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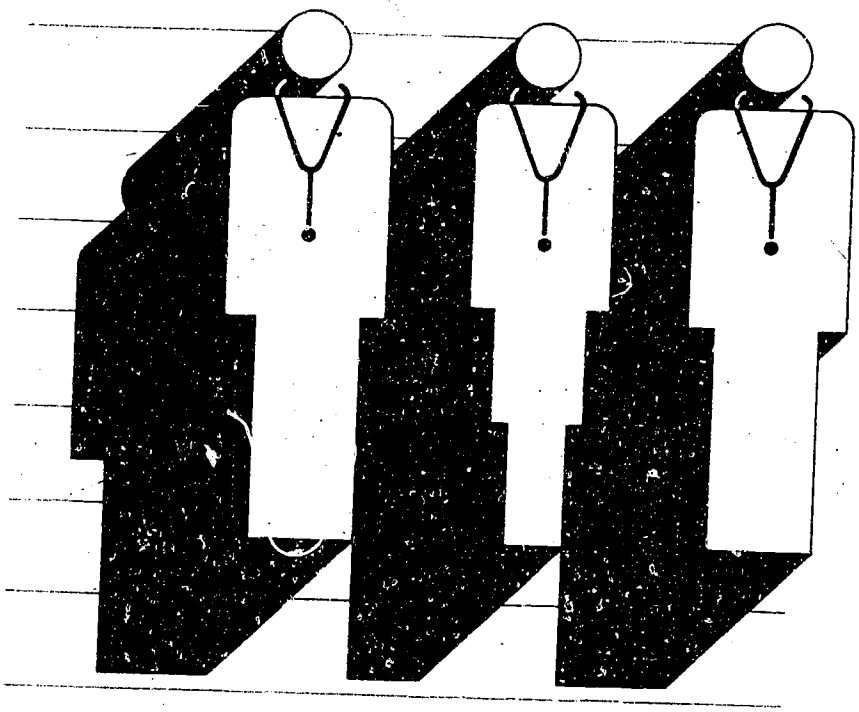
ABSTRACT

The demographic and socioeconomic characteristics and career plans of medical students in the National Health Service Corps (NHSC) scholarship program from 1973-1974 through 1979-80 were examined. Where possible, comparisons were made between NHSC participants and the U.S. medical student population. Major findings are as follows: individuals whose state of legal residence was New York were awarded the largest number of scholarships (1,931), and the next 10 ranking states in descending order were Pennsylvania, California, Illinois, Ohio, Michigan, Virginia, Maryland, New Jersey, Massachusetts, and Texas; a large proportion (approximately 30 percent) of scholarship participants from 1974-75 to 1979-80 had resided in localities with a population of 2,500-50,00 during their precollege years; an additional one-third of all scholarship participants had resided in cities over 500,000 and in the suburbs of such cities; more NHSC scholarship participants attended private medical institutions than public medical schools; although males comprised the majority of both the NHSC scholarship participants and the U.S. medical student population, the proportions of females for these two groups increased considerably over time; although whites constituted the majority of participants in the NHSC scholarship program from 1973-74 through 1979-80, their representation declined by 11.1 percent during this period, while the proportion of blacks and Hispanics increased during the same period; and from 1973-74 to 1979-80, there was an 18.8 percent increase in the proportion of scholarship participants planning a general practice. A bibliography is appended. (SW)

Final Report

Characteristics of Medical Students in the National Health Service Corps (NHSC) Scholarship Program, 1973 Through 1980



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES · Public Health Service · Health Services Administration

ERRATA

Subheading in Table 12, page 31, which now reads "Willingness to Make Commitment" should read "Need for Financial Aid."

Final Report

Characteristics of Medical Students in the National Health Service Corps (NHSC) Scholarship Program, 1973 Through 1980

Covers Period of Performance
During September 19, 1979 - July 9, 1980

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Executive Summary

The study examines the demographic and socio-economic characteristics and career plans of medical students in the NHSC scholarship program from 1973–74 through 1979–80. Where possible, comparisons are made between NHSC participants and the U.S. medical student population. Since some data were gathered from the students a year prior to entry into medical school, those characteristics subject to change over time must be interpreted with caution. This applies to both populations in the study. The major findings of these analyses are:

1. Individuals whose state of legal residence was New York were awarded the largest number of scholarships (1,931). The next ten ranking states in descending order were Pennsylvania (1,553); California (1,476); Illinois (858); Ohio (733); Michigan (724); Virginia (690); Maryland (667); New Jersey (638); Massachusetts (608); and Texas (532). Forty-one percent (7,472) of the total number of scholarships awarded were to individuals from the remaining state, U.S. possessions and to U.S. citizens applying to the Scholarship Program from foreign countries. All students were U.S. citizens at the time they participated in the NHSC scholarship program.

2. A large proportion (approximately 30 percent) of scholarship participants from 1974–75 to 1979–80 had resided in localities with a population of 2,500–50,000 during their pre-college years. An additional one-third of all scholarship participants had resided in cities over 500,000 and in the suburbs of such cities.

3. More NHSC scholarship participants attended private medical institutions than public medical schools. By comparison, a higher proportion of all medical students in the U.S. attended public institutions. A 7.5 percent increase in the proportion of scholarship participants attending private schools from 1973–74 to 1979–80 contrasts with a 3.7 percent decrease in the proportion of all medical students attending such schools.

4. Although males comprised the majority of both the NHSC scholarship participants and the U.S. medical student population, the proportions of females for these two groups increased considerably over time. The 17.4 percent increase in women in the NHSC scholarship program from 1973–74 to 1979–80 was approximately twice the 9.9 percent increase in total women medical students during the same period.

5. Although Whites constituted the majority of participants in the NHSC scholarship program from 1973–74 through 1979–80, their representation declined by 11.1 percent during this period. Conversely, the proportions of Blacks and Hispanics increased during the same period (6.3 percent and 5.3 percent respectively). Whites received proportionately fewer scholarship awards relative to their representation in the medical student population, particularly during the most recent years of the program. Blacks and Hispanics received proportionately more awards. The proportion of American Indians receiving awards decreased slightly from 1973–74 through 1979–80. Orientals were slightly underrepresented in the scholarship program during the time period under study.

6. The proportions of white and American Indian males participating in the scholarship program declined from 1973–74 to 1979–80, (8.1 percent and 1.3 percent respectively), while the proportions of black, hispanic, and oriental males increased during the same period, (3.0 percent, 4.9 percent and 1.5 percent respectively).

7. Similar trends were observed for female ethnic groups. The proportions of white and American Indian females decreased by 11.8 percent and 8.1 percent respectively. The proportions of black, Hispanic, and oriental females increased by 9.5 percent, 8.1 percent and 2.4 percent respectively.

8. Participants whose fathers were employed as non-medical professional workers comprised the largest proportion of the NHSC population. The proportions of scholarship participants' fathers employed as (1) owners, managers, administrators, or (2) as farmers increased from 1973–74 to 1979–80 (6.3 percent and 1.1 percent respectively). Conversely, the proportions of participants whose fathers were (1) clerical or sales workers, or (2) craftsmen, skilled workers, decreased (3.7 percent and 4.5 percent respectively). The proportions of participants with fathers employed as physicians, other health professionals, non-medical professional workers, unskilled workers, homemakers and in other occupations, showed no significant changes over time. In comparison to the U.S. medical student population for 1975–76 and 1976–77, the fathers of scholarship participants were more likely to be employed as non-medical professional workers, clerical or sales workers, craftsmen or skilled workers, unskilled workers, farmers, or in other occupational areas. Proportionately fewer fathers of the participants were physicians, other health professionals, and owners, managers, administrators, compared to fathers of medical students in general.

9. From 1973–74 to 1979–80, there was an increase among the participants in the proportion of mothers employed as other health professionals (2.7 percent), non-medical professional workers (7.0 percent), owners, managers, administrators (3.5 percent), unskilled workers (2.8 percent), and farmers (0.4 percent. The proportions of mothers holding positions as (1) clerks or saleswomen, or (2) homemakers decreased over time (3.5 percent and 16.1 percent respectively). The distributions of mother's occupation for the NHSC and medical student populations during 1975–76 and 1976–77 were very

similar. A large percentage of the mothers from both groups were homemakers.

10. From 1973–74 to 1979–80, there was an 18.8 percent increase in the proportion of scholarship participants planning a general practice. This was accompanied by decreases in the proportions of participants planning a specialty practice (5.0 percent), research and teaching (3.1 percent), a combination of research, teaching and specialty practice (6.6 percent), and undecided as to their career plans (7.2 percent). In comparison to the medical student population in 1975–76 and 1976–77, scholarship participants were more likely to plan a general practice and were less likely to plan a specialty practice, a research and teaching career or a combination of these.

