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ABSTRACT

An exploratory study, completed in 1976, of U.S. medical schools' efforts to achieve equal representation of minority students was conducted to assess the degree to which the goals for minority participation established by a 1970 Association of American Medical Colleges' Task Force had been met and the extent to which the Task Force recommendations have been implemented. That study was condensed and updated and is presented in this monograph. Chapter I provides a summary of the study, the Task Force goals and recommendations, and findings of the study, followed by a more detailed project background given in Chapter II. Chapter III contains the analysis of medical school enrollment patterns while Chapter IV places the analysis of medical school enrollment within the context of the entire educational system. The extent to which the Task Force goals were achieved is contained in Chapter V, and Chapter VI presents the analysis of the extent to which the Task Force recommendations were implemented. Chapter VII contains an analysis of program activities directed toward increasing minority enrollment. A summary of eight case studies of individual medical schools undertaken to supplement the national statistical data is presented in Chapter VIII. (Author/SPG)

AN EXPLORATORY EVALUATION

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... OF U.S. MEDICAL SCHOOLS' EFFORTS TO ACHIEVE EQUAL REPRESENTATION OF MINORITY STUDENTS

December 1977

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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The principal authors of the original Orkand study were Sam Schildhaus, Ph.D. and Franz M. Jaggar. In addition, Elliott Hurwitz, Ph.D., and Mary S. Madden made valuable contributions to the accuracy of this revised version. Overall direction to the project was provided by Donald S. Orkand, Ph.D., President of The Orkand Corporation.

Sam Schildhaus, Ph.D.

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I. SUMMARY

PROJECT BACKGROUND

In 1970, a Task Force organized by the Association of American Medical Colleges (AAMC) compiled data on existing trends in the recruitment and retention of minorities in medical schools and recommended strategies and goals for increasing minority group participation in medical education. The goal, defined by the Task Force, was the achievement of 12 percent representation of minority groups in the composition of the medical school student population by the 1975-1976 academic year, an increase from the level of 2.8 percent of the 1970 medical school student body. The Office of Health Resources Opportunity (OHRO) of the Health Resources Administration is concerned with the degree to which the AAMC Task Force goals have been achieved and the extent to which its recommendations were implemented. Further, OHRO recognizes the need to improve the methodology for analyzing and evaluating the progress of minority groups within the medical education system. Accordingly, The Orkand Corporation was asked to conduct an exploratory study of U.S. medical schools' efforts to achieve equal representation of minority students. That study has been condensed and updated and is presented in this monograph.

PROJECT OBJECTIVES

The basic objectives of the exploratory evaluation project may be summarized as follows:

- Assess the degree to which the goals established by the AAMC Task Force have been met and the extent to which the recommendations of the Task Force report have been implemented.
- Analyze the programs and activities that have been initiated to increase minority enrollment and retention and determine, to the extent feasible, their costs and impacts.

The findings, corresponding to each of these major objectives, are discussed in the remainder of this summary and in the relevant chapters of this report.

ANALYSIS OF AAMC TASK FORCE GOALS AND RECOMMENDATIONS

Summary of Findings

The principal findings of the analysis of the AAMC Task Force goals and recommendations are organized by a discussion of the following: enrollment trends, fulfillment of the AAMC enrollment goal, stages and interrelationships in the medical education pathway, and implementation of AAMC Task Force recommendations.

Medical School Enrollment Trends. The principal findings with regard to enrollment trends are:

- The combined minority total enrollment increased from 1,737 students in 1970-1971 to 4,524 in the 1975-1976 academic year. As a percentage of total enrollment, combined minority enrollment increased from 4.4 percent for the 1970-1971 academic year to 8.1 percent for the 1975-1976 academic year. However, total minority enrollment has leveled off in the most recent year and no increase in the proportion of minority students enrolled was achieved in the 1975-1976 academic year. In the 1976-1977 academic year, 4,715 minority students--comprising 8.2 percent of the total student body--were enrolled.

- When first-year class enrollment, the most sensitive measure of change, is considered, the rate of change is lowered. Although the number of minority students increased substantially, the proportion of minorities in the first-year class increased less than two percentage points between the 1970-1971 and 1975-1976 academic years. The 1975-1976 levels represent a drop in both absolute and relative terms from 1974-1975 when combined minority enrollment reached a high of 10.1 percent of the first-year class. In the 1976-1977 academic year, minority students comprised only 9.0 percent of the first-year class.

- The decrease in the absolute number and proportion of first-year minority students between the 1974-1975 academic years occurred at a time of general expansion in the size of the first-year class. The most significant component of the decrease was for Blacks who comprised 7.6 percent of the first-year class in 1974-1975, only 6.8 percent in 1975-1976, and 6.7 percent in 1976-1977. As Blacks comprised 6.3 percent of the 1970-1971 first-year class, the overall increase of Black enrollment from the 1970-1971 to 1976-1977 academic years was less than one-half of one percent.

- In order to obtain a measure of the true number of matriculants in any one year, it is critical that the first-year class repeaters be considered separately from the non-repeating, first-year medical school students. Adjusting the enrollment data for repeaters decreases the proportion of first-year minority students by a percentage point or more, depending on the academic year.

Fulfillment of AAMC Enrollment Goal. The principal finding regarding the relationship between enrollment trends and the AAMC enrollment goal is:

- The principal goal set by the AAMC Task Force in 1970 was the achievement of proportional representation of minority populations in the medical school first-year class enrollment by academic year 1975-1976. This AAMC goal has not been met, and for the combined minority populations, only 50 percent of the required number of first-year minority students necessary to meet the population parity goals were enrolled in the 1975-1976 academic year (exclusive of repeaters). As noted above, both the 1975-1976 and 1976-1977 enrollment levels represented a decline from the 1974-1975 levels.

Stages and Interrelationships in the Medical Education Pathway. The principal findings with regard to the movement of minority students through the medical education pathway are:

- Non-minority high school graduates have consistently had almost double the probability of entering college than did Black high school graduates over the time period studied. In the 1970-1971 high school academic year, 52.0 percent of the non-minority high school graduates entered college as compared to 26.7 percent of the Black high school graduates. This severely constrains the size of the Black applicant pool from which medical students are drawn.

- The proportion of medical school applicants to college first-year entrants (four years prior to application to medical school), remained relatively stable over the period from 1973-1974 through 1975-1976, and was not dramatically different for non-minority, combined minority, Black, and Mexican American students. In the 1975-1976 academic year, the proportion was 2.6 percent for non-minorities and 2.2 percent for minorities.

- The ratio of students actually receiving offers to medical school applicants has been higher for minority students than for non-minority students throughout the three year period (1973-1974 through 1975-1976) for which data are available. During this period, an average of 43.1 percent of minority applicants received offers as compared to 35.0 percent for non-minority applicants. Further, the proportion of medical school applicants actually entering medical school for the first time is also higher for minority applicants (39.7 percent) than for non-minority applicants (33.7 percent). These differences appear to result from the medical schools' desire to increase minority enrollment and the adoption of admissions policies designed to achieve that goal.

- Although based only on data for two academic years, a comparison of the first-year repetition rates for minority and non-minority students shows that the repetition rate for minority students (11.7 percent) is roughly 10 times the rate (1.2 percent) for non-minority students.

IMPLEMENTATION OF AAMC TASK FORCE RECOMMENDATIONS

The principal findings with regard to the implementation of AAMC Task Force recommendations are:

- The degree of implementation of the recommendation that student aid at the undergraduate level be increased cannot be evaluated from available data. Data on student and institutional aid do not show the breakdown of such aid between minority and non-minority groups.

- No single organization has taken the responsibility for the centralized coordination, solicitation, and distribution of financial assistance to minority students as recommended by the AAMC Task Force. National Medical Fellowships, Inc. has, however, continued and expanded its role as a major source of both financial aid and information for minority medical students.

- There has been no effort to establish an "educational opportunity bank" as a long term solution to the problem of medical student financing.

- There has been no implementation of the AAMC Task Force recommendation to establish a network of regional centers to provide factual and personal information about career opportunities for minority students.

- Since 1970, the AAMC Office of Minority Student Affairs has--as recommended by the Task Force--expanded both in the number of personnel assigned and in the functions it carries out. The Office has been instrumental in organizing data collection activities related to minority enrollment and in disseminating information on minority related policies and programs. It has also cooperated in an effort to revise the Medical College Admissions Test in order to minimize racial and cultural biases.

ANALYSIS OF MINORITY MEDICAL STUDENT PROGRAMS

The principal findings derived from the analysis of minority medical student programs may be summarized as follows:

- Until Fiscal Year 1974, funds administered by the Bureau of Health Manpower (BHM) played a sharply increasing role in the education of health professionals, including students enrolled in schools of medicine. However, the Federal program of Health Professions Scholarships expired in June 1974 and categorical general scholarships and direct loan activities for health professions students were decreased substantially. The decrease in scholarship funds from Fiscal Year 1974 levels, coupled with reductions in other funding categories, resulted in a total reduction of $103 million in available BHM funds between the 1973-1974 and the 1975-1976 academic years.

- Although the proportion of BHM funding allocated to minority students is not known, the substantial decline in funding levels, after a generally increasing trend of funds support, has had what appears to be major effects on the enrollment levels of minority students in medical schools. Specifically, the drop in BHM funding has apparently resulted in a significant drop in the number of first-year minority students while the number of first-year non-minority students has continued to increase.

- With respect to recruiting activities, a review of medical schools self-categorization of programs for the 1974-1975 academic year showed that field visits and summer programs were most frequently employed. Information on program quality and cost was not available.

- Academic aid programs consisted primarily of tutorial programs and a special pre-entry summer program during the 1974-1975 academic year. It appears that the pre-entry summer program is found more often at institutions that have a higher proportion of minority first-year students, but the nature and direction of the causal links cannot be demonstrated from available data.

- None of the relationships between school characteristics and minority enrollment appeared significant although certain regional differences were found to exist.

- There are severe limitations in the availability of comprehensive historical data concerning the presence, cost, and quality of minority related programs. Comprehensive analysis of program impacts must await the development of a data base containing basic program information.

CASE STUDY FINDINGS

Despite the limitations of the case study approach--including the small number of schools surveyed--certain general conclusions can be drawn which complement the statistical analysis presented earlier. These conclusions may be summarized as follows:

- All schools surveyed have become more active with respect to recruitment of minorities and have increased, often significantly, the number of minority students. This has led to serious competition among schools for qualified applicants.

- The effort to increase minority enrollment is also reflected in the willingness of medical colleges to utilize alternative criteria for admissions. Several institutions have decreased their emphasis on MCAT scores and Grade Point Averages.

- Both admission and retention of minority students are being hampered by poor pre-medical counseling and preparation. Hence, medical institutions are playing an increasing role in both areas.

- There is continued concern, but little factual data, about minority student attrition and repetition although several schools reported a decrease in both areas.

- Minority enrollment had become an important item on the agenda of most schools prior to the issuance of the AAMC report. Hence, the AAMC Task Force served to reinforce rather than initiate changes in attitudes, policies, and programs.

II. INTRODUCTION

PROJECT BACKGROUND

In 1970, a Task Force of the Association of American Medical Colleges (AAMC) was organized to set objectives and define methodologies to increase minority group participation in the medical profession. The Task Force compiled data on the existing trends in the recruitment and retention of minority students into medical schools; set goals for 1975 and intervening years with respect to targets for minority group participation in medical education; and made recommendations on possible strategies to increase the percentage of minorities entering the medical school pathway.[1] The goal defined by the Task Force was the achievement of 12 percent representation of minority groups in the composition of the medical school student population by 1975, an increase from the level of 2.8 percent of the 1970 medical school student body.

In order to meet the goal of equal representation of minorities, the Task Force set forth the following recommendations:

- Increase Federal financial assistance at all levels of the university educational system
- Increase short-term and long-term financing of minority medical students
- Establish a network of regional centers to provide information about career opportunities for minority students in the health professions
- Expand the AAMC Office of Minority Student Affairs by seeking necessary additional funding.

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[1] "A Report of the Association of American Medical Colleges Task Force to the Inter-Association Committee on Expanding Educational Opportunties in Medicine for Blacks and Other Minority Students," April, 1970.

The Office of Health Resources Opportunity (OHRO) is charged with developing and implementing policies which provide for the assurance of equal opportunity for minority group members in the fields of health education and delivery. This charge emphasizes the role of OHRO in health manpower development and training programs which is a primary responsibility and activity of the Health Resources Administration. An important component of this activity is the understanding of how minority group members are recruited and maintained in the educational pathway leading to educational degrees that qualify minority group members to practice medicine. The study of the dynamics and linkages that affect the minority group members' relationships with the medical education system provides a basis for the design and implementation of specific program activities that attempt to achieve equal representation of minority group members in the health professions.

Given this policy mandate, the Office of Health Resources Opportunity (OHRO), in conjunction with the Office of Planning, Evaluation, and Legislation (OPEL), contracted with The Orkand Corporation in 1975 to undertake an exploratory evaluation project to:

- Assess the degree to which the goals established by the AAMC Task Force have been met and the extent to which the recommendations of the Task Force report have been implemented.
- Analyze the programs and activities that have been initiated to increase minority enrollment and retention and determine, to the extent feasible, their costs and impacts.

The previous study[2] was completed in 1976 and serves as the basis for this monograph, which has been condensed and contains more recent data.

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[2]The Orkand Corporation, "An Exploratory Evaluation of U.S. Medical Schools' Efforts to Achieve Equal Representation of Minority Students," Health Resources Administration, DHEW, Contract No. HRA-230-75-0081, 1976. This report is available in two volumes from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. Volume I is available under NTIS Number PB262126 for $12.00, and Volume II is available under NTIS Number PB262127 for $4.00. Microfiche copies are also available for $3.00 per volume.

ORGANIZATION OF THE MONOGRAPH

The following chapter of this monograph contains the analysis of medical school enrollment patterns while Chapter IV places the analysis of medical school enrollment within the context of the entire educational system. The extent to which the AAMC Task Force goals were achieved is contained in Chapter V, and Chapter VI presents the analysis of the extent to which the Task Force recommendations were implemented. Chapter VII contains an analysis of program activities directed toward increasing minority enrollment. A summary of eight case studies of individual medical schools undertaken to supplement the national statistical data is presented in Chapter VIII.

III. ANALYSIS OF MINORITY MEDICAL SCHOOL ENROLLMENTS

INTRODUCTION

The purpose of the analysis presented in this chapter is to provide a quantitative description of the major trends in the enrollment of minority (i.e., Black, Mexican American, American Indian, and Puerto Rican) students in U.S. medical schools. The chapter includes the examination of variations among the minority groups at different stages of medical school education; an examination of summary measures of enrollment change over time; and the analysis of the relationship between school-related characteristics and minority enrollment.

