuss this question by asking how the outcomes would change if only one (or two) attributes changed, with all others remaining at the sample means. Table 1.6 gives probabilities of attendance and dropout for selected values of high school class rank and SAT scores, together with the probabilities of application shown in Table 1.2. The data show a positive partial relationship between SAT scores and high school class rank on the one hand and the probabilities of application and attendance on the other. This positive relationship is reflected in an inverse relationship be-