11. The highest percentage of scholarships from 1973–74 through 1979–80 went to participants expecting to practice with a hospital-based group, (approximately 20 percent). In 1975–76 and 1976–77, scholarship participants and enrolled medical students did not differ with respect to the expected character of their medical practice, with the highest proportions of both populations expecting to practice in a hospital.

12. The highest percentage of scholarship participants preferred to practice in a locality of 2,500–50,000. From 1975–76 to 1979–80, the proportions of participants preferring a town of less than 2,500 or a large city of over 500,000 decreased (9.9 percent and 6.8 percent respectively), while an increasing proportion of participants preferred to practice in a moderate size city of 50,000–500,000 (15.1 percent).

13. Although over half of the NHSC scholarship participants did not incur any financial debt prior to entering medical school, approximately 80 percent indicated that they would require some form of financial assistance while in medical school. Of those participants needing financial aid, approximately one-fourth estimated that they would require more than $20,000 to complete their medical education. A large proportion (approximately 84 percent) said they were willing to make service commitments in exchange for financial support at the time they took the MCAT.

Limitations

Caution must be used in the interpretation of the results of the study. Changes in the selection policy of the Corps and varying retention rates for participants in the scholarship program are the major limitations. These two factors affect comparisons of the characteristics of the NHSC scholarship participants and the U.S. medical student population at a given point in time. Since some data were gathered for both populations in the study a year prior to entry into medical school, those characteristics subject to change must also be interpreted with caution.

I. Introduction

A. History, Legislation, and Goals of the NHSC

The past two decades have witnessed a significant decline in the availability of primary health care to many rural and urban areas in the United States. This phenomenon may be due in part to a decrease in the number of physicians actively practicing general medicine. Studies by the American Medical Association (6, 7, 8, 19, 20, 21, 22, 23) have shown that the number of physicians practicing general medicine decreased from 73,055 in 1963 to 56,197 in 1978. However, the shift of family practitioners from the inner city to suburbia and the loss of family doctors from small towns have also contributed to this geographic maldistribution of primary care (11).

In response to this perceived shortage, the Emergency Health Personnel Act (Public Law 91–623) was enacted in 1970 and the National Health Service Corps (NHSC) was created to alleviate the geographic and specialty maldistribution of primary care physicians. The primary goal of the NHSC was to identify areas in which severe health manpower shortages existed and to work cooperatively with the community to provide the needed health services. The NHSC first became operational in 1972 when 182 volunteer physicians served in 94 designated manpower shortage areas.

In 1972, two years after the NHSC was founded, Congress instituted the Public Health and National Health Service Corps (PH/NHSC) Scholarship Training Program (Public Law 92–585) which was designed to offer health professions students full tuition payment and a monthly living allowance in exchange for service in the Public Health Service. For each year of PH/NHSC scholarship support received, a student agreed to serve for one year in a designated shortage area with a minimum commitment of two years. The scholarship program first became effective in the 1973–74 academic year when 372 scholarships were awarded to medicine and osteopathy students. The first graduates of the program joined the Corps in 1976.

In 1976, Congress expanded the scope of the NHSC with the enactment of the Health Professions Educational Assistance Act (Public Law 94–484), and the program became known as the National Health Service Corps (NHSC) Scholarship Program. At this time, a more comprehensive definition of health manpower shortage areas was established in order to expand the health care available to underserved areas.

The NHSC scholarship program has expanded rapidly since its inception in 1973. From the first 343 scholarships awarded to medical students during the 1973–74 academic year, the number has increased to 5,141 new and continuing awards for 1979–80. In recent years, the program has broadened its scope of recruitment to include additional health disciplines such as nursing, public health, social work, speech pathology, veterinary medicine, optometry, podiatry, and pharmacy.

B. Purpose of the Project

Of major interest to the NHSC Scholarship Program are the characteristics of the medical students who participate in the program as compared with the typical medical student. Prior studies by the AAMC (17, 18) provided descriptive data on the characteristics of NHSC scholarships recipients by year of initial award. These data provided information on the type of student entering the program, but they did not reflect the characteristics of all medical students holding scholarships during a given academic year. The purpose if the present study is to provide information not only on new recipients, but also on recipients who continue in the program from prior years. These data make possible a comparison between scholarship participants and the U.S. medical student population in general.

II. Methodology

A. Data Sources: Matching PHS Data With the AAMC Data Base

The data for the present study were furnished by the Public Health Service (PHS) in the form of a computer tape containing a file of records on the participants in the program from 1973–74 through 1979–80. The records contained identifying information, year of entry into the program, and years in which support was continued for each medical student in the program. A separate record was provided for each year of support for each participant. Since most students received more than one year of support, the file included multiple records of individuals. The total file had 18,859 records for 8,821 participants.

Medical students identified on the tape were matched with several AAMC data files including: (1) an AAMC-NHSC file created in 1978, (2) AAMC applicant study files, and (3) AAMC applicant master files. These files contained information on the demographic and socio-economic characteristics and preadmission career plans of medical students at the time they took the Medical College Admission Test (MCAT) or applied to medical school. For more recent medical students, data on educational indebtedness and financial needs for medical school were also available.

The results of the matching process are expressed in terms of the number of records matched rather than the number of individuals, since, as previ-

Table 1

Number of Records on the PHS Tape Matched With the AAMC Data Base, 1973–74 Through 1979–80

Year	Number of Records On Tape	Number of Records Matched With AAMC Data Base	Percent Matched
Total	18,859	18,141	96.2
1973–74	343	299	87.2
1974–75	1,671	1,569	93.9
1975–76	2,227	2,135	95.9
1976–77	2,299	2,271	98.8
1977–78	2,981	2,952	99.0
1978–79	4,197	4,022	95.8
1979–80	5,141	4,893	95.2

ously discussed, a student could be represented by more than one record on the file. Of the 18,859 records contained on the tape, 18,141 were matched with the AAMC data files (Table 1). A majority of the records (12,019 or 64.3 percent) were matched with the NHSC file previously created in 1978. Of the 6,122 remaining records, 3,651 (20.1 percent) were matched with applicant master files and 2,471 (13.6 percent) were matched with applicant study files. The total of 18,141 records represented an overall match rate of 96.2 percent.

B. Comparison Data On The U.S. Medical Student Population

Where available, data on scholarship participants were compared with similar information on the U.S. medical student population. These data were obtained from several AAMC publications including the Fall Enrollment Surveys (1, 12, 13), Studies of Enrolled Medical Students for specific years (2, 3), and a previous AAMC study on Public Health Service Scholarship Recipients and National Health Service Corps Participants (18).

C. Limitations of the Data

A major limitation of the data in the present study relates to the comparability of the NHSC scholarship participants and the U.S. medical student population. During the early years of the NHSC Scholarship program most scholarship recipients were selected from the upper classes of medical school. In recent years, however, preference was given to beginning classes. Therefore, in comparisons involving the U.S. medical student population, the characteristics of the NHSC population may be weighted disproportionately according to the selection policy of the Corps in force at that time. This factor is particularly important for those variables known to be susceptible to change during the period under study. In addition, the varying incremental changes in the number of new and continuing scholarship participants further alter the characteristics of the NHSC population from one year to the next. These incremental changes are dependent on both the addition of new participants entering the scholarship program and the subtraction of previous participants who either drop out of the scholarship program before their senior year or graduate from medical school. Thus, the weighting of characteristics due to selection criteria and incremental changes in the number of NHSC scholarship participants may affect the distribution of any variable being examined. Depending upon the extent to which either or both of these factors have an impact on the variable being studied at a given time, information on the NHSC scholarship population may or may not be directly comparable to the data on the corresponding U.S. medical student population.

A second limitation of the study involves the degree to which information gathered on the MCAT questionnaire before admission to medical school is representative of the characteristics of the same group while enrolled in the medical school. Background variables such as race and sex do not change during this period; however, other characteristics such as career plans and financial status may undergo significant changes during the course of medical education. These changes apply to both populations in the study.

III. Results and Discussion

The demographic characteristics, socioeconomic backgrounds, career plans, and financial indebtedness and needs of NHSC scholarship participants from 1973–74 through 1979–80 are presented. Where possible, comparisons are made between NHSC scholarship participants and the U.S. medical student population.

A. Demographic Characteristics of NHSC Scholarship Participants

1. State of Legal Residence

Table 2 presents the state of legal residence for all scholarship recipients supported from 1973–74 to 1979–80. The number of scholarships awarded for each state ranged from a high of 1,931 for New York to a low of 33 for Alaska and Wyoming. Residents of other U.S. territories and possessions and of foreign countries accounted for an additional 47 awards.* After New York, the next ten ranking states in descending order were: Pennsylvania (1,553); California (1,476); Illinois (858); Ohio (733); Michigan (724); Virginia (690); Maryland (667); New Jersey (630); Massachusetts (608); and Texas (532). The remaining states, U.S. possessions and foreign countries accounted for 7,472 (41 percent) of the total number of scholarships awarded during the life of the program.