MEDICAL SCHOOL ENROLLMENTS

Data Sources

The primary source of data for the analysis of medical school enrollments was the Association of American Medical Colleges (AAMC). The AAMC maintains school enrollment and characteristic information in its Institutional Profile System (IPS) which undergoes continuous updating and correction. All available data files were processed by the staff of The Orkand Corporation to independently replicate the minority enrollment reports and summaries of the data previously published by the AAMC. When the initial study was conducted, the IPS data base did not contain any information for the 1975-1976 academic year; therefore, for this year and the following years it was necessary to use secondary source reports from the AAMC.[1] In the analysis presented in this report, two medical schools maintained on the IPS--The American University at Beirut and the University of Puerto Rico--were excluded. Furthermore, the analyses of class years (first, middle, and graduate) were controlled for the number of institutions reporting enrollment in the specific year for the calculation of means and other summary statistics.

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[1] Additional detail on methodology, data tabulations, and data analysis is contained in Orkand, op. cit., Chapter II.

Overall Enrollment

Since the 1970-1971 academic year, 13 medical schools have been added to the AAMC reporting system and there are now 115 schools enrolling 57,765 students reporting to AAMC. This represents an increase of 43.5 percent in the total number of students between 1970 and 1976. In the same period, the first-year enrollment has reached 15,613, an increase of 37.5 percent. In the assessment of minority enrollment, it is important to keep in mind that the 1970-1976 period was one of rapidly rising overall enrollment.

Most of the medical schools in the U.S. are four year institutions and report data to the AAMC for the first-year class, the middle years, and the fourth, or graduate year enrollments. While the size of the first-year class has increased over the time period, the first-year class has remained a relatively constant proportion of total enrollment at approximately 28 percent.

Total and First-Year Minority Enrollment

Measured in terms of both total enrollment and first-year class size, minority group enrollment in medical schools has increased during the 1970-1977 period. This is seen in Exhibits 1 and 2 which describe total minority enrollment and first-year enrollment, respectively. The first-year enrollment reported in Exhibit 2 includes those students repeating the first-year medical school curriculum. The total and first-year enrollment data illustrate movement toward proportionality with respect to the overall medical school environment, as well as the impact of recruitment and admissions activities directed at minority groups. First-year class enrollment is, perhaps, the most sensitive measure since medical schools can more readily influence the distribution of minorities within the first-year class than in other classes. Changes in the distribution of minorities in the total school enrollment reflect the net result of several influences including successive first-year minority class sizes, retention activities targeted at specific student populations, and attrition from medical school.

The combined minority group total enrollment for the four target populations increased from 1,737 students in 1970-1971 to 4,715 in 1976-1977, a growth of 171 percent in the seven year period. As may be expected, this increase was comprised primarily of Blacks, with 2,003 more Blacks enrolled in the latest academic year than in 1970-1971.

In the 1970-1971 academic year, Blacks were the only minority group of the four targeted populations having any significant representation in medical school, with 3.8 percent

Exhibit 1

Total Enrollment by Minority Group
(1970-1977)

Academic Year	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
Minority Group	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A. Black	1,514	3.8	2,090	4.8	2,577	5.5	2,882	5.9	3,354	6.3	3,456	6.2	3,517	6.2
B. Mexican American	152	0.4	255	0.6	427	0.9	512	1.1	638	1.2	699	1.3	780	1.4
C. American Indian	17	*	37	0.1	72	0.2	93	0.2	159	0.3	172	0.3	186	0.3
D. Puerto Rican-Mainland	54	0.1	81	0.2	97	0.2	127	0.3	172	0.3	197	0.4	232	0.4
E. Combined Minority	1,737	4.4	2,463	5.7	3,173	6.7	3,614	7.1	4,323	8.1	4,524	8.1	4,715	8.2

Note: Percents may not add to total due to rounding

All data include both repeaters and re-entrants. Data for 1974-1975 do not include an additional first-year class of 157 students admitted to New York Medical College in the Spring of 1975.

Sources: The Orkand Corporation analysis of LCME-11 data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October 1975: 1974-1975.

AAMC, Medical School Admission Requirements 1978-1979.

* Less than one-tenth of one percent.

Exhibit 2

First-Year Enrollment by Minority Group
(1970-1977)

Minority Group \ Academic Year	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A. Black	701	6.3	890	7.3	969	7.2	966	7.0	1,106	7.6	1,036	6.8	1,040	6.7
B. Mexican American	78	0.7	119	1.0	168	1.2	176	1.3	227	1.6	224	1.5	245	1.6
C. American Indian	11	0.1	22	0.2	36	0.3	41	0.3	71	0.5	60	0.4	43	0.3
D. Puerto Rican - Mainland	24	0.2	39	0.3	44	0.3	54	0.4	69	0.5	71	0.5	72	0.5
E. Combined Minority	814	7.3	1,070	8.8	1,217	9.0	1,237	9.0	1,473	10.1	1,391	9.1	1,400	9.0

Note: Percents may not add to total due to rounding.

All data include both repeaters and re-entrants. Data for 1974-1975 do not include an additional first-year class of 157 students admitted to New York Medical College in the Spring of 1975.

Sources: The Orkand Corporation analysis of LCME-II data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October 1975: 1974-1975.

AAMC, Medical School Admission Requirements 1978-1979.

of the total student enrollment. Mexican Americans, American Indians, and Mainland Puerto Ricans together made up only one-half of one percent of the total enrollment. Combined minority enrollment was only 4.4 percent for the 1970-1971 academic year. By 1976-1977, combined minority enrollment represented 8.2 percent of the total enrollment in medical school, with Blacks comprising 6.2 percent and the other groups the balance.

When viewed as a trend, the combined minority student enrollment increased slowly but steadily between the 1970-1971 and the 1974-1975 academic years. However, it appears that the total enrollment leveled off in the most recent years with virtually no increase in the proportion of minority enrollment achieved in the 1975-1976 and 1976-1977 academic years according to data reported to the AAMC. Insight into this apparent stabilization of minority total enrollment can be gained by examining the data on first-year class enrollment presented in Exhibit 2.

Over the seven year period, the number of minority students in the first-year class has increased by 72 percent. Most of the increase in the number of students has been among Blacks with the first-year class enrollment of Blacks growing from 701 students in 1970-1971 to 1,040 in 1976-1977. Significant percentage growth has been observed for the other minority populations as well, but the number of students involved in each is relatively small. Although the number of minority students enrolled has increased substantially, a somewhat different interpretation is gained when the proportion of minorities in the first-year class is analyzed. The percent of minorities of the first-year class has increased by less than two percentage points from 1970-1971 to 1976-1977 and there has been a decrease in the proportion of minority first-year enrollment since the 1974-1975 academic year.

Although the decrease of 73 minority students enrolling in the first-year class from 1974-1975 to 1976-1977 was small, the decrease occurred at a time of general expansion in the size of the first-year class. Therefore, the proportional decrease was magnified. In addition, the most significant component of the decrease in enrollment was for Blacks. Blacks comprised 7.6 percent of the first-year class in 1974-1975, but only 6.7 percent in 1976-1977. In the 1970-1971 academic year, Blacks made up 6.3 percent of the first-year class, making their overall increase less than one-half of one percent from the earliest to the most recent academic year. Mexican Americans increased their proportion of the first-year enrollment more than any other group with a

0.9 percent gain from 0.7 percent in 1970-1971 to 1.6 percent in 1976-1977. However, the number of students in the groups is quite small and the percentage increase should be considered only in this light.

First-Year Enrollment Adjusted for Repeaters

Very little data were available on the incidence of students repeating years of the medical school curriculum. However, the impact of repeaters on the size of the first-year class, particularily with respect to a small minority group, may be substantial. In order to examine questions of equal opportunity, as well as obtain a measure of the true number of matriculants in any one year, it is critical that the data be adjusted for these cases. Information for 1972-1973 and 1973-1974 in the AAMC IPS data base was used to estimate the number of first-year repeaters by minority group and for the non-minority group, as well as for each of the other years in the six year period included in the evaluation. The size of each year's non-repeating, first-year class was then calculated by subtracting the estimated number of repeaters from the total first-year class size as reported by the medical schools. The results of the calculations are presented in Exhibit 3 which provides estimates of the non-repeating, first-year minority group enrollment by year. The analysis of repeaters for non-minority and total-minority students is presented in Exhibits 4 and 5.[2]

Three observations may be made about the differential repetition rates for the population groups. First, a comparison of the first-year repetition rates for minority and non-minority students shows that the rate for minority students (11.7 percent) is approximately ten times the rate for non-minority students (1.2 percent). Second, the repetition rate for Mexican American medical students appears to be substantially lower than the rates of the other three minority groups. Third, with the exception of the American Indian minority group, the repetition rates of each group between the two years for which there are data are relatively similar. The apparent variation between the years for the American Indian group may be the result of the small number of enrollees from that group in the previous year.

When the estimated number of repeaters for each population group is removed from the first-year class statistics, the magnitude of the changes in the proportion of minorities

[2] A more detailed analysis of repeaters and data for each by minority group is contained in Chapter II of the earlier Orkand report, but some of the discussion for each group is presented in this chapter.

Exhibit 3

Estimates of Nonrepeating, First-Year Enrollment, by Minority Group

ENROLLMENT GROUP \ ACADEMIC YEAR	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A. Total Nonrepeating, First-Year Enrollment	10,992	100	11,956	100	13,269	100	13,469	100	14,154	100	14,969	100	15,288	100
B. Non-Minority Nonrepeating, First-Year Enrollment	10,237	93.1	10,984	91.9	12,180	91.8	12,370	91.8	13,022	90.7	13,746	91.8	14,046	91.9
C. Combined Minority Nonrepeating, First-Year Enrollment	755	6.9	972	8.1	1,089	8.2	1,099	8.2	1,332	9.3	1,223	8.2	1,241	8.1
D. Black Nonrepeating, First-Year Enrollment	646	5.9	802	6.7	850	6.4	850	6.3	984	6.9	897	6.0	909	5.9
E. Mexican American Nonrepeating, First-Year Enrollment	76	0.7	114	1.0	164	1.2	168	1.2	220	1.5	214	1.4	236	1.5
F. American Indian Nonrepeating, First-Year Enrollment	10	0.1	20	0.2	35	0.3	33	0.2	65	0.5	49	0.3	34	0.2
G. Puerto Rican - Mainland Nonrepeating, First-Year Enrollment	23	0.2	36	0.3	40	0.3	48	0.4	63	0.4	63	0.4	63	0.4

Note: Percents may not add to total due to rounding.

Sources The Orkand Corporation analysis of LCME-11 data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October 1975: 1975-1976.

AAMC, Medical School Admission Requirements 1978-1979.

Exhibit 4

Estimates of Nonrepeating, First-Year Enrollment and First-Year Repeaters: Non Minority

CALCULATIONS \ ACADEMIC YEAR	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977
A. Total Enrollment of Group	36,512	38,047	40,750	43,948	43,134	48,777	51,294	53,050
B. First-Year Enrollment (includes repeaters)	9,912	10,356	11,108	12,313	12,508	13,172	13,904	14,213
C. First-Year Repeaters (actual)	-	-	-	133	138	-	-	-
D. % Repeaters of Previous Year's First-Year Enrollment(B)	-	-	-	1.2%	1.1%	-	-	-
E. % Repeaters of Pooled First-Year Enrollments	-	-	-	1.2%		-	-	-
F. First-Year Repeaters (estimated using E)	-	119	124	133	138	150	158	167
G. Nonrepeating, First-Year Enrollment (estimated-excludes repeaters)	-	10,237	10,984	12,180	12,302	13,022	13,746	14,046

Sources: The Orkand Corporation analysis of LCME-11 data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October 1974: 1975-1976.

AAMC, Medical School Admission Requirements 1978-1979.

Exhibit 5

Estimates of Nonrepeating, First-Year Enrollment and First-Year Repeaters: Combined Minority

CALCULATIONS \ ACADEMIC YEAR	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977
A. Total Enrollment of Group	1,178	1,737	2,463	3,173	3,614	4,323	4,524	4,715
B. First-Year Enrollment (Includes Repeaters)	501	814	1,070	1,217	1,237	1,473	1,391	1,400
C. First-Year Repeaters (Actual)	-	-	-	128	138	-	-	-
D. % Repeaters of Previous Year's First-Year Enrollment (B)	-	-	-	12.0%	11.4%	-	-	-
E. % Repeaters of Pooled First-Year Enrollments	-	-	-	11.7%		-	-	-
F. First-Year Repeaters (Estimated using E)	-	59	98	128	138	141	168	158
G. Nonrepeating, First-Year Enrollment (Estimated excludes Repeaters)	-	755	972	1,089	1,099	1,332	1,223	1,242

Sources: The Orkand Corporation analysis of LCME-II data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October 1974: 1975-1976.

AAMC, Medical School Admission Requirements 1978-1979.

enrolled in first-year medical school is reduced. Combined minority nonrepeating, first-year enrollment increased from 6.9 percent in 1970-1971 to a high of 9.3 percent in 1974-1975 and back to a level of 8.1 percent for the 1976-1977 academic year. When just the 1970-1971 and the 1976-1977 academic years are compared, Blacks exhibited no change with 5.9 percent in both years. Mexican Americans increased enrollment by eight-tenths of a percent, and smaller changes are observed for the American Indian and Mainland Puerto Rican groups. Although the increase in the proportion of minority students is reduced by adjusting for repeaters, it is important to note that the number of nonrepeating, first-year students enrolled for each group did go up, with 263, 169, 24, and 40 more students enrolling in 1976-1977 than in 1970-1971 for Blacks, Mexican Americans, American Indians, and Mainland Puerto Ricans, respectively.

Middle and Graduate Year Enrollment

The distribution of minority students in the middle and graduate years of medical school for 1970-1971 through 1973-1974 shows an increase in minority enrollment. Over the four year period for which data are available, minority groups increased their proportion of middle-year enrollment by 3.8 percentage points, moving from 3.6 percent in 1970-1971 to 7.4 percent in 1973-1974. Blacks accounted for the largest portion of the gain with a 2.7 percentage point increase over the time period. In 1973-1974, Black enrollment represented 5.9 percent of the enrollment in the middle-years of medical school.

Graduate-year enrollment of minorities also increased, going from 2.3 percent in the earlier year to 5.4 percent in 1973-1974 for a gain of 3.1 percentage points over the four years. The gain in graduate year enrollments over the time period is primarily a product of increased minority enrollment prior to 1970-1971, since students enrolling as part of the first-year class in 1970-1971 would just be entering their fourth-year in 1973-1974. Thus, whereas minorities made up 7.3 percent of the 1970-1971 entering class, they comprised 5.4 percent of the fourth-year class four years later. Almost three-quarters (594) of the minority students enrolled in the first-year class in 1970-1971 (814) were in the fourth-year class in 1973-1974.

SUMMARY MEASURES OF ENROLLMENT-CHANGE

To summarize the changes in minority enrollments, three approaches for examining the increase in minority medical school enrollments are presented in Exhibit 6. These approaches are:

Exhibit 6

Measures of Enrollment Change for Total and First-Year Enrollment Between Academic Years 1970-1971 and 1976-1977

MINORITY GROUP	INCREASE IN TOTAL ENROLLMENT			INCREASE IN FIRST YEAR ENROLLMENT		
	Change in No. of Students Enrolled	Percent of 1970-1971 Enrollment	Change in Percent of Enrollment	Change in No. of Students Enrolled	Percent of 1970-1971 Enrollment	Change in Percent of Enrollment
A. Black	+2,003	+132%	+2.4%	+339	+ 48%	+0.4%
B. Mexican American	+ 628	+413%	+1.0%	+167	+214%	+0.9%
C. American Indian	+ 169	+994%	+0.3%	+ 32	+291%	+0.2%
D. Puerto Rican - Mainland	+ 178	+330%	+0.3%	+ 48	+200%	+0.3%
E. Combined Minority	+2,978	+171%	+3.8%	+586	+ 72%	+1.7%

Note: All data include both repeaters and re-entrants. Data for 1974-1975 do not include an additional first-year class of 157 students admitted to New York Medical College in the Spring of 1975.

Sources: The Orkand Corporation analysis of LCME-11 data in AAMC I.P.S.: 1970-1971 through 1973-1974.

The Orkand Corporation analysis of fall enrollment questionnaire in AAMC I.P.S.: 1974-1975.

AAMC, Division of Student Studies, preliminary report, October, 1975: 1975-1976.

AAMC, Medical School Admission Requirements 1978-1979.

- Change in the number of students
- Percent increase over the 1970-1971 enrollment level
- Change in the proportion of minority enrollment

The change measures are computed for each minority group for only total enrollment and first-year enrollment since, as previously stated, other enrollment data for the minority groups were not available.

The number of minority students enrolled in medical school has increased substantially from the 1970-1971 to the 1976-1977 academic years. In terms of the percent of the base year enrollment, several of the minority groups, particularly American Indians, have made impressive gains. However, this is primarily a function of the very low enrollment levels evidenced by these groups in 1970-1971. The change in the percentage of minority enrollment, which directly addresses the issue of proportional representation, has been less than dramatic with a combined minority percent change in total enrollment of 3.8 percentage points and in first-year enrollment of 1.7 points. It would appear that of the two objectives--increasing the number of minority students in medical school and increasing the proportion of minority students--it has been the latter that has been the most difficult to accomplish in a period of generally expanding medical school enrollments.

SCHOOL RELATED CHARACTERISTICS AND MINORITY ENROLLMENT

An exploratory analysis was also made of the relationships between minority enrollment and school characteristics. The statistical analysis treated total minority enrollment and first-year minority enrollment as the dependent variables and examined their relationship to the area population (population in SMSA, total area population, and percentage of non-white population); size of school; ownership (public vs. private); and geographic region.

Area Population Characteristics

With regard to the characteristics of the area population, changes in minority school enrollment and percentage of minority enrollment did not correlate with the area's population, density, or percentage of non-white population. The absolute size of minority enrollment in public institutions (excluding Howard and Meharry) did correlate somewhat with the size of the population in the SMSA and the population density. These relationships may be explained by the fact that public schools in urban areas tend to enroll more students than do public schools in less urbanized areas.

Size of School Enrollment

The total enrollment did not correlate significantly with the percentage of minority school enrollment (first-year or total) or with percentage changes in enrollment. School enrollment did, of course, correlate significantly with the absolute level of minority enrollment when Howard and Meharry are excluded.

Medical School Ownership

Analysis of the minority enrollments in public and private institutions indicated that the mean enrollment of combined minority students in the first-year class varied only slightly between publicly and privately owned medical schools. In the 1970-1971 academic year, private institutions had a mean of 7.3 minority students in the first-year class while public institutions enrolled an average of 6.6 minority students. By the 1974-1975 academic year, the means were still very close and public institutions enrolled somewhat more minority students on the average (11.7) than did the private institutions (10.9). The traditionally Black colleges, Howard and Meharry, were excluded from the computations of the means in order to remove the effects of these atypical cases. When the total minority enrollment is considered, the means are also very similar (11.6 students per public institution and 13.4 students per private institution) in the 1970-1971 academic year and (31.8 students in public and 33.1 students in private institutions) during the 1974-1975 academic year.

Regional Characteristics

The analysis of regional characteristics of minority student enrollment reveals increases in minority first-year class enrollment across all regions: Northeast, South, Midwest, and West between the 1970-1971 and 1974-1975 academic years. All geographic regions had increased both the proportion of minority enrollment in the first-year and total enrollment. In fact, the regional rank order of minority enrollment remained constant between the 1970-1971 and 1974-1975 academic years. The Western region had the highest proportion of minority enrollment followed by the Northeast, South, and Midwest, respectively.

IV. THE MEDICAL EDUCATION PATHWAY

INTRODUCTION

This chapter places medical school enrollment within the context of the education system which permits the analysis of medical school enrollment within its systemwide perspective. This perspective is presented by the development of a medical education pathway model, the analysis of individual stages in the pathway, and the analysis of relationships among the stages in the pathway.

MEDICAL EDUCATION PATHWAY: CONCEPTUAL AND METHODOLOGICAL ISSUES

The medical education pathway concept provides a framework for assessing the movement of students through the general educational process in the United States to specialized training for the M.D. degree. The objectives of such an assessment are twofold. First, by empirically investigating the relationships between stages in the educational process, barriers, as well as inducements to the movement of students between stages may be identified. Further empirical investigation will permit the assessment of how these barriers and/or inducements operate differentially with respect to the specific populations, producing disproportionate concentrations of minority and non-minority representation at particular stages. Second, for purposes of manpower planning, understanding the dynamics of the career choice process with respect to the medical education pathway will permit forecasts of M.D. training requirements and graduates given observed numbers of students in earlier stages in the pathway.

AAMC TASK FORCE EDUCATION PATHWAYS

The AAMC Task Force used five stages to conceptualize the Medical Education Pathway.

- Stage I - Becoming a Qualified College Applicant
- Stage II - From Qualified College Applicant to College Student
- Stage III - From College Student to Qualified Medical School Applicant

- Stage IV - From Qualified Medical School Applicant to Medical Student
- Stage V - From Medical Student to M.D. Degree Recipient.

The Task Force focused on the linkages between levels of student educational attainment in order to identify the major reasons why students exit from the pathway. In this way, the Task Force reasoned, various "action elements"--individuals, groups, or institutions--that may play roles in maximizing student retention in the pathway could be examined. While the AAMC conceptualization of the medical education pathway is useful for a descriptive study of the forces that may influence student retention, the five AAMC stages do not provide a well defined framework for monitoring and evaluating student progress through the complex educational system that funnels a limited number of students into the M.D. curriculum. Thus, the following section presents an alternative conceptualization of the educational pathway.

MODIFIED MEDICAL EDUCATION PATHWAY: DESCRIPTION OF INDIVIDUAL STAGES

In order to develop an evaluative methodology to guide this exploratory study and suggest a viable approach for future research, it was necessary to substantially modify the AAMC Task Force's pathway concept. Our modification of the pathway concept was developed by focusing on specific milestones that a student must accomplish in order to become a practicing physician. These specific milestones provide points in time and in student progress that serve as the focus for data collection and analysis activities that address the question of the relationship between successive milestones, as well as the proportionality of minority representation at the milestone points. Between each milestone is a set of influences and processes that affect student movement from one milestone level to another. Using the milestone approach it is possible to estimate the expected time between successive milestones; another interesting empirical question is the extent of similarity in the estimated time periods between milestones for minority and non-minority populations.

The modified Medical Education Pathway has the following 12 milestones, each of which is influenced by major processes in the educational environment:

- Milestone 1: High School Graduate
- Milestone 2: College Applicant
- Milestone 3: College Applicant Offered Admission

- Milestone 4: College First-Year Entrant
- Milestone 5: Physician Aspirant
- Milestone 6: College Graduate
- Milestone 7: Medical School Applicant
- Milestone 8: Medical School Applicant Offered Admission
- Milestone 9: Medical School First-Year Entrant
- Milestone 10: Medical School Graduate
- Milestone 11: Licensed Physician
- Milestone 12: Practicing Physician

Exhibit 7 presents the pathway milestones, the primary processes linking milestones, and the expected time lapse between milestone accomplishments. The processes encompass the influential factors identified by the AAMC Task Force as well as other situational variables, educational curriculum characteristics, career selection and attitudinal effects, and financial considerations. A detailed discussion of each of the 12 milestones, concomitant processes, data sources, and data estimation methodologies is presented in our earlier report.[1]

MEDICAL EDUCATION PATHWAY: ANALYSIS OF INDIVIDUAL STAGES

In this exploratory evaluation, data and analyses were developed for seven of the twelve milestones in the medical education pathway. The relationships between several stages of the pathway were also investigated and comparisons made with the AAMC Task Force projections. The seven milestones studied in the evaluation are:

- High School Graduates
- College First-Year Entrants
- Physician Aspirants
- Medical School Applicants

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[1] The Orkand Corporation, op. cit., pp. II-44 - II-45.

Exhibit 7

Modified Medical Education Pathway

MILESTONES	PRIMARY PROCESSES LINKING MILESTONES	Approx. Duration Years
1. High School Graduate	Primary and Secondary Education	12
2. College Applicant	Applications and Tentative Career Selection	1
3. College Applicant Offered Admission	Admissions	0
4. College First-Year Entrant	Matriculation	0
5. College Level Physician Aspirant	Higher Education, Retention and Tentative Career Selection	4
6. College Graduate	Application and Career Selection	1
7. Medical School Applicant	Admissions	0
8. Medical School Applicant Offered Admission	Matriculation	0
9. Medical School First-Year Entrant	Medical Education, Retention	4
10. Medical School Graduate	Internship and Residency Training	Variable
11. Licensed Physician	Professional Mode Selection	Variable
12. Practicing Physician		

- Medical School Applicants Offered Admission
- Medical School First-Year Entrants
- Medical School Graduates

Each of these milestones is discussed in the following sections.

High School Graduates

The result of estimations of the number of high school graduates for all students, Whites, and Blacks is presented in Exhibit 8. Examination of the exhibit shows that the proportion of Blacks has generally increased since 1965 with some minor fluctuation that may reflect sampling error rather than true differences. It appears that the proportion of Blacks in the high school graduate population approximates or even exceeds the general proportion of Blacks in the population, approximately 11.4 percent of the population according to the Bureau of Census estimates for 1974. This may be explained by a somewhat higher proportion of Blacks in the 15 to 19 age group (13.6 percent) than in the general population according to current population estimates.

College First-Year Entrants

Information available from the American Council on Education (ACE) on the distribution of college first-year entrants by minority group is presented in Exhibit 9. Substantial fluctuation may be noted over the time period with combined minority enrollment peaking at over 11 percent in the 1968-1969 and 1972-1973 academic years. The most recent estimate finds combined minority enrollment at 10.4 percent. It should be noted that the substantially increased level of total enrollment which occurred during the late 1960s apparently declined in the early 1970s. According to ACE estimates, first-year enrollment has only increased over the two most recent academic years; however, this increase has been considerably lower than the increase that occurred over the 1966 to 1970 period.

The number of minority college students enrolled from each minority group has increased considerably over the time period with both Blacks and American Indians showing gains of over 100 percent over the nine year period. The proportion of Black enrollment appears to have decreased significantly since the 1972-1973 academic year when Black enrollment was at 8.7 percent. Data were only available over the last four years for Mexican Americans and Mainland Puerto Ricans; however, both have shown significant numerical gains with Mexican Americans increasing enrollment by approximately 7,100.

Exhibit 8

Estimates of High School Graduates: Whites and Blacks
1965-1975 (in Thousands)

Academic Year / Population Group	1965-1966[1]		1966-1967		1967-1968		1968-1969		1969-1970	
	N	%	N	%	N	%	N	%	N	%
A. Total Graduates	2,932	100.0	2,994	100.0	3,089	100.0	3,168	100.0	3,260	100.0
B. Whites	2,588	88.3	2,632	87.9	2,711	87.8	2,775	87.6	2,845	87.3
C. Blacks	316	10.8	336	11.2	347	11.2	361	11.4	380	11.7

Academic Year / Population Group	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975	
	N	%	N	%	N	%	N	%	N	%
A. Total Graduates	3,296	100.0	3,414	100.0	3,368	100.0	3,409	100.0	3,518	100.0
B. Whites	2,875	87.2	2,987	87.5	2,894	85.9	2,910	85.4	3,005	85.4
C. Blacks	385	11.7	383	11.2	427	12.7	460	13.5	454	12.9

[1] Straight-line interpolation from 1964-1965 and 1966-1967 data. Data on 1965-1966 not available.

Source: U.S. Department of Commerce, Bureau of Census, Education Statistics Division

Note: Data are for High School Seniors as Estimated for Number of High School Graduates
Actuals for 1971-1972 through 1974-1975

The Orkand Corporation Estimate for 1965-1966 through 1970-1971

Exhibit 9

Estimates of College First-Year Entrants, by Minority Group: 1966-1975

Population Group \ Academic Year	1966-1967		1967-1968		1968-1969	
	N	%	N	%	N	%
A. Total Enrollment	1,163,100	100.0%	1,359,900	100.0%	1,472,900	100.0%
B. Non-Minority	1,063,100	91.4%	1,231,900	90.6%	1,301,900	88.4%
C. Combined Minority	100,000	8.6%	128,000	9.4%	171,000	11.6%
D. Black	58,200	5.0%	58,500	4.3%	85,400	5.8%
E. Mexican American	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
F. American Indian	7,000	0.6%	9,500	0.7%	10,300	0.7%
G. Puerto Rican - Mainland	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Population Group \ Academic Year	1969-1970		1970-1971		1971-1972	
	N	%	N	%	N	%
A. Total Enrollment	1,637,800	100.0%	1,617,300	100.0%	1,634,100	100.0%
B. Non-Minority	1,516,600	92.6%	1,481,400	91.6%	1,495,200	91.5%
C. Combined Minority	121,200	7.4%	135,900	8.4%	138,900	8.5%
D. Black	98,300	6.0%	98,700	6.1%	102,900	6.3%
E. Mexican American	N.A.	N.A.	N.A.	N.A.	18,000	1.1%
F. American Indian	4,900	0.3%	3,200	0.2%	14,700	0.9%
G. Puerto Rican-Mainland	N.A.	N.A.	N.A.	N.A.	3,300	0.2%

Population Group \ Academic Year	1972-1973		1973-1974		1974-1975	
	N	%	N	%	N	%
A. Total Enrollment	1,557,500	100.0%	1,649,000	100.0%	1,673,100	100.0%
B. Non-Minority	1,372,200	88.1%	1,477,500	89.6%	1,499,100	89.6%
C. Combined Minority	185,300	11.9%	171,500	10.4%	174,000	10.4%
D. Black	135,500	8.7%	128,700	7.8%	128,800	7.4%
E. Mexican American	23,400	1.5%	21,400	1.3%	25,800	1.5%
F. American Indian	17,100	1.1%	14,800	0.9%	15,100	0.9%
G. Puerto Rican - Mainland	9,300	0.6%	6,600	0.4%	10,000	0.6%

Source: American Council on Education, National Norms for Fall Entering College Freshmen, 1966 through 1974.

students and Puerto Rican enrollment going from 3,300 in 1971 to approximately 10,000 in 1974.