Table 2

Number of Awards by State of Legal Residence for NHSC Scholarship Participants, 1973–74 Through 1979–80*

State of Residence	*Number of Awards*	*Percent of Awards*
Total	18,141	100.0
Alabama	282	1.6
Alaska	33	0.2
Arizona	122	0.7
Arkansas	84	0.5
California	1,476	8.1
Colorado	318	1.8

* Since data on the state of residence were obtained before admission to medical school, some awards were made to individuals who were former residents of areas outside the U.S. However, all students were U.S. citizens at the time they participated in the NHSC scholarship program.

Table 2 (continued)

State of Residence	Number of Awards	Percent of Awards
Connecticut	289	1.6
Delaware	106	0.6
District of Columbia	222	1.2
Florida	483	2.7
Georgia	354	2.0
Hawaii	81	0.4
Idaho	52	0.3
Illinois	858	4.7
Indiana	166	0.9
Iowa	179	1.0
Kansas	138	0.8
Kentucky	116	0.6
Louisiana	303	1.7
Maine	87	0.5
Maryland	667	3.7
Massachusetts	608	3.4
Michigan	724	4.0
Minnesota	263	1.4
Mississippi	222	1.2
Missouri	288	1.6
Montana	77	0.4
Nebraska	174	1.0
Nevada	112	0.6
New Hampshire	75	0.4
New Jersey	638	3.5
New Mexico	215	1.2
New York	1,931	10.6
North Carolina	328	1.8
North Dakota	74	0.4
South Dakota	73	0.4
Tennessee	321	1.8
Texas	532	2.9
Utah	110	0.6
Vermont	74	0.4
Virginia	690	3.8
Washington	254	1.4
West Virginia	101	0.6
Wisconsin	308	1.7
Wyoming	33	0.2
Puerto Rico	260	1.4
U.S. Territories and Possessions†	13	0.1
Foreign†	34	0.2
Unidentified	259	1.4

* These figures represent the total number of scholarships awarded for all years combined.
† Since data on the state of residence were obtained before admission to medical school, some awards were made to individuals who were former residents of areas outside the U.S. However, all students were U.S. citizens at the time they participated in the NHSC scholarship program.

Table 3

Hometown Size of NHSC Scholarship Participants, 1974–75 Through 1979–80*

Participants by Year	Total†	Hometown size: Farm	Small Town (< 2,500)	Small City (2,500–50,000)	Moderate City (50,000–500,000)	Large City (> 500,000)	Suburb of a Large City
1974–75	227	5	17	63	54	41	47
	100.0	2.2	7.5	27.8	23.8	18.1	20.7
1975–76	616	20	58	184	136	109	109
	100.0	3.2	9.4	29.9	22.1	17.7	17.7
1976–77	1,192	54	108	356	250	217	207
	100.0	4.5	9.1	29.9	21.0	18.2	17.4
1977–78	2,574	120	232	756	530	490	446
	100.0	4.7	9.0	29.4	20.6	19.0	17.3
1978–79§	3,605	175	299	1,031	784	638	678
	100.0	4.9	8.3	28.6	21.7	17.7	18.8
1979–80§	4,169	214	317	1,243	945	660	790
	100.0	5.1	7.6	29.8	22.7	15.8	18.9

* Since this item first appeared on the 1973 MCAT questionnaire, data for 1973–74 not available.

† The total number of participants for each year includes only individuals who were matched with the AAMC Data Base, not the total number of individuals participating in the NHSC Scholarship program for any given year.

§ Due to revisions in the Hometown Size item from the 1976 to the 1977 version of the MCAT Questionnaire, two categories of Hometown Size have been combined for individuals who took the MCAT in 1977 or later. Moderate City includes "City of Moderate Size (pop. 50,000–500,000)" and "Suburb of a Moderate Size City." Small City includes "Small City (pop. 10,000–50,000—other than Suburb)" and "Town (pop. 2,500–10,000—other than Suburb)".

2. Hometown Size

The distribution of hometown size for scholarship participants as presented in Table 3, reflects responses to the following item asked on the MCAT questionnaire:

> "Where did you spend the major portion of your pre-college years?"

Very little change occurred in the relative proportions of individuals indicating a given hometown size. The most consistent trend was observed for participants from farms whose proportion steadily increased from 1974–75 to 1979–80. The proportions of participants from other areas showed slight but unsystematic variations during the same period.

3. School Control

While more participants attended private medical institutions than public institutions from 1973–74 to 1979–80, the reverse was true for the medical student population as a whole (Figures 1 and 1a). The proportion of scholarship participants from private schools increased 7.5 percent from 1973–74 to 1979–80. Conversely, the proportion of enrolled medical students attending private schools declined slightly (3.7 percent) during the same period.

B. Comparison of the Socioeconomic Backgrounds of NHSC Scholarship Participants and the U.S. Medical Student Population

1. Sex

A majority of the NHSC scholarship awards from 1973–74 to 1979–80 were made to males, with a ratio of approximately 2.9 to 1 (Figure 2). The ratio of men to women for the U.S. medical student population (Figure 2a) is somewhat higher (3.6 to 1). The 17.4 percent increase in the number of women participating in the NHSC program from 1973–74 to 1979–80 is approximately twice as large as the 9.9 percent increase in enrolled women medical students during the same period.

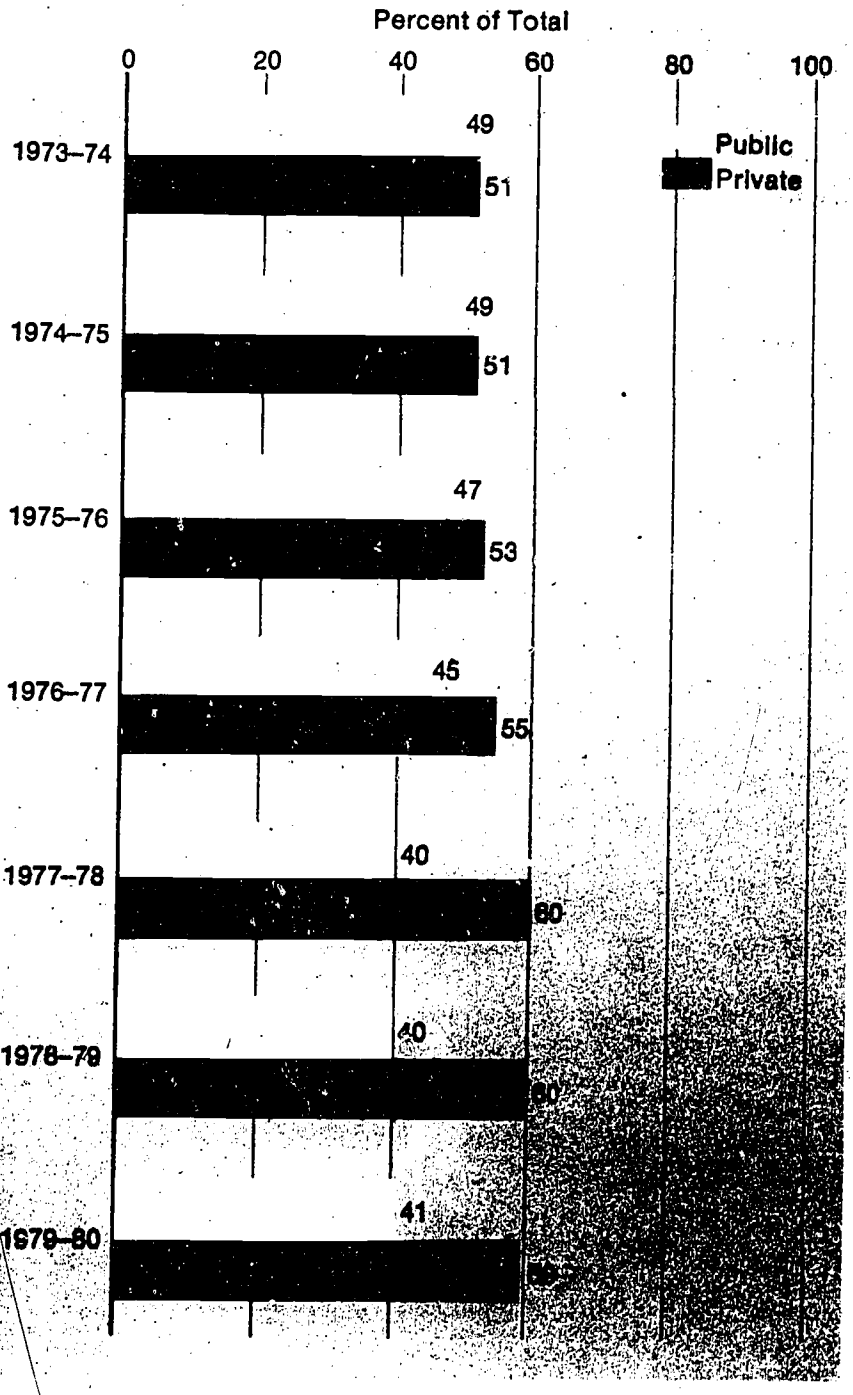
2. Race/Ethnicity

Although a majority of the NHSC scholarship participants were Whites, this group witnessed a more than 10 percent decline in awards from 1973–74 to 1979–80 (Table 4). The proportion of awards to Blacks and Hispanics* increased during the same period (6.3 percent and 5.3 percent respectively). The proportion of awards to American Indians decreased by 2.2 percent, while awards to Orientals increased by about 1.6 percent.