When the proportion of minority students in the first-year college class is examined, some of the relatively large numerical increases in enrollment are reduced in impact because of the generally expanding first-year class size over the entire time period. Blacks increased from 5.0 percent of the 1966-1967 entering class to 7.4 percent in the 1974-1975 academic year. American Indians increased three-tenths of one percent over the nine years to 0.9 percent of the 1974-1975 first-year class. Both Mexican Americans and Mainland Puerto Ricans increased their proportion approximately four-tenths of one percent with the 1974-1975 enrollment of these two groups at 1.5 percent and 0.6 percent, respectively. Of the four minority groups, the American Indian group is the only one that apparently exceeds the population proportion with 0.9 percent in the college first-year class and approximately 0.4 percent in the general population. Puerto Ricans are close to parity with 0.6 percent in the first-year class as compared to 0.7 percent in the general population. Mexican Americans are close to the halfway point of proportional representation with 1.5 percent in the first-year class and 3.2 percent in the population. Blacks, however, are significantly below the proportional representation level with 7.4 percent in the first-year class but approximately 11.5 percent in the general population.

In their analysis of college first-year enrollment and the projected enrollment for the 1970-1976 period, the AAMC Task Force made the following assumption: minority enrollment in college continues to grow at about the same rate as that for the past two years. Blacks were used as the surrogate measure for all minority groups in the Task Force calculations. The rate of increase in the size of the Black college first-year class between the two most recent years for which the Task Force had data (1968-1969 and 1969-1970) was 15.3 percent. However, the Task Force used a 10.8 percent increase to project 120,000 Black first-year college entrants by the year 1975-1976. In reality, the 1968-1969 and 1969-1970 academic years were relatively high growth years for Black college enrollment. The actual observed increases for the following two years--1970-1971 and 1971-1972--were substantially lower, 0.4 percent and 4.3 percent, respectively. Even if the college enrollment for the combined minority groups is used, the increases for the years are 12.1 percent and 2.2 percent for an average of 7.2 percent--still below the estimates of 15.3 percent and the 10.8 percent applied by the Task Force.

Physician Aspirants

The proportion of the first-year college class that identified the doctor of medicine or doctor of dental surgery

career as a probable career choice has varied considerably over the nine year period for which data were available. Exhibit 10 presents the data on the proportion of college freshmen selecting medical careers for three groups: all freshmen, freshmen entering predominately Black undergraduate colleges, and Black freshmen entering all colleges. The observed fluctuation may in part be due to sampling errors as well as to changes in the popularity of alternative careers over the time period. When the distribution of career choices is compared for the 1966-1967 and 1970-1971 academic years for freshmen entering predominately Black colleges, the proportion of students interested in physician careers dropped from 5.6 percent to 2.6 percent. However, college students indicating probable careers in business increased from 11.6 percent to 16.9 percent, perhaps reflecting the expanding opportunities for minorities in the business environment.

There is some indication that the proportion of college freshmen indicating a probable physician career has increased somewhat since the late 1960s. However, the physician career selections for the college freshmen from the 1970 through 1976 classes from which medical school entering students would be drawn were considerably below the 6.0 percent level assumed by the Task Force. Only since 1972-1973 has the 6.0 percent level been approached in the Black college freshmen entering class; these students will not appear in the medical school applicant pool until the 1976-1977 academic year at the earliest. A detailed discussion of the impact of these trends is presented in the section of this chapter on the relationships between milestones.

Medical School Applicants

The trends in medical school applicants by minority group to U.S. medical schools are presented in Exhibit 11. Although data on the size of the combined minority applicant pool were available for only the four most recent academic years, the information shows little change over time, both in the total number of minority applicants and the relatively stable proportion of minority students in the total applicant pool. The small change in the number of applicants over the four year time period and their relatively stable proportions also appear to generally apply to each separate minority group although the number of Mexican American applicants has increased slightly and the number of American Indian applicants declined over the time period.

Additional historical data were available for Black applicants since 1970. The proportion of Blacks in the applicant pool increased to a high of 6.6 percent in the 1972-1973 academic year. However, the proportion decreased from 1972-1973 until 1975-1976 and then increased to 6.0

Exhibit 10

College Freshmen Selecting M.D. or D.D.S. Career Choice

Academic Year	All Freshmen	Freshmen Entering Predominately Black Colleges	Black Freshmen (All Colleges)
1966-1967	4.8%	5.6%	5.1%
1967-1968	4.2%	4.7%	4.5%
1968-1969	3.7%	2.9%	4.0%
1969-1970	3.4%	N.A.	3.6%
1970-1971	3.9%	2.6%	4.2%
1971-1972	4.4%	3.9%	4.7%
1972-1973	5.5%	3.6%	5.9%
1973-1974	5.9%	5.3%	6.3%
1974-1975	5.3%	4.5%	N.A.

Sources: American Council of Education, National Norms for Fall Entering Freshmen, 1966 Through 1974.

Davis G. Johnson, et. al., "Recruitment and Progress of Minority Medical School Entrants 1970-1972", Journal of Medical Education, Vol. 50, July 1975.

Exhibit 11

Distribution of Medical School Applicants, by Minority Group: 1970-1976

ACADEMIC YEAR / MINORITY GROUP	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A. Total Applicants	24,987	100.0	29,172	100.0	36,135	100.0	40,506	100.0	42,624	100.0	42,303	100.0	42,155	100.0
B. Non-Minority	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	37,457	92.5	39,518	92.7	39,254	92.8	38,832	92.1
C. Combined Minority	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3,049	7.5	3,106	7.3	3,049	7.2	3,323	7.9
D. Black	1,250	5.0	1,552	5.3	2,382	6.6	2,227	5.5	2,368	5.6	2,288	5.4	2,523	6.0
E. Mexican American	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	349	0.9	437	1.0	427	1.0	460	1.1
F. American Indian	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	240	0.6	131	0.3	132	0.3	128	0.3
G. Puerto Rican - Mainland	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	233	0.6	170	0.4	202	0.5	212	0.5

Source: AAMC, Division of Student Studies, December 5, 1975, W.F. Dube, "Datagram, U.S. Medical Student Enrollment, 1970-1971 through 1974-1975."
Journal of Medical Education, 50:303-305, 1975; Ibid., 1977.

percent for the 1976-1977 academic year. A significant increase in the number of Black applicants was made between 1970 and 1973 with the number of Black applicants almost doubling in the three year period. However, this increase was accompanied by a general increase in the total number of applicants to medical school over the same period.

Medical School Applicants-Offered-Admission

The total number of medical school applicants extended offers has increased somewhat more than 30 percent since 1970 commensurate with the increase in the size of the first-year medical school class. Data by minority group were available, however, only since the 1973-1974 academic year as is shown in Exhibit 12. Since that time, the number of offers extended to the combined minority applicants has remained relatively stable. However, over the same period offers to minority students have decreased, as a proportion of the total number of offers, from 9.2 percent to 8.3 percent. The largest decrease was evidenced by Blacks falling from 6.8 percent in the 1973-1974 academic year to 6.1 percent in 1976-1977. Mexican Americans slightly increased their share of the total number of offers extended while the proportion of American Indians and Mainland Puerto Ricans declined slightly.

One important comparison is between the distribution of minority students in the "applicant-offered-admission" population and their distribution in the applicant pool. Minority students have consistently gained a higher proportion of offers than the proportion of minorities in the applicant pool. In the 1975-1976 academic year, the combined minority groups comprised 7.2 percent of the applicant pool in contrast to 8.5 percent of the number of offers extended. This reflects an apparent demand for minority students by medical schools and admissions policies that appear to be sensitive to this increased concern.

Medical School First-Year Entrants

A detailed discussion of the distribution of minority groups in the medical school first-year class was presented in Chapter III. Four points are of special significance and are reemphasized:

- The repetition rate for combined minority students appears to be approximately ten times the repetition rate for non-minority students (11.7 percent for minorities versus 1.2 percent for non-minorities).
- When the first-year class size is adjusted for the number of students repeating the first-year, the proportion of minority students enrolled in medical

Exhibit 12

Distribution of Minority School Applicants Offered Admission, by Minority Group: 1970-1976

ACADEMIC YEAR / MINORITY GROUP	1970-1971		1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A. Total Offerees	11,500	100.0	12,335	100.0	13,757	100.0	14,335	100.0	15,066	100.0	15,365	100.0	15,774	100.0
B. Non-Minority	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	13,012	90.8	13,714	91.0	14,057	91.5	14,461	91.7
C. Combined Minority	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,323	9.2	1,352	9.0	1,308	8.5	1,313	8.3
D. Black	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	977	6.8	1,000	6.6	945	6.2	966	6.1
E. Mexican American	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	174	1.2	216	1.4	220	1.4	223	1.4
F. American Indian	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	79	0.6	64	0.4	57	0.4	39	0.2
G. Puerto Rican - Mainland	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	93	0.6	72	0.5	86	0.6	85	0.5

Source: AAMC, Division of Student Studies, December 5, 1975, W.F. Dube, "Datagram, U.S. Medical Student Enrollment, 1970-1971 through 1974-1975." Journal of Medical Education, 50:303-305, 1975; Ibid., 1977.

school declines approximately one percentage point depending on the academic year.

- In addition to the level of minority enrollment decreasing as a result of the adjustment for repeaters, the level of minority representation in the first-year medical school class changed little over the analyzed time period. This lack of change is most noticeable for Blacks. For first-year students including repeaters, the proportion of Blacks increased 0.5 percent between the 1970-1971 and 1975-1976 academic years. For nonrepeating, first-year Blacks, the increase in proportionality was only one-tenth of one percent.

- There appeared to be a significant drop in the proportion of minority nonrepeating, first-year students between the 1974-1975 and 1975-1976 academic years (9.3 percent and 8.2 percent, respectively). This was primarily a reflection of the decreased Black enrollment in the latter year. The proportion of combined minority students in 1975-1976 was reduced to the levels observed for the 1971-1972, 1972-1973, and 1973-1974 academic years (8.1, 8.2, and 8.2 percent, respectively).

When comparisons are made with the AAMC Task Force goals of proportionality with the population, it is immediately apparent that the goals have not been reached. If the proportion of minority students targeted for enrollment in the 1975-1976 academic year by the Task Force is compared with the actual combined nonrepeating, first-year minority enrollment, 67.9 percent of the 1,800 minority student goal had been achieved. However, this is the most favorable interpretation of the goal statement. If the AAMC enrollment goal is interpreted to apply to just the Black minority group--a reasonable possibility since the proportion of Blacks in the population approximately corresponds to this percentage and Blacks were used as the surrogate measure throughout the Task Force report--then only 49.8 percent of the AAMC goal had been acheived by the 1975-1976 academic year with an estimated 897 nonrepeating, first-year students enrolled in U.S. medical schools.

Medical School Graduates

Trends in medical school graduates by minority group were discussed in Chapter III. In summary, although only four years of graduate data were available in the analysis, the proportion of minority students enrolled in the graduating year of medical school has increased from 2.3 percent in 1970-1971 to 5.4 percent in 1973-1974. This change is

concomitant with increases in first-year enrollment prior to 1970 and a continuation of the retention of minority students since that time.

Summary of Minority Representation at Selected Stages

The status of the proportional representation of minority groups in the medical education pathway is summarized in the bar chart in Exhibit 13. By inspection, insight can be gained into some of the problems that constrain the expansion of educational opportunities in medical school for the minority groups. The first constraint appears to be the disproportionally smaller size of the medical school applicant pool for the minority groups when compared to the proportion of minority students in the medical school "applicant-offered-admission" and first-year entrant population. A second constraint appears to be the disproportionately small size of the college first-year entrant population for the minority groups as compared to the proportion of each minority group in the general population. It may not be reasonable to expect that the proportion of minority students in the medical school first-year class would exceed the percentage of minority students in the undergraduate college first-year population since a college education is generally a prerequisite for medical school entrance. For both Blacks and Mexican Americans, a considerable gap exists between the proportion of each minority group in the general population and the group's proportion in the college first-year class. At the same time, the proportion of both minority groups in the medical school "applicant pool-offered-admission" and entrant categories is relatively close to the proportion of the minority group enrolled in first-year college class. It appears that the major difficulty and barrier to the increase in the proportion of medical school minority enrollment is the size of minority enrollment in undergraduate college.

MEDICAL EDUCATION PATHWAY: ANALYSIS OF INTERRELATIONSHIPS AMONG STAGES

The organization of the medical education pathway into milestones provides focal points for data collection and the analysis of the proportionality of minority representation at each stage in the education process. However, the analysis extends beyond a discussion of the relative proportionality of minority representation in the individual stages. A critical factor to the understanding of the dynamics of the medical education pathway is the interrelationships among the stages.

Data for the analysis of the pathway relationships and the primary calculations are presented in Exhibits 14 through 16 for non-minority, combined minority, and Black populations,

Exhibit 13

Minority Representation in Medical Education Pathway: 1974

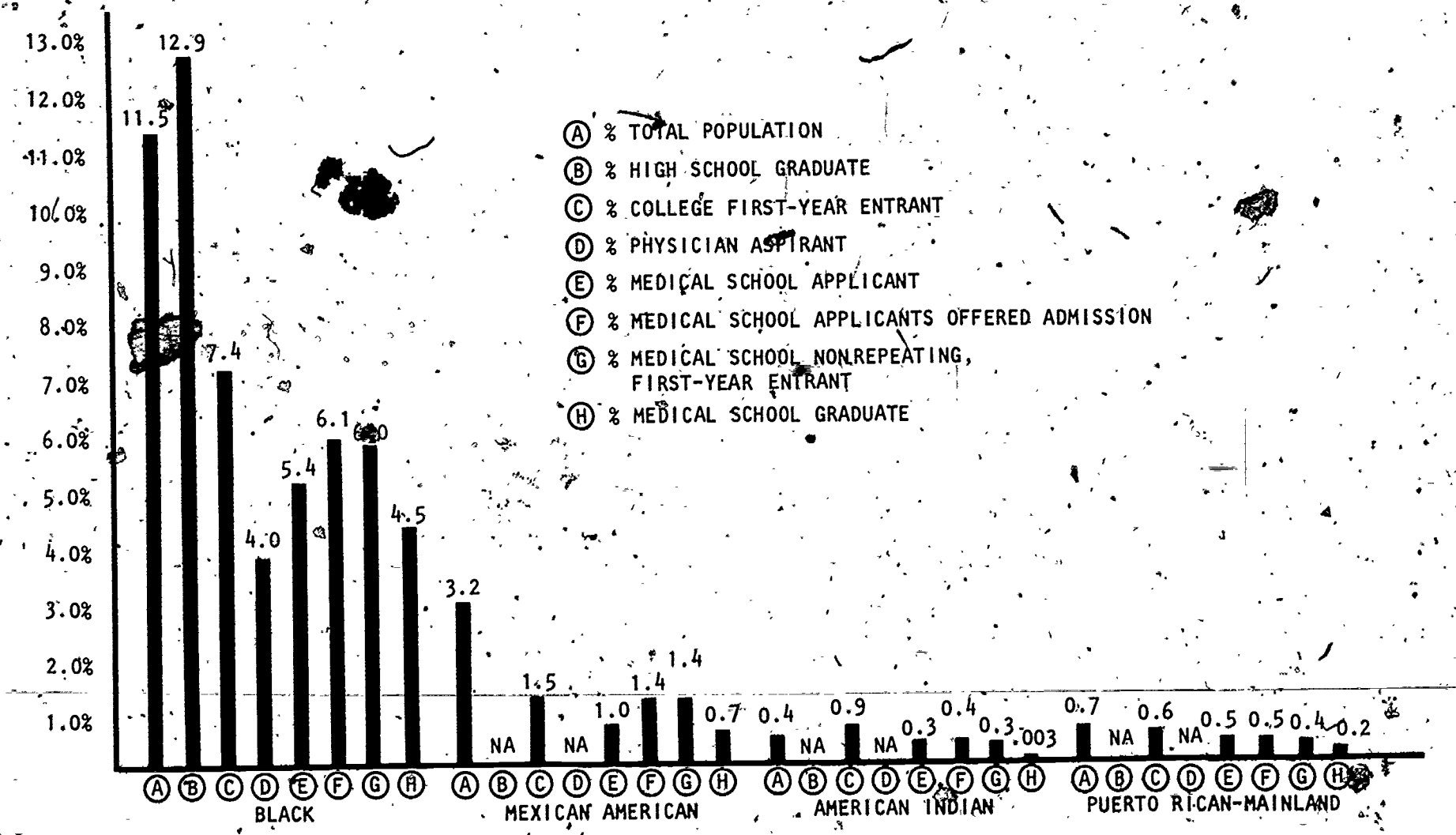

Exhibit 14

Medical Education Pathway-Interrelationships Among Selected Milestones, 1970-1976: Non-Minority

MILESTONE		ACADEMIC YEAR					
		1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
A. High School Graduates (5 years prior to entering medical school)	N	2,588,000	2,632,000	2,711,000	2,775,000	2,845,000	2,875,000
B. College First-Year Entrants (4 years prior to entering medical school)	N	1,063,100	1,231,900	1,301,900	1,516,600	1,481,400	1,495,200
	%(A)	41.1%	46.8%	48.0%	54.7%	52.1%	52.0%
C. Physician Aspirants	N	51,000	51,700	48,200	51,600	57,800	65,800
	%(B)*	4.8%	4.2%	3.7%	3.4%	3.9%	4.4%
D. Medical School Applicants	N	N.A.	N.A.	N.A.	37,457	39,518	38,999
	%(B)	N.A.	N.A.	N.A.	2.5%	2.7%	2.6%
	%(C)	N.A.	N.A.	N.A.	72.6%	68.4%	59.3%
E. Medical School Applicants Offered Admission	N	N.A.	N.A.	N.A.	13,012	13,714	13,885
	%(D)	N.A.	N.A.	N.A.	34.7%	34.7%	35.6%
F. Medical School First-Year Entrants (Excludes Repeaters)	N	10,237	10,984	12,180	12,370	13,022	13,746
	%(D)	N.A.	N.A.	N.A.	33.0%	33.0%	35.2%
	%(E)	N.A.	N.A.	N.A.	95.1%	95.0%	99.0%
G. Medical School Graduates (4 years after entering medical school)	N	10,393	N.A.	N.A.	N.A.	N.A.	N.A.

*Percent for all freshman was used in computations.

Exhibit 15

Medical Education Pathway-Interrelationships Among Selected Milestones, 1970-1976: Combined Minority

MILESTONE		ACADEMIC YEAR					
		1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
A. High School Graduates (5 years prior to entering medical school)	N	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B. College First-Year Entrants (4 years prior to entering medical school)	N	100,000	128,000	171,000	121,000	135,900	138,900
	%(A)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
C. Physician Aspirants	N	5,100	5,760	6,840	4,360	5,710	6,530
	%(B)*	5.1%	4.5%	4.0%	3.6%	4.2%	4.7%
D. Medical School Applicants	N	N.A.	N.A.	N.A.	3,049	3,106	3,052
	%(B)	N.A.	N.A.	N.A.	2.5%	2.3%	2.2%
	%(C)	N.A.	N.A.	N.A.	69.9%	54.4%	46.7%
E. Medical School Applicants Offered Admission	N	N.A.	N.A.	N.A.	1,323	1,352	1,291
	%(D)	N.A.	N.A.	N.A.	43.4%	43.5%	42.3%
F. Medical School First-Year Entrants (Excludes Repeaters)	N	755	972	1,089	1,099	1,332	1,223
	%(D)	N.A.	N.A.	N.A.	36.0%	42.9%	40.1%
	%(E)	N.A.	N.A.	N.A.	83.1%	98.5%	94.7%
G. Medical School Graduates (4 years after entering medical school)	N	594	N.A.	N.A.	N.A.	N.A.	N.A.

*Percent for Blacks was used in computations.

Exhibit 16

Medical Education Pathway-Interrelationships Among Selected Milestones, 1970-1976: Blacks

MILESTONE		ACADEMIC YEAR					
		1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
A. High School Graduates (5 years prior to entering medical school)	N	316,000	336,000	347,000	361,000	380,000	385,000
B. College First-Year Entrants (4 years prior to entering medical school)	N	58,200	58,500	85,400	98,300	98,700	102,900
	%(A)	18.4%	17.4%	24.6%	27.2%	26.0%	26.7%
C. Physician Aspirants	N	2,970	2,630	3,410	3,540	4,150	4,840
	%(B)	5.1%	4.5%	4.0%	3.6%	4.2%	4.7%
D. Medical School Applicants	N	1,250	1,552	2,382	2,227	2,368	2,286
	%(B)	2.1%	2.7%	2.8%	2.3%	2.4%	2.2%
	%(C)	42.1%	59.0%	69.9%	62.9%	57.1%	47.2%
E. Medical School Applicants Offered Admission	N	N.A.	N.A.	N.A.	977	1,000	931
	%(D)	N.A.	N.A.	N.A.	43.2%	42.2%	40.7%
F. Medical School First-Year Entrants (Excludes Repeaters)	N	646	802	850	850	984	897
	%(D)	51.7%	51.7%	35.7%	38.2%	41.6%	39.2%
	%(E)	N.A.	N.A.	N.A.	87.0%	88.4%	86.3%
G. Medical School Graduates (4 years after entering medical school)	N	495	N.A.	N.A.	N.A.	N.A.	N.A.

respectively.[2] The analysis findings are summarized in the following sections.

Relationships Between College First-Year Entrants and High School Graduates

- The proportion of both non-minority and Black high school graduates entering undergraduate college increased from 1965 to 1970. (Five years prior to the medical school academic year.)
- The percent of both non-minority and Black high school graduates entering college peaked in the 1968-1969 high school academic year and declined slightly thereafter.
- Non-minority high school graduates consistently had almost double the probability of entering college than did Black high school graduates over the time period. In the 1975-1976 high school academic year, 52.0 percent of the non-minority high school graduates entered college as compared to 26.7 percent of the Black high school graduates.

Relationships Between Physician Aspirants and College First-Year Entrants

- The percent of "probable physician career selection" responses by college freshmen varied considerably over the six year period included in the evaluation and was considerably below the AAMC Task Force estimate of 6.0 percent for Black students eligible for admission to the 1970-1971 through 1975-1976 classes.
- The average percent of Black college freshmen indicating a possible physician career was 4.4 percent over the time period.
- In each of the six years, a higher proportion of Blacks indicated a possible physician career than did all freshmen (4.4 percent average for Blacks, 4.1 percent for all freshmen).

[2] A more extensive discussion of these relationships for each of the minority groups is found in our earlier report, ibid; our analysis of relationships among stages includes conclusions from our minority specific analysis.

Relationships Between Medical School Applicants and College First-Year Entrants

- Medical school applicants as a percent of college first-year entrants four years prior to application to medical school remained relatively stable (between 2.1 percent and 2.8 percent) for non-minority, combined minority, Black, and Mexican American students over the time period.
- The percent of American Indian undergraduate college entrants applying to medical school was relatively high in the 1973-1974 and 1974-1975 academic years with 4.9 and 4.1 percent, respectively; applicants in the 1975-1976 academic year decreased to 0.9 percent.
- Mainland Puerto Rican medical school applicants as a percent of undergraduate college entrants were 6.2 percent. However, only one observation year (1975-1976) was available.

Relationships Between Medical School Applicants and Physician Aspirants

- Medical school applicants as a percent of the physician aspirants has declined steadily since the 1973-1974 academic year for both non-minority and combined minority student populations.
- For Blacks, medical school applicants as a proportion of aspirants increased from 42.1 percent in 1970-1971 to a high of 69.9 percent in 1972-1973 and declined after that date.
- The ratio of medical school applicants to physician aspirants has been consistently lower for the combined minority group than for non-minority medical school applicants. The average percent over the time period of the combined minority group was 57.0 percent and 66.8 percent for the non-minority group.
- The AAMC Task Force assumed that a smaller proportion of minority college freshmen physician aspirants would become medical school applicants than would non-minority freshmen. However, the Task Force estimate of 25 and 35 percent for minority and non-minority students respectively underestimated the actual proportion by a factor of two in each case. Also, the ratios were not stable over the time period as also assumed by the Task Force.

Relationships Between Medical School Applicants Offered Admission and Medical School Applicants

- Since the 1973-1974 academic year, the ratio of "medical school applicants-offered-admission" to medical school applicants was higher for minority students than for non-minority students, with an average of 43.1 percent of minority applicants receiving offers as compared to 35.0 percent for non-minority applicants.

- There has been no discernible change in the ratio of "applicants-offered-admission" to applicants for any of the population groups over the time period.

- The ratio of "applicants-offered-admission" was higher for Mexican Americans, with an average of 50.0 percent, than for any of the other minority groups.

Relationships Between Medical School Nonrepeating, First-Year Entrants and Medical School Applicants

- The ratio of medical school nonrepeating, first-year entrants to medical school applicants is substantially lower for the non-minority population than for the combined minority population with an average of 33.7 percent of the non-minority applicants entering medical school as compared to 39.7 percent for the minority applicants.

- The ratios for non-minority, combined minority, Blacks, and Mexican Americans have remained relatively stable since the 1974-1975 academic year.

- A significant decline in the ratio of entrants to applicants was observed for both the American Indian and Mainland Puerto Rican minority groups between the 1974-1975 and 1975-1976 academic years.

- Mexican Americans had a substantially higher and more stable entrant to applicant ratio than any of the other minority groups with 48.1, 50.3, and 49.3 percent for the 1973-1974 through 1975-1976 academic years respectively.

- The AAMC Task Force overestimated the proportion of both minority and non-minority applicants that become medical school entrants. The Task Force assumed that approximately 75 percent of the minority applicants would matriculate. This compares with an observed value of 39.7 percent. The Task Force also assumed that about 45 percent of the non-minority students

would become entrants. The actual percent was 53.7 percent over the last three academic years.

Relationships Between Medical School Nonrepeating, First-Year Entrants and Medical School Applicants Offered Admission

- A very high proportion of the students offered a place in the medical school first-year class become entrants in the medical school. The average for both combined minority students and non-minority students exceeds 90 percent.
- A significant increase in the entrant to "applicant-offered-admission" ratio was observed for the combined minority, Black, American Indian, and Mainland Puerto Rican groups between the 1973-1974 and 1974-1975 academic years.
- In the 1975-1976 academic year, the ratio of entrants to "applicants-offered-admission" declined sharply for the American Indian and Mainland Puerto Rican minority groups.

Relationships Between Medical School Graduates and Medical School First-Year Entrants

Information on only one class that both enrolled and graduated during the time period included in the evaluation was available for analysis. Furthermore, the data reflect the number of graduates receiving M.D. degrees in the academic year rather than the number of graduates from a particular entering class receiving degrees. The cross sectional rather than longitudinal nature of the data, as well as the presence of only one isolated observation severely limit any interpretation of the relationship between the medical school graduate and medical school first-year entrant milestones in the medical education pathway for minority students. A comprehensive analysis of the relationships must await the availability of additional yearly data on minority graduates; control for the incidence of repeaters and reentrants; as well as controls for schools offering less than four year curriculums.

V. PROJECTIONS OF FINANCIAL AID REQUIREMENTS AND ENROLLMENT

INTRODUCTION

This chapter describes the evaluation of the achievement of the AAMC Task Force enrollment goals and financial aid projections and also develops predictions regarding future minority enrollment. In presenting this analysis, the chapter is divided into three sections, each of which is discussed in turn. First, the AAMC financial aid requirements for minority students are updated. Second, the achievement of the AAMC goals for minority enrollment are evaluated. Third, based on characteristics of the medical education pathway, predictions of future minority enrollment are developed.

STUDENT FINANCIAL AID REQUIREMENTS

The 1970 AAMC Task Force Report developed estimates of the requirements for financial aid to minority students for the academic years 1970-1971 through 1975-1976. These AAMC estimates are presented in Exhibit 17 using both annual aid requirements of $3,000 and $4,000 per student. The AAMC estimates specify the concept of minority student financial "need" or requirements. Initially, an attempt was made to compare the AAMC estimates of financial aid requirements with actual financial aid disbursements to minority students. Given the unavailability of data with regard to the level of financial aid actually disbursed to minority students, this section of the chapter contains an analysis of updated financial aid requirements. An evaluation of the effect of the level of funding disbursed to minority students must await the availability of requisite financial aid broken down by minority group status. Limited data for funding through one source--National Medical Fellowships--are available and analyzed in Chapter VII. The following discussion focuses on the development and analysis of updated financial aid requirements using more recent data.

Methodology for Updating Financial Aid Estimates

The calculation of financial aid requirements involves the development of estimates of: a) the average level of aid per year required for each student, and b) the number of minority students requiring aid.

Exhibit 17

AAMC Task Force Estimates of Total Aid Requirements

Academic Year	Total Aid Required ($3,000 per year)	Total Aid Required ($4,000 per year)
1970-71	$ 3,920,000	$ 5,230,000
1971-72	5,530,000	7,370,000
1972-73	7,600,000	10,130,000
1973-74	9,780,000	13,040,000
1974-75	11,930,000	15,910,000
1975-76	13,770,000	18,360,000

Source: AAMC Task Force Report, Table B-11

The estimates of average aid per year were developed as follows:

- Average annual costs for individuals attending U.S. medical schools were obtained for the 1970-1971 and 1974-1975 academic years for public and private schools.[1] These costs, which were developed in 1973 dollars, were converted to current price levels in each of the academic years by applying relative values of the Consumer Price Index.

- The public and private school costs were then combined using relative enrollment data[2] to produce composite cost estimates of $5,503 for the 1970-1971 academic year and $7,360 for the 1974-1975 academic year.

- The estimates for the 1970-1971 and 1974-1975 academic years were combined to produce an average estimate for the five year time-period of $6,413 paralleling the AAMC Task Force use of a constant cost estimate.

- In the absence of more recent valid data, we assumed, as did the AAMC Task Force, that 40 percent of a student's annual expenditures would be supplied by personal funding (e.g., spouse's income, employment). This results in an estimated annual aid requirement of $3,848 per student.

- Paralleling the AAMC Task Force use of an upper bound estimate one-third higher than the low estimates, an upper estimate of $5,118 was developed.

The estimated number of students requiring aid was derived by first obtaining actual minority enrollment data presented earlier in this report. We then assumed, as did the AAMC Task Force, that 85 percent of minority students will require financial aid. This assumption may be somewhat pessimistic as it ignores recent increases in minority family incomes.