With respect to the total U.S. medical student population, Whites received proportionately fewer of the NHSC scholarship awards (Tables 4 and 4a). This departure from the proportions of white enrolled medical students was greatest in the most recent years of the program.

* Included as Hispanics are Cubans, Mexican Americans, Mainland and Commonwealth Puerto Ricans, and other Hispanics. At the present time, Puerto Rican Mainlanders and Mexican Americans are recognized as underrepresented minorities.

Figure 1
Distribution of NHSC Scholarship Participants by Public/Private Classification of Schools, 1973–74 Through 1979–80



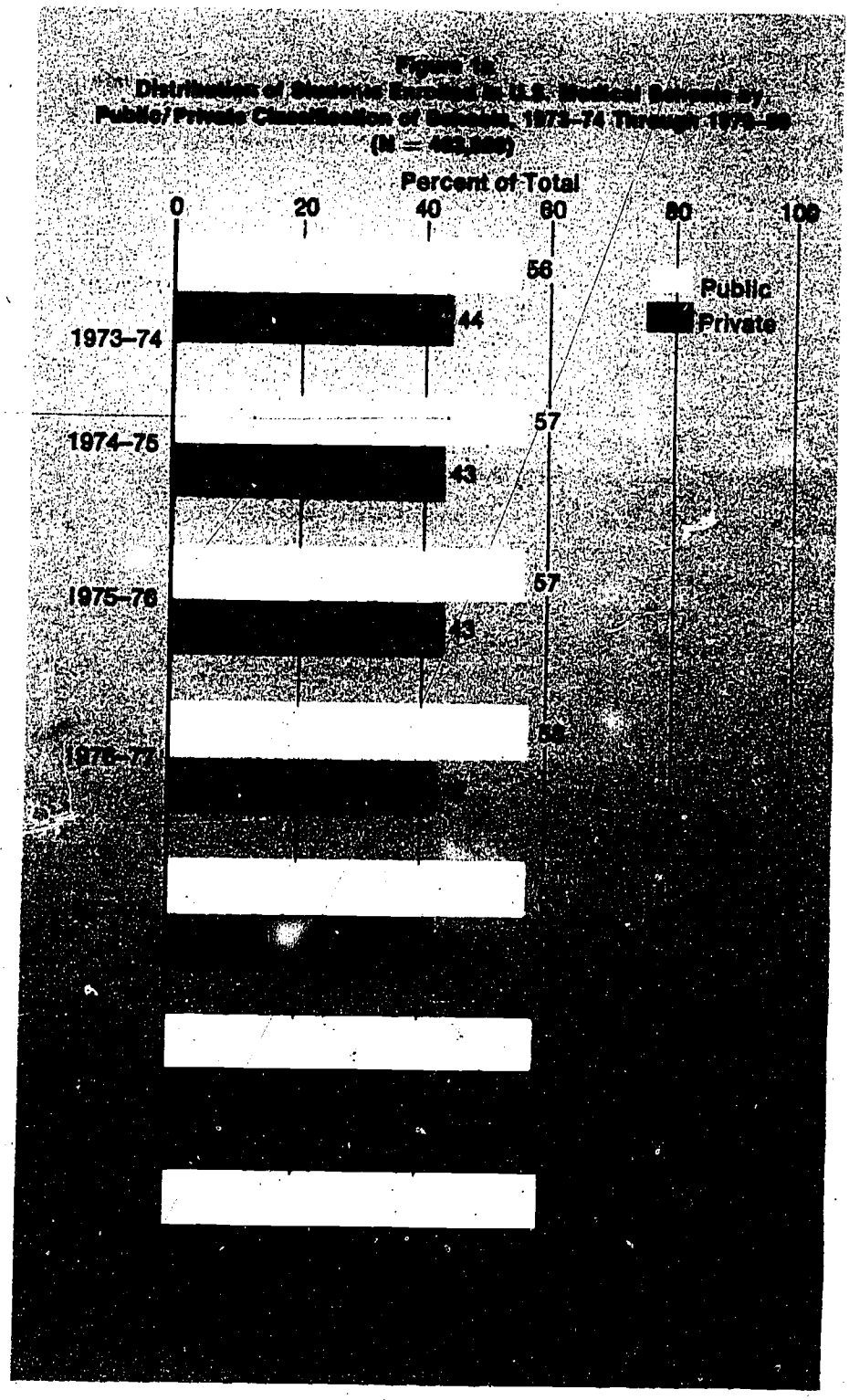

Percent of Total
0
20
40
60
80
100
Public
Private
1973–74
56
44
1974–75
57
43
1975–76
57
43
1976–77