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[1] Federal Manpower Legislation and The Academic Health Centers: An Interim Report, Carter et. al., The Rand Corporation, April 1974, pg. 14.

[2] Data were obtained from the project analyses of LCME-II (Liaison Committee on Medical Education) data 1970-1971 through 1973-1974; Fall Enrollment Questionnaire 1974-1975; and AAMC Division of Student Study Report, October 1975.

However, the comparison of relative changes in minority and non-minority incomes is a complex one and no data specifically applicable to medical school students were available.

Analysis of Updated Aid Requirements

The updated estimates of total aid requirements are shown in Exhibit 18. A comparison of the Task Force estimates with the updated requirements shows that actual aid requirements were probably considerably higher than the AAMC Task Force estimated although the relative difference diminishes sharply in the most recent years. This diminished difference between AAMC estimates and updated requirements can be attributed to two partially offsetting factors. First, the yearly student aid requirement is approximately 28 percent higher in the updated estimates than the AAMC Task Force estimates. Understandably, the AAMC Task Force did not anticipate the magnitude of the rates of inflation that actually occurred during the six year period. Second, it should be recalled that the AAMC Task Force used Black enrollment as a proxy for total minority enrollment. Since the updated estimates use actual total minority enrollment, the enrollment figures are higher than the AAMC Task Force estimates for the years 1970-1971 through 1972-1973. For the academic years 1973-1974 through 1975-1976, the failure to meet the AAMC Task Force enrollment projections drops the number of minority students below the anticipated levels and sharply diminishes the differences in total aid requirements.

Exhibit 19 presents updated estimates of total aid requirements for Blacks rather than all minorities. This exhibit permits the analysis of the full impact that the failure to achieve the AAMC enrollment levels have had on total financial aid requirements. A comparison of those estimates and the AAMC Task Force estimates shows that total aid requirements are lower than originally estimated starting with the 1973-1974 academic year, despite the higher estimated annual cost per student. Again, this result can be attributed to the increasing difference between the actual level of Black enrollment and the AAMC Task Force targets for enrollment.

COMPARISON OF ACTUAL MINORITY ENROLLMENT LEVELS WITH AAMC TASK FORCE GOALS.

In Chapter III we presented a detailed analysis of medical school enrollment patterns. This section summarizes that data and compares minority medical school enrollment to the enrollment projections developed by the AAMC Task Force.

Exhibits 20 and 21 summarize the observed minority enrollment levels by year for the combined minority and the

Exhibit 18

Updated Estimates of Total Aid Requirements:
All Minorities

Academic Year	Number of Minority Students Requiring Aid	Total Aid Required	
		$3,848 Per Year	$5,118 Per Year
1970-71	1,476	$ 5,679,648	$ 7,554,168
1971-72	2,094	8,057,712	10,717,092
1972-73	2,697	10,378,056	13,803,246
1973-74	3,072	11,821,056	15,722,496
1974-75	3,675	14,141,400	18,808,650
1975-76	3,845	14,795,560	19,678,710

Exhibit 19

Updated Estimates of Total Aid Requirements:
Blacks

Academic Year	Number of Black Students Requiring Aid	Total Aid Required	
		$3,848 Per Year	$5,[illegible]8 Per Year
1970-71	1,287	$ 4,952,376	$ 6,586,866
1971-72	1,776	6,834,048	9,089,568
1972-73	2,190	8,427,120	11,208,420
1973-74	2,450	9,427,600	12,539,100
[illegible]4-75	2,851	10,970,648	14,591,418
1975-76	2,938	11,305,424	15,036,684

EXHIBIT 20

COMPARISONS OF ACTUAL ENROLLMENT LEVELS WITH AAMC TASK FORCE PROJECTIONS, 1970-1976: NON-MINORITY

ENROLLMENT CHARACTERISTIC	ACADEMIC YEAR					
	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
A. Estimated Total Size of Nonrepeating First-Year Class, All Students (Excludes Repeaters)	10,992	11,956	13,269	13,469	14,354	14,969
B. Percent of Total Population Non-Minority	85.6%	85.2%	85.1%	84.6%	84.4%	84.2%
C. Proportional Target for Non-Minority Enrollment in Medical School First-Year Class (A x B)	10,173	10,700	11,716	11,618	12,205	12,525
D. Non-Minority Medical School Nonrepeating First-Year Entrants (Excludes Repeaters)	10,237	10,984	12,180	12,370	13,022	13,746
E. Percent of Target Achieved (D ÷ C)	100.6%	102.7%	103.9%	106.5%	106.7%	109.7%

Exhibit 21

Comparisons of Actual Enrollment Levels with AAMC Task Force Projections, 1970-1976: Combined Minority

ENROLLMENT CHARACTERISTICS	ACADEMIC YEAR					
	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
A. Estimated Total Size of Nonrepeating First-Year Class, All Students (Excludes Repeaters)	10,992	11,956	13,269	13,469	14,354	14,969
B. Percent of Total Population Combined Minority	14.4%	14.8%	14.9%	15.4%	15.6%	15.8%
C. Proportional Target for Combined Minority Enrollment in Medical School First-Year Class* (A x B)	819	1,256	1,553	1,851	2,149	2,444
D. Combined Minority Medical School Nonrepeating First-Year Entrants (Excludes Repeaters)	755	972	1,089	1,099	1,332	1,223
E. Percent of Target Achieved (D ÷ C)	92.2%	77.4%	70.1%	59.4%	62.0%	50.0%

* Calculated from the sum of the individual minority groups.

non-minority student population.[3] The most recent population estimates from the Bureau of Census were used to calculate the targeted number of minority students required for proportionality in the 1975-1976 academic year. However, for Blacks the Task Force estimate of 1,800 first-year class entrants were used, permitting direct comparisons with the Task Force goals. For other groups, the yearly enrollment increase necessary to achieve targeted 1975-1976 enrollment was distributed linearly over the six-year period between the 1970-1971 and 1975-1976 academic years, taking into account the level of minority enrollment in 1969-1970. Therefore, the target enrollment level for each minority group increased each year to the 1975-1976 enrollment goal. For each population group, the percentage of target achieved is calculated for each year.

The principal goal set by the 1970 AAMC Task Force was the achievement of proportional representation of minority populations in the medical school first-year class enrollment by the 1975-1976 academic year. This goal has not been met, and in terms of the combined minority populations, only 50 percent of the required number of first-year minority students necessary to meet the population parity goals were enrolled in the 1975-1976 academic year.

As the minority group with the largest number of first-year students, the enrollment patterns for Blacks dominate the combined minority population. When the minority groups are assessed individually, it is apparent that the American Indian and Mainland Puerto Rican groups were more successful than Blacks in moving toward the goal of proportionality. Although neither group achieved parity with the population in the 1975-1976 academic year, the American Indians and Puerto Ricans did attain 81.7 percent and 60.0 percent of the Task Force goals, respectively. This level of parity compares favorably with 49.8 percent for Blacks and 44.7 percent for the Mexican Americans.

It must be remembered, however, that the proportion of American Indians and Mainland Puerto Ricans in the population is relatively small in comparison to the proportion of Blacks and Mexican Americans. Therefore, significantly fewer new American Indian or Puerto Rican medical school entrants are required to achieve parity. Given their proportion in the population and the concomitant number of students required to

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[3] Data regarding each minority group are found in the earlier Orkand study, op. cit. pp. III - 78-81, but some of the discussion for each minority group is presented in this chapter.

achieve parity, medical schools face a more massive enrollment task to achieve parity for Blacks and Mexican Americans.

Between the 1974-1975 and 1975-1976 academic years, movement toward parity of minority medical students was substantially halted and even reversed by the overall decline in the number and proportion of minority medical students enrolled in the first-year class. The goal of minority representation was farther from being achieved in the latter than in the former academic year.

1976-1980 PROJECTIONS OF FIRST-YEAR CLASS ENROLLMENTS

In addition to analyzing the updated financial aid requirements and evaluating the achievement of the AAMC Task Force goals, this chapter presents projections of future minority medical school enrollment. These predictions are based on our earlier analyses of the relationships between stages in the medical education pathway.

Projections of first-year class enrollments were developed for the time period 1976 through 1980. Information provided by 114 medical schools on expected class size--developed in response to the 1973-1974 academic year LCME-II (Liaison Committee on Medical Education) questionnaire--was used in conjunction with the level of planned medical school enrollment to project the total first-year class size for all U.S. medical schools in future years.[4] Projections were then calculated for the combined minority group and the Black minority group using the trend data for high school graduates and college first-year entrants. The 2.3 percent ratio of medical school applicants to college first-year entrants was applied to estimate medical school applicants in each academic year, and the 39.7 percent ratio was used to estimate the number of medical school nonrepeating, first-year entrants. The proportions of the combined minority group and the Black minority group in the total first-year class previously estimated were then calculated. The results of the projections are presented in Exhibit 22. Projections were not made for the other minority groups because of the small number of students and the instability of many of the medical

[4] These projections were first developed in 1975, and the trend predicted by these projections has been borne out by subsequent events. More specifically, the change from an increase in minority enrollment to a decrease in minority enrollment that we predicted in 1975 understates the actual level of the decrease. Except for minor word changes, the following section remains unchanged from our original report.

Exhibit 22

Projections of First-Year Class Enrollment: 1976-1980

Population Group	ACADEMIC YEAR							
	1976-1977		1977-1978		1978-1979		1979-1980	
	N	%	N	%	N	%	N	%
A. Total	15,571	100.0%	15,905	100.0%	16,072	100.0%	16,235	100.0%
B. Combined Minority	1,692	10.9%	1,566	9.8%	1,589	9.9%	1,613	9.9%
C. Black	1,237	7.9%	1,175	7.4%	1,130	7.0%	1,115	6.9%

education pathway relationships for these groups which would probably render the projections inaccurate.

The projected first-year class enrollments for minority medical students indicate the proportion of minority students will increase in the 1976-1977 academic years. This may be attributed to the substantial increase in undergraduate college first-year enrollment in the 1972-1973 academic year. Of all of the medical education pathway relationships, the most stable over time and the highest impact appears to be the relationship between college enrollment and the medical school applicant pool. After 1972-1973, the college first-year enrollment declined for Black undergraduates and declined and rose again for the combined minority population. These effects resulted in the drop in the combined minority projections for the academic year 1977-1978 from 10.9 percent to 9.8 percent and the subsequent stabilization of the combined minority proportion of the first-year class at 9.9 percent. Black medical school first-year enrollment, however, after an increase to 7.9 percent in 1976-1977 will apparently continue to decline over the four year period to 6.9 percent of the total first-year class by the 1979-1980 academic year.

VI. IMPLEMENTATION OF TASK FORCE RECOMMENDATIONS

INTRODUCTION

The 1970 AAMC Task Force report proposed five major areas where efforts should be made to increase and sustain the retention of minority students in the medical education pathway. During the course of this study, information was gathered on the implementation status of some of the major recommendations. A brief discussion of each area follows.

RECOMMENDATION: INCREASE AVAILABILITY OF STUDENT AID AT THE UNDERGRADUATE LEVEL

Because this exploratory evaluation focused on U.S. medical schools, the issue of undergraduate educational financing was not investigated in depth. There were few data available on the distribution of student aid and institutional assistance to minority groups. Study of undergraduate educational financing is difficult because of the multiple sources of assistance and the lack of a central reporting system.

Analysis of the effect that changes in the level of student aid have on the retention of minority students is confounded by the use of aggregate data without minority-group-specific breakdowns. Although an overall trend in student funds may be observed, the same pattern is not necessarily applicable to all student population groups. Because minority students make up a relatively small proportion of the total undergraduate enrollment and the numbers of students are also correspondingly small--especially for the smallest minority groups such as American Indians and Mainland Puerto Ricans--even a relatively small share of financial aid targeted to these groups can have a substantial impact. This AAMC Task Force recommendation deserves additional investigation regarding the relationships among the following: general funding, minority group funding, and minority student retention in the undergraduate curriculum.

RECOMMENDATION: DESIGNATE A SINGLE NATIONAL ORGANIZATION SUCH AS NATIONAL MEDICAL FELLOWSHIPS, TO BE RESPONSIBLE FOR COORDINATION, SOLICITATION, AND DISTRIBUTION OF FINANCIAL AID TO MINORITY STUDENTS

It appears that since the 1970 AAMC Task Force report, no one organization has taken the responsibility for the

centralized coordination, solicitation, and distribution of financial assistance to minority students. The myriad variety of sources of loan and scholarship assistance for non-minority, as well as minority students, seems to be the major difficulty in the coordination of financial aid activities. Minority medical students--in addition to having generalized eligibility to all scholarship and loan programs--are the specific targets of special aid programs such as those administered by National Medical Fellowships, Inc. The coordination between the multiple sources of financial aid required to fulfill this recommendation is difficult, as sources of aid involve not only scholarship and loan sources but elements of Federal, State, and local government programs, as well as private philanthropic organizations.

The AAMC publication entitled Medical School Admission Requirements 1976-1977 discusses the various sources of financial assistance for students and identifies the following major types of sources: medical schools, the Federally supported Public Health Service Health Professions Scholarship Program; the Federally supported Guaranteed Loan Program (Federally Insured Student Loan Program); loan funds, such as the American Medical Association Education and Research Foundation (AMA-ERF) Program; and private philanthropic organizations.

Although centralized coordination of the sources listed above has not taken place with respect to the financial assistance required by minority students, National Medical Fellowships, Inc. (NMF), has continued to be a major source of both financial aid and information for minority medical students. Three changes in the programmatic characteristics of NMF are important over the time period included in this evaluation. First, between the 1970-1971 and 1974-1975 academic years, NMF substantially increased its level of funding, doubling its awards from $924,000 in 1970-1971 to almost $2.3 million in the 1974-1975 academic year. In the 1975-1976 academic year, NMF funding declined to approximately $1.9 million.

Second, the number of minority students included in the scholarship programs has more than tripled from 598 to 1,840 between the 1970-1971 and 1974-1975 academic years. In the 1974-1975 academic year, approximately 42 percent of all minority students enrolled in U.S. medical schools were receiving some financial aid from NMF with an average award of $1,245. This compares with 34 percent of minority students funded through NMF in the 1970-1971 academic year with an average award of $1,545.

The number of students funded by NMF substantially declined between the 1974-1975 and 1975-1976 academic years. During the 1975-1976 academic year, 1,551 students--approximately 34 percent of minority students--were funded by NMF. Thus, although the NMF program has substantially increased the number of funded students, the proportion of minority students funded in the 1975-1976 academic year was the same as in the 1970-1971 academic year.

The third major change in the NMF program is the increased scope of the program to include Mexican American, American Indian, and Mainland Puerto Rican medical students, as well as Black students. In the 1969-1970 academic year, Blacks accounted for 100 percent of the number of awards. By the 1975-1976 academic year, Blacks comprised 77.2 percent of the number of awards with Mexican Americans, American Indians, and Mainland Puerto Ricans accounting for 15.9, 1.2, and 5.2 percent of the awards, respectively.

RECOMMENDATION: ESTABLISH AN EDUCATIONAL OPPORTUNITY BANK AS A LONG TERM SOLUTION TO THE PROBLEM OF MEDICAL STUDENT FINANCING

The Educational Opportunity Bank has not been implemented. As stated in the Task Force report, the Bank would provide loans to all qualified students to enable them to finance completely their educational costs at the institution of their choice. Loans would be paid out of future earnings and no distinctions among recipients would exist, even with respect to the student's own economic resources. As stated by the Task Force, an objection to the Educational Opportunity Bank is based on the underlying view that students should finance their own education although medical education and the training of physicians is considered by some as a public good which deserves some public support and financing. Also, the bank concept removes considerations of the student's financial need and ability to pay as a primary criterion in the equitable distribution of limited scholarship and loan monies. Another major difficulty with the Educational Opportunity Bank would be the lengthy start-up time before the Bank would become self-financing. During the period prior to the receipt of any repayment income, extensive external funding would be required.

RECOMMENDATION: ESTABLISH A NETWORK OF REGIONAL CENTERS TO PROVIDE FACTUAL AND PERSONAL INFORMATION ABOUT CAREER OPPORTUNITIES FOR MINORITY STUDENTS

The network of regional centers suggested by the Task Force has not been implemented. However, the AAMC has continued to sponsor a series of yearly regional meetings for the deans of medical schools. At these meetings, discussions

center on the recruitment and retention of all students as well as other issues of interest and concern to the institutions. In 1973, the series of regional meetings and workshops focused specifically on problems related to the education of minority students and the dissemination of information about new programs at various schools. It should be emphasized that these regional meetings and activities are not directed at students but rather at the administrative personnel of medical schools.

The regional center concept would be a difficult program to administer since the AAMC, the logical choice for coordinating such an activity, is not established on a regional basis but rather operates out of a national headquarters.

RECOMMENDATION: EXPAND THE AAMC OFFICE FOR MINORITY STUDENT AFFAIRS

Since 1970, the AAMC Office for Minority Student Affairs has expanded both in the number of personnel assigned and in the role it plays with the individual medical schools, according to the AAMC. The Office received little funding with one person assigned prior to 1970. Since 1970, the Minority Student Affairs Office has received regularly budgeted funds from the AAMC and, according to the Association, has a staff of four. The Office has apparently been instrumental in organizing data collection activities--in conjunction with other AAMC staff efforts--to provide regular reports on the enrollment of minority students in the nation's medical schools.

The Office is also responsible for the publication of the handbook entitled Minority Student Opportunities in U.S. Medical Schools, which includes a brief description of minority-related policies and programs provided by each institution. The Office is also responsible for the coordination of efforts with the Minority Affairs Offices at the individual schools. Due to the large number of individual institutions that must be dealt with and the unique problems faced by each, these efforts have been somewhat less successful than the Office's data collection and publication activities. It should be noted that an independent association of minority student affairs offices was formed in an effort to supply additional coordination.

In an effort to increase the probability of medical school's acceptance of minority students, the AAMC operates the Medical Minority Applicant Registry (MEDMAR). The program provides the opportunity for a minority medical school applicant to have basic biographical information circulated automatically to the admissions offices of all U.S. medical

schools without cost. Medical schools interested in further contact with particular students will correspond with them directly and request more detailed application materials.

The AAMC Task Force evidenced much concern over the primary testing instrument, the Medical College Admissions Test (MCAT), used to determine a student's suitability for medical school. One recommendation made by the Task Force was that the Office of Minority Affairs cooperate with the MCAT Advisory Committee to minimize racial and cultural biases in the test. Recently there was a revision of the MCAT which sought to restructure questions in order to reduce biases against students from socially, economically, and culturally diverse backgrounds. Evaluation of the impact of the new testing instrument--introduced in the Spring of 1977--on minority student admissions must await the reaction of medical school admissions committees to the testing results.

Another function suggested by the Task Force for the AAMC Office for Minority Student Affairs was the evaluation of programs directed toward increasing minority enrollment in medical schools. Although the dissemination of information about specific successful programmatic activities has taken place at the regional meetings and at other forums, it appears that no systematic framework for the evaluation of programmatic activities implemented at individual schools has been developed. The institutional enrollment data with respect to minority medical students over time are available through the Liaison Committee on Medical Education (LCME) questionnaires and the Institutional Profile System. However, a consistent, verified, and comparable data base on minority programs have not been developed or obtained. The AAMC Office for Minority Student Affairs does administer the questionnaire for input to the Minority Student Opportunities in United States Medical Schools handbook; however, the information is not collected in a format that permits analysis of the programs or the target populations they are designed to affect. In the course of this project, an effort was made to profile some of the major types of programs and determine their distribution among the nation's medical schools. These results are reported in Chapter VII, Analysis of Minority Medical Student Programs.

SUMMARY OF FINDINGS

The principal findings with regard to the implementation of AAMC Task Force recommendations are:

- Implementation of the recommendation that student aid at the undergraduate level be increased cannot be

evaluated from available data. Data on student and institutional aid do not show the breakdown of such aid between minority and non-minority groups.

- No single organization has taken the responsibility for the centralized coordination, solicitation, and distribution of financial assistance to minority students as recommended by the AAMC Task Force. National Medical Fellowships, Inc., has, however, continued and expanded its role as a major source of both financial aid and information for minority medical students.

- There has been no effort to establish an "educational opportunity bank" as a long term solution to the problem of medical student financing.

- There has been no implementation of the AAMC Task Force recommendation to establish a network of regional centers to provide factual and personal information about career opportunities for minority students.

- Since 1970, the AAMC Office for Minority Student Affairs has, as recommended by the Task Force, expanded both in the number of personnel assigned and in the functions it carries out. The Office has been instrumental in organizing data collection activities related to minority enrollment and in disseminating information on minority related policies and programs. It has also cooperated in an effort to revise the Medical College Admissions Test in order to minimize racial and cultural biases.

VII. ANALYSIS OF MINORITY STUDENT PROGRAMS

INTRODUCTION

This chapter investigates some of the factors related to the process of minority medical student enrollment and retention. Several data constraints[1] regarding minority programs and funding required this analysis to focus on descriptive rather than analytical approaches. This analysis of minority related programs is presented in three sections: recruitment, academic aid, and financial assistance.

RECRUITMENT PROGRAMS

Recruitment programs are primarily designed to increase a minority student's interest in the medical profession at the high school and undergraduate college levels. Recruitment programs expose students to a variety of stimuli including physician role models, films, lectures, seminars, and field visits highlighting aspects of the medical education curriculum and the career of medicine. Recruitment programs may be administered by the medical schools or by other organizations. Several programs, not administered by medical schools, develop interest in the health professions generally rather than specifically focusing on the medical school curriculum.

In reviewing the statements of medical schools describing their recruitment programs during the 1974-1975 academic year, six types of programmatic activity were most frequently reported: summer, orientation, preparatory, comprehensive minority, and tracking programs as well as field visits. Field visits are by far the most common recruitment activity, with over three-quarters of the 97 schools reporting programs of this type. Summer programs, consisting of courses introducing prospective medical school applicants to the medical curriculum and medical careers, are also frequently employed by medical schools with 32 schools reporting some form of summer recruitment program activity. The number of

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[1] A more detailed discussion regarding these data constraints, as well as a more detailed analysis of the programs is presented in the earlier Orkand study. See: The Orkand Corporation, op. cit., Chapter III.

summer recruitment programs may be somewhat understated because many of the programs described by the schools as orientation or preparatory may also be components of a broader based summer program activity.

Almost all of the programs were described by the schools as targeted at all minority groups included in this study; however, the actual operational characteristics of the programs certainly depend on the environment in which the medical school is located. Several schools reported that their programs also sought to recruit low income students regardless of racial or ethnic group membership. A limited number of schools and programs singled out a particular minority group for special attention. Nineteen schools reported special programs targeted at the recruitment of Black students; five schools had programs designed to recruit American Indian students; and two school programs were targeted at Mexican Americans. No school responding to the AAMC request for information reported special recruitment programs aimed only at the Mainland Puerto Rican minority group. Many recruitment programs overlap, reinforcing one another in their activities. Most schools report either one (47.4 percent), two (33.0 percent), or three (16.5 percent) programs, but a few institutions operate several recruitment programs.

Two important dimensions of the recruitment programs were not assessed in this evaluation: program quality and program cost. Detailed information was not available about specific programs in place across the medical schools; therefore, a systematic assessment of program quality was not possible. Furthermore, information about the cost of programs was also not obtainable from secondary sources and--as the case studies presented in the following chapter reveal--was not always available from the individual schools.

Since the program data were only available for the 1974-1975 academic year, it was impossible to assess the differential impact of the recruitment programs on minority enrollment in medical school. However, it would be useful to present the enrollment characteristics of the types of schools in which the recruitment programs are operational. Although the present data make it impossible to discover whether the enrollment patterns influenced the initiation of program activity or vice versa, Exhibit 23 summarizes the average number and proportion of minority students enrolled in the medical schools reporting each program type during the 1974-1975 academic year. This exhibit excludes Howard and Meharry, the traditionally Black colleges, from the analysis so the mean will not be skewed by these two atypical cases. Schools with the highest average minority enrollment in the first-year class also employ tracking programs in their

Exhibit 23

First-Year Enrollment Characteristics, by Type of Recruitment Program: 1974-1975

Program Type	N	Mean Number of Minority Students	Mean Proportion of Minority Students
Field Visits	76	12.2	9.5%
Summer	31	12.7	9.1%
Orientation	22	11.9	8.9%
Preparatory	12	11.7	8.7%
Comprehensive Minority Program	12	14.6	8.9%
Tracking	6	18.0	10.0%

Source: Minority Student Opportunities in United States Medical Schools 1975-1976.

recruitment activities. These six schools also have the highest proportion of minority students in the first-year class. Comprehensive minority programs, field visits, and summer activities also occur in schools with somewhat higher numbers and proportions of minority students; however, the differences between the means are in most cases relatively small and may well be insignificant.

Although no cost information was available with respect to the programs included in the above analysis, more detailed financial information was available about the funding levels of the recruitment programs sponsored by the Special Health Career Opportunity Grants (SHCOG) program administered by the Health Resources Administration. In Fiscal Year 1974, the SHCOG program funded 18 programs having the designated purpose of motivation or identification and recruitment of potential medical students--although some programs had multiple objectives (e.g., medical students in conjunction with dental or pharmacy students). The total funding level for these programs was $1,587,000, and program targets included Blacks, American Indians, and Spanish-surnamed Americans, as well as other disadvantaged groups.

ACADEMIC AID PROGRAMS

Academic aid programs are activities directed at assisting accepted medical school applicants prepare for or conduct their academic studies after matriculation. Medical schools reported two major types of academic aid activities during the 1974-1975 academic year: tutorial programs; and a special pre-entry summer program designed to assist conditionally accepted students prepare for entry with full status in the fall. It should be emphasized that the academic aid programs are not exclusively targeted at minority students as are several of the recruitment activities. Generally, tutorials and pre-entry summer programs are available to all students enrolled in medical school; however, such services tend to be used disproportionately by minority students because of problems associated with previous academic preparation. Some minority students admitted to medical school are conditionally admitted pending successful completion of the pre-entry summer program. Additional details on such programs are provided in the case study documentation.[2] When school enrollment characteristics for the 1974-1975 academic year are compared to the availability of academic aid programs, it appears that the pre-entry summer program is present at those institutions enrolling a relatively large number of minority students in

[2] The Orkand Corporation, ibid., Appendices A through H.

the first-year class (approximately 16 minority students per class) and a higher proportion of minority students (11.7 percent). Exhibit 24 presents the mean enrollment values for the schools with specific academic aid programs. However, due to the same limitations described for the recruitment programs, no conclusions are warranted about the effects of the pre-entry summer program on changes in minority student enrollment for the time period included in this evaluation. A thorough review of the historical experience of the schools presenting summer programs would have to be developed to determine the enrollment effects.

In Fiscal Year 1974, the SHCOG program funded 14 programs, both affiliated and not affiliated with medical schools, for the purposes of admissions and retention development of minority students in the M.D. curriculum. The definition of retention used by the SHCOG program is similar to that used by the AAMC Task Force and includes generalized retention in the medical education pathway and associated academic remedial and reinforcement programs. Special course work may include subjects in the health sciences, math, and other health-related curriculum, as well as career and academic counseling and tutoring programs.

FINANCIAL ASSISTANCE

The analysis of the sources and distribution of financial assistance for medical education is a complex task. As previously discussed in this report, the sources of funds are both numerous and diverse. In addition, there is no centralized reporting of the final disposition of all funds made available. Therefore, it is very difficult to get a comprehensive picture of the availability or use of funds in any given time period. It is precisely these types of data, however, that are to conduct an analysis of the impact of changes in the supply of financial resources on medical school enrollment. Furthermore, if the analysis is to explain changes in the enrollment patterns of the minority student population--a relatively small proportion of the total enrollment levels in the nation's medical schools--even more detailed data are required that specify the amounts needed by and awarded to the minority group students. Information at the level desired for a comprehensive assessment was not available. Therefore, this exploratory evaluation made use of secondary data reporting the total funding levels by various loan and scholarship categories to assess whether or not there appeared to be any relationships between changes over time in the funding of financial assistance programs[3] (both to schools and to students) and the enrollment of minority students.

[3] A more detailed description of various sources of financial assistance is presented in: The Orkand Corporation, ibid., chapter III.

Exhibit 24

First-Year Enrollment Characteristics, by Academic Aid Program Type: 1974-1975

Program Type	N	Mean Number of Minority Students	Mean Proportion of Minority Students
Tutorial	73	11.4	9.2%
Pre-Entry - Summer	40	16.2	11.7%
Remedial	5	12.2	8.2%
Academic Reinforcement	4	17.8	10.2%
Other Summer	1	18.0	11.9%

Source: Minority Student Opportunities in United States Medical Schools 1975-76.

National Medical Fellowships, Inc.

National Medical Fellowships, Inc., (NMF), is a critically important source of financial assistance for minority medical students. The funding activity primarily focuses on students in their first and second years; however, third and fourth-year students are also provided with fellowships through Sloan and Macy Foundation funds administered by NMF. The growth in NMF funding activities has been extensive. In the 1974-1975 academic year, NMF distributed awards to 1,840 students with 956 going to first-year students representing approximately 52 percent of the entering minority members of the freshmen class. The average award to the student recipient was $1,245 which defrays approximately one-fifth of the estimated yearly aid required based on the calculations presented in Chapter V. In the 1975-1976 academic year, NMF funding declined and awards were distributed to 1,551 students.

Bureau of Health Manpower

Until Fiscal Year 1974, the funds administered by the Bureau of Health Manpower (BHM) had played a sharply increasing role in the education of health professions including students enrolled in schools of medicine. However, the Federal program of Health Professions Scholarships expired on June 30, 1974. The result of the change in the program was a decrease in the availability of scholarship funds from the Fiscal Year 1974 levels. This decrease, in conjunction with apparently large reductions in the formula grant funds and the special project grants, resulted in a total decrease in the four primary funding categories (formula grants, special project grants, student loans, and scholarships) of approximately $103 million between the 1973-1974 and the 1975-1976 academic years.