Figure 2
Sex of NHSC Scholarship Participants, 1973–74 Through 1979–80

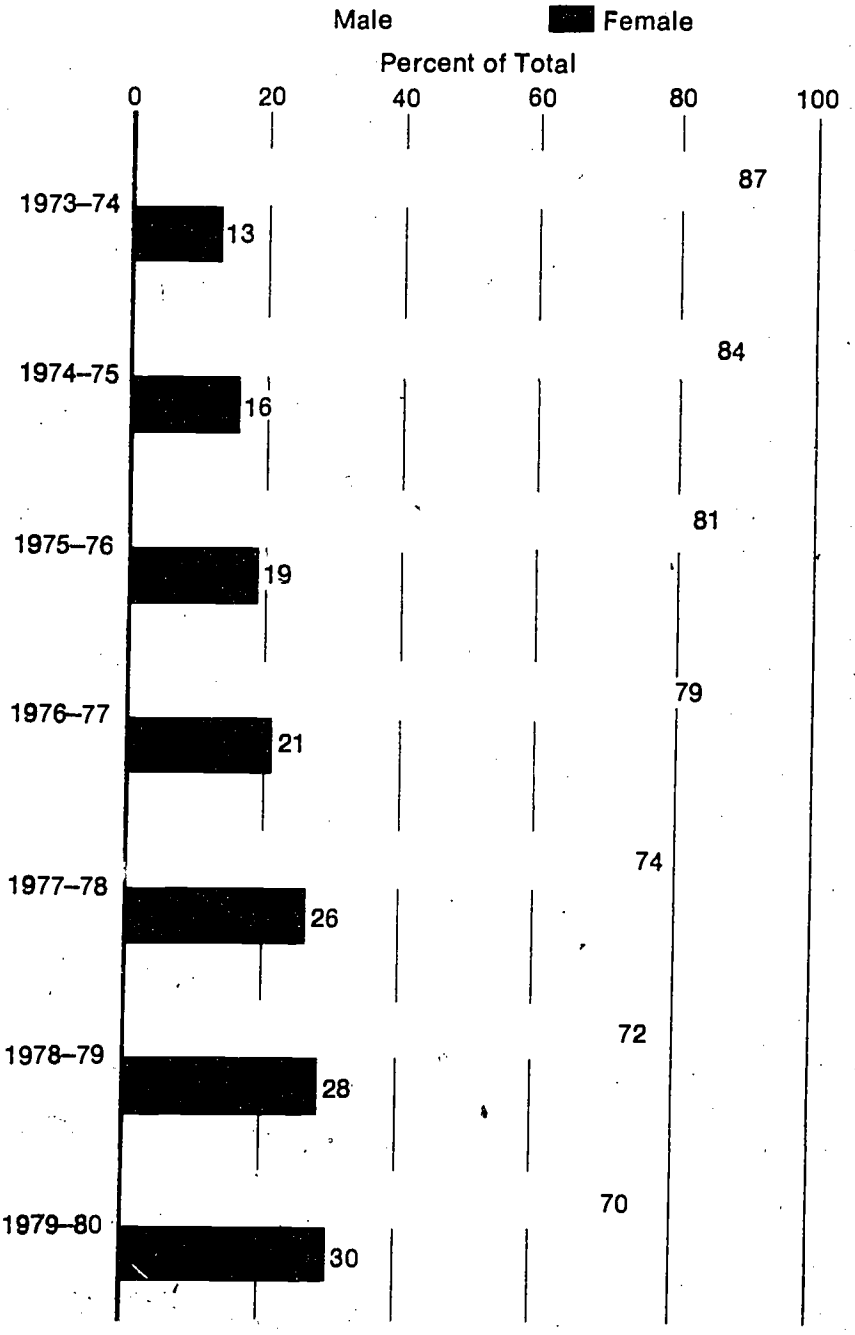
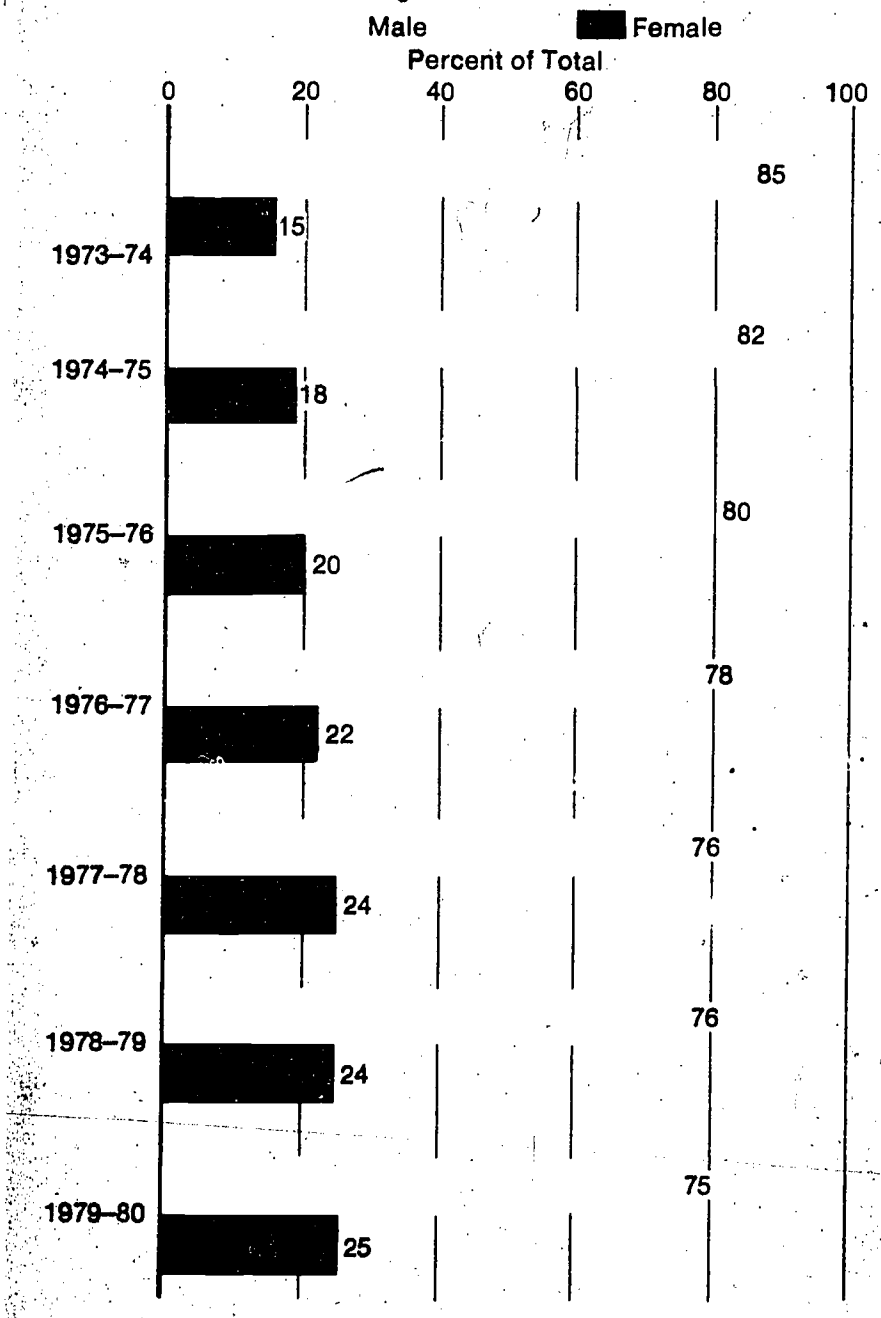


Figure 2a
Sex of Students Enrolled in U.S. Medical Schools, 1973–74 Through 1979–80 (N = 403,969)



Source: AAMC Fall Enrollment Surveys.

Blacks and Hispanics received proportionately more NHSC scholarship awards relative to their representation in the total medic student population. The disproportionate number of Blacks and Hispanics receiving awards appears to have increased during the most recent years that the scholarship program has been in effect. It should be noted, however, that the representation of Hispanics in the scholarship program must be interpreted with caution since this ethnic category is composed of several distinct sub-groups (see reference note for Hispanics). Thus, it is possible that while some Hispanic sub-groups were overrepresented, others may have been underrepresented.

American Indians received proportionately more scholarship awards relative to their representation in the medical student population. On the other hand, orientals were slightly underrepresented in the scholarship program during the time period examined.

3. Race/Ethnicity and Sex

The breakdown of NHSC scholarship participants by race/ethnicity and sex is presented in Table 5.

In terms of general trends, the proportion of white and American Indian males participating in the scholarship program declined by 8.1 percent and 1.3 percent respectively from 1973–74 to 1979–80. Conversely, the pro-

Table 4

Race of NHSC Scholarship Participants, 1973–74 Through 1979–80

Participants by Year	Race					
	Total*	White	Black	Hispanic†	American Indian	Oriental
1973–74	256	196	43	7	8	2
	100.0	76.6	16.8	2.8	3.1	0.8
1974–75	1,307	974	233	61	24	15
	100.0	74.5	17.8	4.7	1.8	1.1
1975–76	1,819	1,303	354	101	39	22
	100.0	71.6	19.5	5.6	2.1	1.2
1976–77	2,041	1,430	422	126	37	26
	100.0	70.1	20.7	6.2	1.8	1.3
1977–78	2,886	1,968	652	178	35	53
	100.0	68.2	22.6	6.2	1.2	1.8
1978–79	3,913	2,661	867	271	37	77
	100.0	68.0	22.2	6.9	.9	2.0
1979–80	4,759	3,119	1,099	385	42	114
	100.0	65.5	23.1	8.1	.8	2.4

* The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

† See footnote for Table 4a.

Table 4a

Race of Students Enrolled in U.S. Medical Schools, 1973–74 Through 1979–80

Year	Race						
	Total	White	Black	Hispanic*	American Indian	Oriental	Foreign
1973–74	50,751	44,720	3,040	1,206	97	883	805
	100.0	88.1	6.0	2.4	0.2	1.7	1.6
1974–75	53,554	46,761	3,355	1,501	159	959	819
	100.0	87.3	6.3	2.8	0.3	1.8	1.5
1975–76	55,818	48,654	3,456	1,711	172	1,022	803
	100.0	87.2	6.2	3.1	0.3	1.8	1.4
1976–77	57,765	50,233	3,517	1,907	186	1,177	745
	100.0	87.0	6.1	3.3	0.3	2.0	1.3
1977–78	60,039	51,974	3,587	2,050	201	1,422	805
	100.0	86.6	6.0	3.4	0.3	2.4	1.3
1978–79	62,242	53,746	3,540	2,265	202	1,592	897
	100.0	86.4	5.7	3.6	0.3	2.6	1.4
1979–80	63,800†	54,853	3,627	2,512	212	1,777	797
	100.0	86.0	5.7	3.9	0.3	2.8	1.3

Source: AAMC Fall Enrollment Surveys.

* For 1973–74 through 1976–77, the Hispanic and "Other" categories were combined, since the "Other" category was dropped in 1977–78 to reflect the DHEW suggested racial/ethnic classification. Thus, the Hispanic category has been broadened to include any person of Spanish culture or origin, regardless of race. However, it should be noted that the Hispanic category does contain several distinct groups including Puerto Rican-Mainland, Puerto Rican Commonwealth, Mexican American, Cuban, and any other Hispanics. At the present time, Puerto Rican-Mainlanders and Mexican Americans are known to be underrepresented minorities in the U.S. medical student population.

† Total includes 22 students for whom data were not available.