Comparing the aggregate level of BHM funding with minority and non-minority enrollment, leads to the emergence of an interesting pattern. While non-minority enrollment has continued to increase, minority first-year enrollment has followed the same pattern of change as the levels of BHM funding except for an apparent one year delay. The sharp increase in BHM support in 1973-1974 was reflected in increased minority student enrollment during the 1974-1975 academic year. Similarly, the drop in BHM funding to below the Fiscal Year 1973 level appeared to result in a significant drop in the number of nonrepeating, first-year minority students enrolled in U.S. medical schools. Thus, the substantial changes in the two most recent Fiscal Years, after a generally increasing trend of funds support, appears to have had major effects on the enrollment levels of minority students in medical education.

Several factors may account for the apparent response of minority enrollment to the severe reduction in BHM funding. Minority students are more expensive candidates for medical schools than are non-minority students. This is because minority students generally have fewer personal resources to apply to the cost of their own education, and therefore require a more favorable mix of grants and loans during the medical school years. Furthermore, there is a higher probability (approximately ten times) that a minority student will have to repeat one or more years of their medical curriculum to compensate for inadequate undergraduate education and preparation. This increases the cost of a repeating minority graduate approximately 25 percent.

In a period of plentiful scholarship and loan funds and generally expanding enrollment, a medical school may not hesitate to accept a minority student although the marginal cost of the student's education is somewhat higher than that of a non-minority student. However, in a period of tighter funding, the school may not as readily choose to accept the marginally more expensive minority applicant. Although additional study would be required to support the above hypothesis, it does seem to fit the observed facts with respect to variations between minority enrollment and the availability of financial assistance funds.

SUMMARY OF FINDINGS

The principal findings derived from the analysis of minority medical student programs may be summarized as follows:

- Until Fiscal Year 1974, funds administered by the Bureau of Health Manpower played a sharply increasing role in the education of health professionals including students enrolled in schools of medicine. However, the Federal program of Health Professions scholarships expired in June 1974 and categorical general scholarship and direct loan activities for health professions students are being phased out. The decrease in scholarship funds from Fiscal Year 1974 levels, coupled with reductions in other funding categories, resulted in a total reduction of $103 million in available BHM funds between the 1973-1974 academic year and the 1975-1976 academic years.

- Although the proportion of BHM funding allocated to minority students is not known, the substantial decline in funding levels--after a generally increasing trend of funds support--has had what appear to be major effects on the enrollment levels of minority students in medical schools.

Specifically, the drop in BHM funding has apparently resulted in a significant drop in the number of first-year minority students enrolled in U.S. medical schools for the 1975-1976 academic year. The number of first-year non-minority students, however, has continued to rise.

- With regard to recruiting activities, a review of medical schools self-categorization of programs for the 1974-1975 academic year showed that field visits and summer programs were most frequently employed. Information on program quality and cost was not available.

- Academic aid programs consisted primarily of tutorial programs and a special pre-entry summer program during the 1974-1975 academic year. The pre-entry summer program is found more often at institutions that have a higher proportion of minority first-year students, but the nature and direction of the causal links cannot be demonstrated from available data.

- There are severe limitations in the availability of comprehensive historical data concerning the presence, cost, and quality of minority-related programs. Comprehensive analysis of program impacts must await the development of a data base containing basic program information.

VIII. CASE STUDY FINDINGS

INTRODUCTION

Chapters III through VII of this report presented a statistically based analysis of minority enrollment in medical schools, as well as the relationship between enrollment levels, school characteristics, and programmatic activities. A complementary element of this project was the development of case studies of minority student programs and enrollment, based on interviews at eight medical schools. The detailed case studies are presented in the earlier Orkand study.[1]

The eight case study schools are distributed throughout the nation: three in the Northeast, one in the South, one in the Midwest, and three in the West. Two of the institutions are private and six are public. Additionally, enrollment varies from an institution with small enrollment to one with very large enrollment. At least two institutions have experience with at least one of the minority subgroups addressed by the AAMC Task Force.

SUMMARY OF CASE STUDY FINDINGS

The results of the case studies are summarized below. First, an overview of enrollment patterns at the eight schools is presented. Second, findings regarding recruitment, admission, and retention are presented. Third, the activities of Minority Affairs Offices, as well as the impact of the AAMC Task Force--as it appeared from the perspectives of the case studies--are briefly discussed.

Overview of Enrollment Patterns at Case Study Schools

Exhibit 25 presents school enrollment data for the eight case study institutions. All of the eight case study schools have increased their overall percentage of minority student enrollment during the time period. Further, six of the eight schools have increased the percentage of minority student

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[1] A detailed description of the site visit selection criteria, interview guidelines, and the case studies themselves is contained in: The Orkand Corporation, op. cit. Chapter IV and Appendices A through H.

Exhibit 25

School Enrollment Characteristics
1971-72 and 1974-75 Academic Years*

School	Year	Total	Black American	American Indian	Mexican American	Mainland Puerto Rican	% Minorities
A	74-5	718/186	69/24	2/0	2/1	9/4	11.4/15.6
	71-2	[illegible]	25/16	0/0	0/0	1/1	4.2/10.2
B	74-5	646/174	10/4	0/0	1/0	9/3	3.1/4.0
	71-2	548/142	10/1	0/0	0/0	1/0	2.0/0.7
C	74-5	601/147	26/6	2/2	45/16	3/1	12.6/17.0
	71-2	541/140	17/7	0/0	21/10	0/0	7.0/12.1
D	74-5	265/72	3/1	8/3	45/15	0/0	21.5/26.4
	71-2	191/56	2/1	3/1	19/8	0/0	12.6/17.9
E	74-5	490/154	29/16	0/0	0/0	0/0	5.9/10.4
	71-2	333/91	8/3	0/0	0/0	0/0	2.2/3.0
F	74-5	576/147	64/14	4/1	47/13	2/1	20.3/19.7
	71-2	516/132	68/21	2/1	21/7	0/0	17.0/21.2
G	74-5	504/138	36/16	0/0	1/0	7/3	8.7/13.8
	71-2	324/97	17/8	0/0	0/0	0/0	4.3/7.1
H	74-5	949/249	110/32	1/0	5/1	3/0	11.5/13.3
	71-2	812/228	79/41	1/0	1/1	0/0	9.2/17.7

Note: During the site visit, individuals from Medical School B reported that there had been a substantial increase in minority enrollment for 1975.

* The first figure in each cell is the number (or percentage in the last category) of students in the entire student body. The second figure is the number (or percentage in the last category) of first-year students.

representation in their first-year classes over the time period; the remaining two schools had already achieved fairly high levels of minority representation by 1971-1972. Overall, six of the eight case study schools had exceeded the AAMC Task Force first-year projection for the 1974-1975 academic year.

Exhibit 26 shows the percentages of minority populations in each of the states in which the case study schools are located. A comparison of Exhibits 25 and 26 shows wide differences--in both directions--between the percentage of minority population in a state and the percentage of minority enrollment in the case study school. As discussed in the individual case studies, these differences can result from the following: the geographic area (state, regional, or national) from which the student body is drawn; competition from other schools; and variations in school programs and policies.

Recruitment

All school faculty and administrators report that they have increased their efforts to recruit minority students. The increase is apparent for all regions and occurs in private as well as public institutions. Three public institutions (the Southern, Midwestern, and one of the Western) have developed a recruiting system encompassing all health services schools while the other medical institutions presently recruit separately for the medical school.

Most public institutions focus their recruiting activities within the state in which they are located although the eastern public institution does attempt a wider recruitment effort. Private institutions are more likely to accept out-of-state students, but financial constraints hamper the geographic extent of their recruiting efforts. Medical educators stress that, in their judgment, a decrease in Federal funding would result in a commensurate decrease in recruitment activity.

Several medical educators reported that inadequate counseling of students with respect to the medical profession contributes significantly to the difficulty some minority students have after admission. Individuals representing all three Northeastern institutions and an individual representing a Western public institution reported this problem. In response, some institutions have invited college premedical advisors to the medical school campus. Medical school administrators hope that this action, in addition to the recruitment of individual students, will increase the amount of accurate information available to college students aspiring to a career in medicine.

Exhibit 26

Percent Minority Population in State, by School: 1970

Medical School	Total Minority % in State	Black Amer. % in State Population	Mexican Amer. % in State Population	Amer. Indian % in State Population	Mainland Puerto Rican % in State Population
A	9.1	8.6	0.1	*	0.4
B	17.2	11.9	0.1	0.2	5.0
C	17.0	7.0	9.3	0.5	0.3
D	20.8	1.9	11.7	7.2	*
E	37.0	36.8	*	0.2	*
F	17.0	7.0	9.3	0.5	0.3
G	18.2	17.8	0.1	0.1	0.2
H	12.2	11.2	0.7	0.2	0.1

* Less than 0.1%

Admission

During the past few years all eight schools have increased their commitment to minority admission and increased their overall percentage of minority enrollment. One example is their increased willingness to utilize alternative criteria for admissions. Several institutions have decreased their emphasis on the Medical College Admissions Test (MCAT) scores and Grade Point Averages.

Although private colleges are less concerned with in-state restrictions with respect to admissions, the two private institutions studied do not admit a greater proportion of minority students. The greater level of minority admissions in the public institutions than the private institutions in our sample may be due to several considerations. First, private colleges do not seem able to afford an extensive recruiting process throughout the nation. Second, although tuition is generally not a factor in the choice of medical school for minority as well as non-minority students--one of the private institutions visited does have a substantially higher tuition rate than do other medical colleges.

Third, the institutions to which site visits were made generally have substantial minority populations residing within the state. Thus, the in-state restriction does not restrict institutions with a sizeable level of minority population in the state from the minority pool of students. Fourth, recruitment of medical students is a new process for medical schools. In fact, every medical school visited receives many times more applicants than it can enroll. In the recent past, medical schools--deluged by large numbers of interested applicants--saw no need to develop an organized staff for recruitment.

Fifth, some medical colleges lose accepted students to more prestigious institutions. Individuals at Medical College D, a small public institution in the West, were concerned about the loss of some of the best applicants. This pattern is more pronounced for the two Northeastern private institutions which have other medical colleges located in the same city. Individuals at all eight institutions stated that there has been increased emphasis on minority admission in the past few years. Interviewees from public institutions were more likely to report that there were generalized goals for minority enrollment, but most were very careful to avoid the implication of quotas with respect to minority enrollment. Individuals representing the two private institutions expressed interest in more minority students but did not specify goals.

Retention

All eight institutions have attempted to decrease attrition and student repetition by emphasizing retention programs. Seven of the eight medical colleges have summer programs with all but one summer program presently available to entering medical students. One Northeastern private institution recently increased its three-year program to four years, thus giving students the opportunity to attend the summer program. The Southern institution conducts the summer programs for college students who are state residents while the Midwestern institution conducts no summer program. Additionally, all eight institutions have developed programs to tutor and counsel students having academic difficulty.

This increased emphasis with respect to retention has brought some change to the nature of medical school education. While enrolling a group of students--some of whom are perceived to be educationally disadvantaged--medical schools have chosen to provide courses that often attempt to teach what had previously been within the realm of undergraduate college education. Increased emphasis on tutorials and counseling is an additional step in that direction. It is likely that non-minority as well as minority students benefit from some retention programs.

In six of the eight institutions, minority students have greater difficulty making regular academic progress. The extent of this tendency strongly varies however. Individuals at two public institutions (West and Midwest) reported that there is presently little difference in rates of repetition between minority and non-minority students. However, it seems clear that both of the private, Northeastern institutions have difficulty in graduating minority students in the normal span of time. Yet, several of the public institutions report the same difficulty.

The variation of retention rates is a complex issue. A low retention rate may be due to an inadequate tutorial and counseling program or weak students, perhaps both. On the other hand, a high retention rate may indicate an excellent tutorial program or excellent students, perhaps both.

Financial aid does not seem to affect the continued attendance of students in medical school. Several individuals at the Northeastern institutions stated that they do not know of any cases where minority or non-minority students have withdrawn from medical school due to financial difficulty. Many individuals stated that once a student has been accepted, the medical school can develop a financial package that will allow the student to complete medical school. Yet, they recognize that extraordinary financial dependency can be

another stress that adds to existing difficulties students may have. All institutions base almost all aid on financial need. One Western public institution has a substantial amount of scholarship money set aside for minority students.

Only limited information with respect to family financial status is available. Although many non-minority students come from low income families, there seems to be a greater tendency for minority students to come from low income families.

Minority Affairs Office

An interesting pattern emerges with respect to the presence or absence of a minority affairs office. All three Northeastern institutions (two private, one public) have an Office of Minority Affairs as does the Southern institution. Two public Western institutions place organizational responsibility within an Office of Special Education (School C) or a Special Programs Office (School D). Two of the public institutions (one Western, one Midwestern) have not developed a special organizational responsibility for minority affairs although both of the latter institutions have developed special organizations for the recruitment of minority students.

In all eight cases, the presence or absence of an Office of Minority Affairs is neither a necessary nor sufficient condition for success. Institutions that have not initiated a special office for minority affairs are not less successful than are institutions with established Minority Affairs Offices. The two public medical colleges that have not established Offices of Minority Affairs seem to have developed successful programs without this institutional support. Additionally, several institutions with existing Offices of Minority Affairs are less successful with respect to recruitment and admissions.

Effect of AAMC Task Force

Although the AAMC Task Force may have served as a catalyst for increasing the admission of minority students, the eight case studies indicate that most of the visited medical schools had instituted action regarding minority recruitment and admission before the AAMC Task Force report. Most often, medical school action resulted from a combination of increased sensitivity to minority needs developed during the 1960s and specific events at each campus. At times, these specific events were medical student demonstrations or medical faculty and administration initiatives. At other times, these events affected the entire university and a university-wide decision was made that only indirectly affected the medical college. This general pattern emerges for all eight medical colleges regardless of region with little variation between private and

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public institutions. Therefore, although the AAMC Report may have speeded up and reinforced an ongoing process, there seems to be no independent, initiating effect of the AAMC Task Force Report.

SUMMARY

Despite the limitations of the case study approach, including the small number of schools surveyed, certain general conclusions can be drawn which complement the statistical analysis presented in earlier chapters. These conclusions may be summarized as follows:

- All schools surveyed have become more active with respect to recruitment of minorities and have increased--often significantly--the number of minority students. This has led to serious competition among schools for qualified applicants.
- The effort to increase minority enrollment is also reflected in the willingness of medical colleges to utilize alternative criteria for admissions. Several institutions have decreased their emphasis on MCAT scores and Grade Point Averages.
- Both admission and retention of minority students are being hampered by poor pre-medical counseling and preparation. Hence, medical institutions are playing an increasing role in both areas.
- There is continued concern, but little factual data, with regard to minority student attrition and repetition although several schools reported a decrease in both areas. Financial considerations do not appear to be a significant cause of these problems.
- The presence or absence of a minority affairs office does not appear to be a primary determinant of success or failure with regard to the enrollment and retention of minority students.
- Minority enrollment had become an important item on the agenda of most schools prior to the issuance of the AAMC report. Hence, the AAMC Task Force served to reinforce rather than initiate changes in attitudes, policies, and programs.

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