Table 5
Race and Sex of NHSC Scholarship Participants, 1973–74 Through 1979–80

Participants by Year	Race											
	Total*		White		Black		Hispanic†		Am. Indian		Oriental	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1973–74	222	34	173	23	35	8	7	0	5	3	2	0
	100.0	100.0	77.9	67.6	15.8	23.5	3.2	0.0	2.3	8.8	0.9	0.0
1974–75	1,095	212	834	140	179	54	54	7	14	10	14	1
	100.0	100.0	76.2	66.0	16.3	25.5	4.9	3.3	1.3	4.7	1.3	0.5
1975–76	1,472	347	1,095	208	248	106	82	19	27	12	20	2
	100.0	100.0	74.4	59.9	16.8	30.5	5.6	5.5	1.8	3.5	1.4	0.6
1976–77	1,599	442	1,181	249	276	146	94	32	26	11	22	4
	100.0	100.0	73.9	56.3	17.3	33.0	5.9	7.3	1.6	2.5	1.4	0.9
1977–78	2,143	743	1,561	407	392	260	128	50	24	11	38	15
	100.0	100.0	72.8	54.8	18.3	35.0	6.0	6.7	1.1	1.5	1.8	2.0
1978–79	2,825	1,088	2,048	613	504	363	191	80	25	12	57	20
	100.0	100.0	72.5	56.3	17.8	33.4	6.8	7.3	0.9	1.1	2.0	1.8
1979–80	3,318	1,441	2,315	804	624	475	268	117	32	10	79	35
	100.0	100.0	69.8	55.8	18.8	33.0	8.1	8.1	1.0	0.7	2.4	2.4

* The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individual participating in the NHSC scholarship program for any given year.
† See footnote for Table 4a.

portion of black, hispanic and oriental males increased by 3.0 percent, 4.9 percent, and 1.5 percent respectively.

The same trends are observed for female participants. The proportion of white and American Indian females decreased by 11.8 percent and 8.1 percent respectively. The proportion of black, Hispanic, and oriental females increased by 9.5 percent, 8.1 percent, and 2.4 percent respectively.

Some of the differences noted for certain minority groups may be somewhat exaggerated and unstable due to the small numbers present in several of the categories.

These data suggest that the changes in both directions are more pronounced for females. Although such data should be interpreted with caution, these results may merit special attention.

4. Father's Occupation

Tables 6 and 6a contain the distribution of responses to the following item on the MCAT questionnaire:

> "What was your father's occupation during the major part of the last year (or if retired or deceased, the major occupation prior to retirement or death)?"

The largest percentage of scholarship participants from 1973–74 to 1979–80 had fathers who were employed as non-medical professional workers.

In general, the proportions of fathers employed as owners, managers, administrators, and farmers increased over time (6.3 percent and 1.1 percent respectively). Conversely, the proportions of participants whose fathers were clerical or sales workers, and craftsmen, skilled workers, decreased over time (3.7 percent and 4.5 percent respectively).

Except for an initial decrease from 1973–74 to 1974–75 for physicians and unskilled workers, and an increase for other health professionals, non-medical professional workers, homemakers, and other occupations, the proportion of participants with fathers employed in these categories remained relatively stable throughout the time period examined.

As compared to data available for 1975–76 and 1976–77 for the enrolled medical student population (Table 6a), there were proportionately fewer participants with fathers employed in the health field (i.e., physicians and other health professionals).

Although there was a slight increase (1.4 percent) in the proportion of participants' fathers employed as owners, managers, or administrators for the two-year period from 1975 to 1977, these figures were below the proportions of total enrolled medical students' fathers employed in such positions.

Conversely, the proportions of participants' fathers who were employed as non-medical professional workers, clerical or sales workers, craftsmen or skilled workers, unskilled workers, farmers, and in other areas, were, in general, higher than those of enrolled medical students' fathers for 1975–76 and 1976–77.

5. Mother's Occupation

The following question was asked in reference to mother's occupation on the MCAT questionnaire:

Table 6

Father's Occupation of NHSC Scholarship Participants, 1973–74 Through 1979–80

Participants by Year	Father's Occupation										
	Total*	Physician	Other Health Prof	Other Prof Worker	Owner, Manager, Admin	Clerical or Sales	Craftsman, Skilled Worker	Unskilled Worker	Farmer	Homemaker	Other
1973–74	240	30	6	59	35	18	37	24	7	0	24
	100.0	12.5	2.5	24.6	14.6	7.5	15.4	10.0	2.9	0.0	10.0
1974–75	1,381	122	55	392	215	119	172	104	32	2	168
	100.0	8.8	4.0	28.4	15.6	8.6	12.5	7.5	2.3	0.1	12.2
1975–76	1,927	165	77	551	307	150	225	160	47	1	244
	100.0	8.6	4.0	28.6	15.9	7.8	11.7	8.3	2.4	0.1	12.7
1976–77	2,090	167	78	585	361	147	240	191	73	3	245
	100.0	8.0	3.7	28.0	17.3	7.0	11.5	9.1	3.5	0.1	11.7
1977–78	2,799	215	116	764	534	151	301	258	129	4	327
	100.0	7.7	4.1	27.3	19.1	5.4	10.8	9.2	4.6	0.1	11.7
1978–79†	3,744	335	154	1,024	764	158	404	313	164	3	425
	100.0	8.9	4.1	27.4	20.4	4.2	10.8	8.4	4.4	0.1	11.4
1979–80†	4,371	392	181	1,196	912	167	478	370	173	3	501
	100.0	9.0	4.1	27.4	20.9	3.8	10.9	8.5	4.0	0.1	11.5

* The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

† Due to revisions in the father's occupation item from the 1976 to the 1977 version of the MCAT questionnaire, several categories of father's occupation have been combined for individuals who took the MCAT in 1977 or later. Other Health Profession includes: "Health Professional", "Other Health Professional Requiring Certification" and "Health Worker-Other Than Above". Owner, Manager, Administrator includes: "Owner, Manager-Small Business" and "Manager, Administrator, Executive (Corporate Business-Non-Farm)". Farmer includes: "Farmer, Farm Manager, Farm Foreman" and "Farm Laborer". Other includes: "Other Business Position", "Full-time Student" and "Transport or Equipment Operator".

Table 6a

Father's Occupation of Students Enrolled in U.S. Medical Schools, 1975–76 Through 1976–77

		Father's Occupation									
Year	*Total*	*Physician*	*Other Health Prof*	*Other Prof Worker*	*Owner, Manager, Admin*	*Clerical or Sales*	*Craftsman, Skilled Worker*	*Unskilled Worker*	*Farmer*	*Homemaker*	*Other*
1975–76	51,209	7,041	2,297	13,121	11,467	3,352	4,646	2,283	1,416	37	5,549
	100.0	13.7	4.5	25.6	22.4	6.5	9.1	4.5	2.8	0.1	10.8
1976–77	54,152	7,430	2,691	13,915	12,801	3,077	4,618	2,272	1,561	46	5,741
	100.0	13.7	5.0	25.7	23.6	5.7	8.5	4.2	2.9	0.1	10.6

Source: AAMC Enrolled Student Studies

Table 7

Mother's Occupation of NHSC Scholarship Participants, 1973–74 Through 1979–80

Participants by Year	Total*	Mother's Occupation: Physician	Other Health Prof	Other Prof Worker	Owner, Manager, Admin	Clerical or Sales	Craftsman, Skilled Worker	Unskilled Worker	Farmer	Homemaker	Other
1973–74	245	0	19	28	2	40	6	8	0	133	9
	100.0	0.0	7.8	11.4	0.8	16.3	2.4	3.3	0.0	54.3	3.7
1974–75	1,391	7	84	202	34	200	24	45	0	697	98
	100.0	0.5	6.0	14.5	2.4	14.4	1.7	3.2	0.0	50.1	7.0
1975–76	1,928	11	124	273	52	277	38	67	1	950	135
	100.0	0.6	6.4	14.2	2.7	14.4	2.0	3.5	0.1	49.3	7.0
1976–77	2,090	10	158	311	60	283	39	95	6	989	139
	100.0	0.5	7.6	14.9	2.9	13.5	1.9	4.5	0.3	47.3	6.7
1977–78	2,801	14	255	439	96	364	48	134	9	1,243	199
	100.0	0.5	9.1	15.7	3.4	13.0	1.7	4.8	0.3	44.4	7.1
1978–79 †	3,732	19	372	631	137	479	75	199	15	1,545	260
	100.0	0.5	10.0	16.9	3.7	12.8	2.0	5.3	0.4	41.4	7.0
1979–80 †	4,360	21	459	803	188	557	87	266	19	1,667	293
	100.0	0.5	10.5	18.4	4.3	12.8	2.0	6.1	0.4	38.2	6.7

* The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.
† See footnote for Table 6.

Table 7a

Mother's Occupation of Students Enrolled in U.S. Medical Schools, 1975–76 Through 1976–77

Year	Mother's Occupation										
	Total	Physician	Other Health Prof	Other Prof Worker	Owner, Manager, Admin	Clerical or Sales	Skilled Worker Craftsman,	Unskilled Worker	Farmer	Homemaker	Other
1975–76	51,262	447	3,376	6,700	1,522	6,234	760	1,260	98	27,663	3,202
	100.0	0.9	6.6	13.1	3.0	12.2	1.5	2.5	0.2	54.0	6.2
1976–77	54,133	505	3,971	7,403	1,892	6,451	749	1,707	148	28,020	3,287
	100.0	0.9	7.3	13.7	3.5	11.9	1.4	3.2	0.3	51.8	6.1

Source: For 1975–76, data were obtained from the AAMC Study of PHS Scholarship Recipients and NHSC Participants.
For 1976–77, data were obtained from the AAMC Study of Enrolled Medical Students.

"What was your mother's occupation during the major part of the last year (or if retired or deceased the major occupation prior to retirement or death)?"

An examination of trends from 1973–74 through 1979–80 (Table 7) indicates that there was an increase in the proportions of participants' mothers employed as other health professionals (2.7 percent), non-medical professional workers (7.0 percent), owners, managers, administrators (3.5 percent), unskilled workers (2.8 percent), and farmers (0.4 percent). A decrease in the proportion of participants' mothers employed as clerks or saleswomen (3.5 percent) and homemakers (16.1 percent) occurred during the same period.

The proportions of mothers holding positions as physicians, craftswomen or skilled workers, and in other areas, either remained stable or showed no consistent trends during the time period examined.

In comparing the occupations of mothers of scholarship participants and the mothers of enrolled medical students (Table 7a), the distributions for these two groups were very similar. The proportions of participants' mothers employed as non-medical professional workers, clerical workers, unskilled workers, and in other occupations, were slightly greater than the proportions

Table 8

General Career Plans of NHSC Scholarship Participants, 1973–74 Through 1979–80

	General Career Plans						
Participants by Year	Total*	General Practice	Specialty Practice	Research and/or Teaching	Comb of 2 and 3	Other	Undecided
1973–74	267	100	61	14	52	4	36
	100.0	37.5	22.8	5.2	19.5	1.5	13.5
1974–75	1,449	534	358	57	282	26	192
	100.0	36.9	24.7	3.9	19.5	1.8	13.3
1975–76	1,997	792	503	62	363	39	238
	100.0	39.7	25.2	3.1	18.2	2.0	11.9
1976–77	2,141	898	524	57	368	42	252
	100.0	41.9	24.5	2.7	17.2	2.0	11.8
1977–78	2,824	1,410	618	73	393	58	272
	100.0	49.9	21.9	2.6	13.9	2.1	9.6
1978–79 †	2,785	1,513	546	56	359	113	198
	100.0	54.3	19.6	2.0	12.9	4.1	7.1
1979–80 †	2,287	1,287	408	49	295	105	143
	100.0	56.3	17.8	2.1	12.9	4.6	6.3

* The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

† Since the item on General Career Plans was deleted from the 1977 and subsequent versions of the MCAT questionnaire, the response frequencies for 1978–79 and 1979–80 include only those individuals who completed the questionnaire prior to 1977.

of enrolled medical students' mothers employed in such areas. Conversely, the proportions of participants with mothers holding positions as physicians, owners, managers, or administrators, farmers, and homemakers were slightly less than the proportions of enrolled medical students' mothers holding these positions.

C. Career Plans for NHSC Scholarship Participants and the U.S. Medical Student Population

1. General Career Plans

Students were asked to indicate their general career plans by responding to the following item:

> "Indicate the one type of medical career listed below to which you plan to devote the majority of your professional efforts."

The distributions of responses to this item are presented in Tables 8 and 8a. The proportion of scholarship participants planning a general practice increased substantially from 1973–74 to 1979–80 (18.8 percent). In contrast, the proportions of participants planning a specialty practice, a research and teaching career, a combination of research, teaching and specialty practice, or undecided about their career plans, decreased in recent years (5.0 percent, 3.1 percent, 6.6 percent and 7.2 percent respectively). The proportion of participants choosing other practice areas increased (3.1 percent) during this time period.

An examination of the general career plans of scholarship participants and of enrolled medical students (Table 8a) for 1975–76 and 1976–77 indicates that the proportion of scholarship participants planning a general practice was higher than in the enrolled medical student population.

By comparison, proportions of participants were lower in the following categories: specialty practice, research and teaching, combinations of specialty practice and research/teaching, and undecided.

Table 8a

General Career Plans of Students Enrolled in U.S. Medical Schools, 1975–76 and 1976–77

		General Career Plans					
Year	*Total*	*General Practice (1)*	*Specialty Practice (2)*	*Research and/or Teaching (3)*	*Comb. of 2 and 3 4)*	*Other (5)*	*Undecided (6)*
1975–76	52,464	17,057	14,817	2,079	10,886	911	6,714
	100.0	32.5	28.2	4.0	20.7	1.7	12.8
1976–77	54,963	19,644	14,555	2,086	10,678	1,007	6,993
	100.0	35.7	26.5	3.8	19.4	1.8	12.7

Source: AAMC Enrolled Student Studies.

Table 9

Expected Character of Medical Practice for NHSC Scholarship Participants, 1973–74 Through 1977–78*

Participants by Year	Total†	Expected Character of Medical Practice								
		Individual	Partners	Private Group	Hosp. Based Group	Full-Time Teaching & Research	Public Health	Medical Admin	Other	Undecided
1973–74	262	45	30	26	47	14	33	0	10	57
	100.00	17.2	11.5	9.9	17.9	5.3	12.6	0.0	3.8	21.8
1974–75	1,441	213	214	163	303	66	177	4	39	262
	100.00	14.8	14.9	11.3	21.0	4.6	12.3	0.3	2.7	18.2
1975–76	1,991	289	309	242	422	80	255	8	51	335
	100.00	14.5	15.5	12.2	21.2	4.0	12.8	0.4	2.6	16.8
1976–77	2,137	333	357	238	454	76	251	8	45	375
	100.00	15.6	16.7	11.1	21.2	3.6	11.7	0.4	2.1	17.5
1977–78	2,817	467	468	299	575	75	376	8	74	475
	100.00	16.6	16.6	10.6	20.4	2.7	13.3	0.3	2.6	16.9

* Since the Expected Character of Medical Practice item was substantially revised on the 1977 and subsequent versions of the MCAT questionnaire, data for 1978–79 and 1979–80 are not presented.

† The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

Table 9a

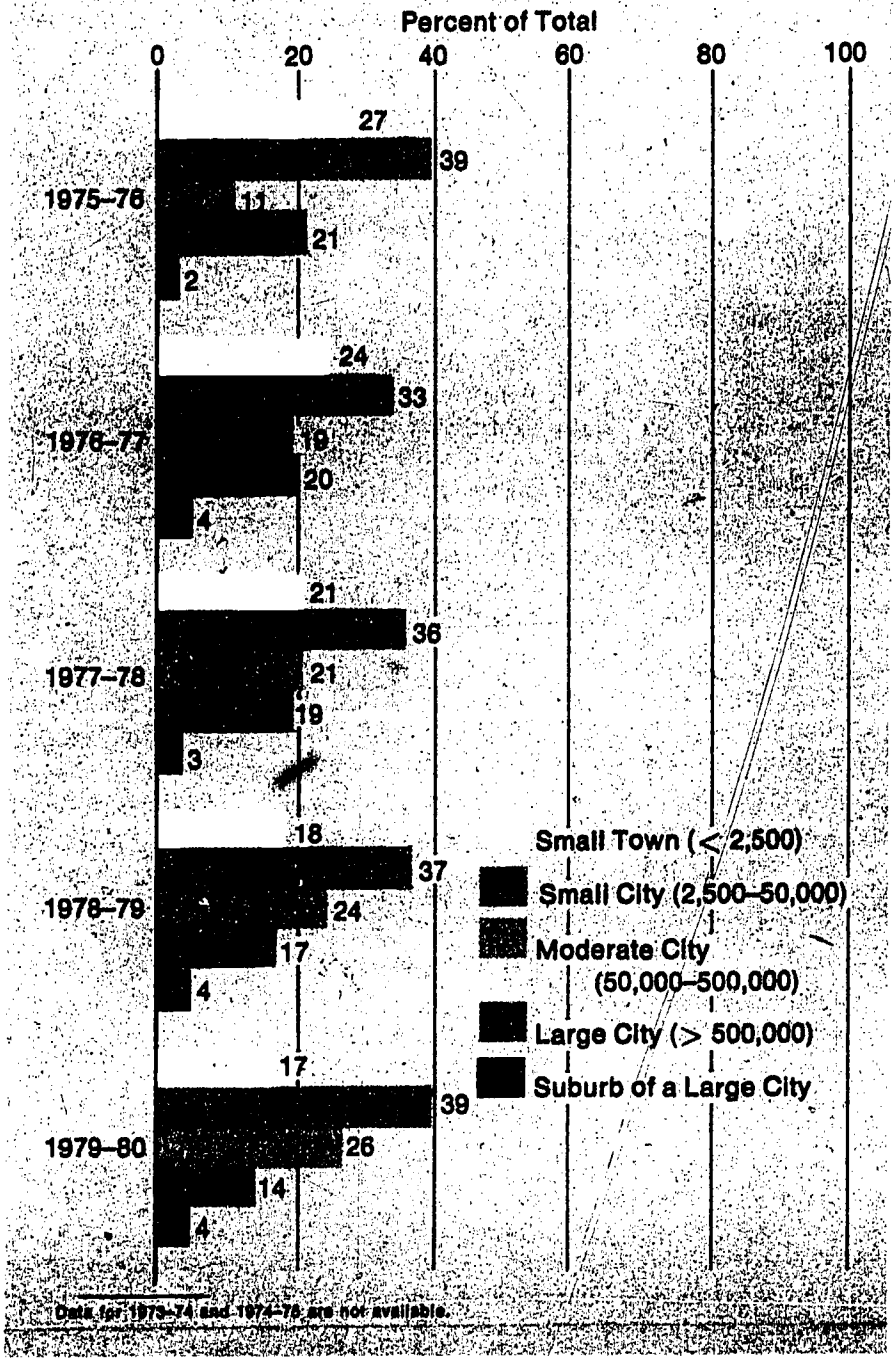
Expected Character of Medical Practice for Students Enrolled in U.S. Medical Schools, 1975–76 and 1976–77

	Expected Character of Medical Practice										
Year	Total	Individual	Partners	Private Group	Hosp. Based Group	Full-Time Teaching & Research	Public Health	Industrial	Medical Admin	Other	Undecided
1975–76	51,746	8,613	8,833	5,868	11,346	2,397	3,405	29	105	1,059	10,091
	100.0	16.6	17.1	11.3	21.9	4.6	6.6	0.1	0.2	2.0	19.5
1976–77	54,896	9,062	9,639	6,411	11,957	2,355	3,539	26	103	1,044	10,760
	100.0	16.5	17.6	11.7	21.8	4.3	6.4	0.0	0.2	1.9	19.6

Source: AAMC Enrolled Student Studies.

Figure 3

Preferred Location of Medical Practice of NHSC Scholarship Participants, 1975–76* Through 1979–80



*Data for 1973–74 and 1974–75 are not available.

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2. Expected Character of Medical Practice

Tables 9 and 9a contain the distribution of responses to the following item:

> "Indicate the character of the medical practice you now contemplate."

As indicated in Table 9, the proportions of scholarship participants expecting to practice in any given practice style remained relatively stable from 1973–74 to 1977–78, with the highest percentages of participants expecting to practice individually, with a partner, in a private group, in a hospital-based group, or in public health.

The distributions of the character of medical practice for 1975–76 and 1976–77 for scholarship participants and enrolled medical students are very similar (Tables 9 and 9a), except for higher proportions of participants expecting to practice in public health.

3. Location of Medical Practice

Students were asked to indicate the location in which they preferred to practice medicine by answering the following item:

> "Indicate the location of the medical practice you now contemplate."

As shown in Figure 3, the highest percentage of scholarship participants preferred to practice in a locality with a population of 2,500–50,000. The largest shifts in the location preference of scholarship participants from 1975–76 to 1979–80 were observed for localities with populations of less than 2,500 (9.9 percent decrease), 50,000–500,000 (15.1 percent increase), and more than 500,000 (6.8 percent decrease).

D. Educational Indebtedness and Financial Needs of Recent NHSC Scholarship Participants

In 1977, the MCAT Questionnaire underwent several revisions, one of which involved the addition of items concerning the financial status of students prior to their entry into medical school. Tables 10 through 13 contain preliminary data on NHSC participants who took the 1977 and 1978 version of the MCAT Questionnaire.

1. Educational Indebtedness

The item pertaining to the amount of educational indebtedness incurred by students is as follows:

> "Please estimate the total of your educational indebtedness as of the date you plan to enter medical school. Educational indebtedness includes money borrowed by legal note for which repayment is required (do not include loans from family or friends if repayment may not be demanded)."

Data from Table 10 indicates that more than half of the NHSC scholarship participants had not incurred any debt at the time they entered medical

Table 10

Amount of Educational Indebtedness for NHSC Scholarship Participants, 1978–79 and 1979–80*

	Educational Indebtedness							
Participants by Year	*Total†*	*None*	*Up to $1,999*	*$2,000–$3,999*	*$4,000–$5,999*	*$6,000–$7,999*	*$8,000–$9,999*	*More Than $10,000*
1978–79	921	528	147	122	77	32	7	8
	100.0	57.3	16.0	13.2	8.4	3.5	.8	.9
1979–80	2,003	1,096	309	281	182	82	28	25
	100.0	54.7	15.4	14.0	9.1	4.1	1.4	1.2

* Figures for this table include only those individuals who completed the 1977 and subsequent versions of the MCAT questionnaire.
† The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

school. Approximately 40 percent had debts of up to $6,000 while the rest (less than 10 percent) were $6,000 or more in debt. No significant changes in debt levels were noted from 1978–79 to 1979–80.

2. Willingness to Make a Service Commitment

Students were also asked if they were willing to exchange a period of service for financial support while in medical school. The item pertaining to this question is as follows:

> "If you attend medical school, please indicate if you would be willing to make a commitment to practice for a time under specified conditions to obtain financial support."

A majority of the scholarships went to participants who were willing to make service commitments (Table 11), while approximately 15 percent

Table 11

Willingness to Make Service Commitment for NHSC Scholarship Participants, 1978–79 and 1979–80*

	Willingness to Make Commitment			
Participants by Year	*Total†*	*Yes*	*No*	*Don't Know*
1978–79	974	808	15	151
	100.0	83.0	1.5	15.5
1979–80	2,123	1,790	33	300
	100.0	84.3	1.6	14.1

* Figures for this table include only those individuals who completed the 1977 and subsequent versions of the MCAT questionnaire.
† The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

Table 12

Need of Financial Aid for NHSC Scholarship Participants, 1978–79 and 1979–80*

	Willingness to Make Commitment			
Participants by Year	Total†	Yes	No	Don't Know
1978–79	967	764	86	117
	100.0	79.0	8.9	12.1
1979–80	2,112	1,683	167	262
	100.0	79.7	7.9	12.4

* Figures for this table include only those individuals who completed the 1977 and subsequent versions of the MCAT questionnaire.
† The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

went to participants who said they were undecided at the time they took the MCAT. However, all students indicated a willingness to make service commitments when they entered the scholarship program. As indicated in Table 11, there were no changes in the willingness of prospective scholarship participants to make service commitments during the two-year period examined.

3. Need and Amount of Financial Aid

The following items were used to gather information on the financial needs of students prior to entering medical school:

> "Assuming you enter medical school, please indicate if you will need some form of external financial assistance to complete your medical education. (This refers to loans

Table 13

Amount of Financial Aid Needed for NHSC Scholarship Participants, 1978–79 and 1979–80*

	Amount of Financial Aid						
Participants by Year	Total†	Up to $4,000	$4,000–$7,999	$8,000–$11,999	$12,000–$15,999	$16,000–$19,999	More Than $20,000
1978–79	731	31	111	151	149	127	162
	100.0	4.2	15.2	20.7	20.4	17.4	22.2
1979–80	1,624	61	242	321	315	269	416
	100.0	3.8	14.9	19.8	19.4	16.6	25.6

* Figures for this table include only those individuals who completed the 1977 and subsequent versions of the MCAT questionnaire.
† The total number of participants for each year includes only individuals who were matched with the AAMC data base, not the total number of individuals participating in the NHSC scholarship program for any given year.

from sources other than family, such as banks, educational institutions, or similar sources)."
"If your answer to the above question is yes, please estimate the approximate amount of financial assistance you will need to obtain from sources other than family to complete your medical education."

The distributions of responses to these items are presented in Tables 12 and 13. Approximately 80 percent of the scholarship participants indicated that they would require some form of financial assistance while in medical school (Table 12). Of those participants indicating a need for financial aid, approximately one-fourth estimated that they would require more than $20,000 to complete their medical education (Table 13).

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