



## Physicians and New Health Practitioners: Issues for the 1980's (1979)

Pages  
68

Size  
7 x 10

ISBN  
0309333288

Scheffler, Richard M.; Yoder, Sunny Graves; Weisfeld, Neil; Ruby, Gloria; Institute of Medicine

 [Find Similar Titles](#)

 [More Information](#)

### Visit the National Academies Press online and register for...

- ✓ Instant access to free PDF downloads of titles from the
  - NATIONAL ACADEMY OF SCIENCES
  - NATIONAL ACADEMY OF ENGINEERING
  - INSTITUTE OF MEDICINE
  - NATIONAL RESEARCH COUNCIL
- ✓ 10% off print titles
- ✓ Custom notification of new releases in your field of interest
- ✓ Special offers and discounts

Distribution, posting, or copying of this PDF is strictly prohibited without written permission of the National Academies Press. Unless otherwise indicated, all materials in this PDF are copyrighted by the National Academy of Sciences.

To request permission to reprint or otherwise distribute portions of this publication contact our Customer Service Department at 800-624-6242.

Copyright © National Academy of Sciences. All rights reserved.

INSTITUTE OF MEDICINE

PHYSICIANS AND NEW HEALTH PRACTITIONERS:  
ISSUES FOR THE 1980s

Richard M. Scheffler, Ph.D.  
Director  
Division of Health Manpower  
and Resources Development

Sunny Graves Yoder  
Professional Associate  
Division of Health Manpower  
and Resources Development

Neil Weisfeld, JD, MSHyg.  
Professional Associate  
Division of Health Manpower  
and Resources Development

Gloria Ruby, M.A.  
Professional Associate  
Division of Health Manpower  
and Resources Development

May 1979

The preparation of this paper was supported in part by the Health Resources Administration of the Department of Health, Education, and Welfare on Task Order 2 of contract 282-78-0163-EJM.

NATIONAL ACADEMY OF SCIENCES

Washington, D.C.

NAS-NAE  
JUL 17 1979  
LIBRARY

79-0069  
c-1

## NOTICE

The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the Councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the Committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

---

The Institute of Medicine was chartered in 1970 by the National Academy of Sciences to enlist distinguished members of medical and other professions for the examination of policy matters pertaining to the health of the public. In this, the Institute acts under both the Academy's 1863 Congressional charter responsibility to be an advisor to the Federal Government, and its own initiative in identifying issues of medical care, research, and education.

Publication IOM-79-002

---

2101 Constitution Avenue, N.W.  
Washington, D.C. 20418

## PREFACE

This paper was written by members of the Institute of Medicine staff. Portions of the paper reflect concerns and views raised at a one-day meeting sponsored and held at the Institute in June 1978. The purpose of the meeting was to discuss and assess health manpower policy options being considered by the Department of Health, Education, and Welfare in preparation for the Health Professions Educational Assistance Act of 1980. The participants in that meeting (see list next page) represent a wide range of expertise in health manpower. Following the meeting, it was decided that this paper be written to make public the issues and the differing views expressed at the meeting. It is hoped that the information in this paper will enhance the quality of the debate. To describe the issues the writers drew upon various government documents as well as published materials.

The paper was reviewed by an advisory panel composed of Luther Christman, Ph.D., Dean of the College of Nursing, Rush University; E. Harvey Estes, Jr., M.D., Professor and Chairman of the Department of Community Health Services, Duke University; Rashi Fein, Ph.D., Professor of Medical Economics, Harvard Medical School; Eli Ginzberg, Ph.D., Director, Conservation of Human Resources, Columbia University; Nathan Hershey, LL.B., Professor of Health Law, Graduate School of Public Health, University of Pittsburgh; Julius R. Krevans, M.D., Dean of the School of Medicine, University of California at San Francisco; and Rosemary Stevens, Ph.D., Professor, Department of History and Sociology of Science, University of Pennsylvania. The staff is grateful for their criticisms and helpful comments, but remains responsible for the content of the paper as well as any remaining errors.

A special thanks to Iris Schneider, Special Assistant to the Administrator of the Health Resources Administration for her encouragement and suggestions, and Howard V. Stambler, Director, Division of Health Manpower Analysis, Bureau of Health Manpower, Health Resources Administration for his advice. In addition, we would like to express an appreciation to Dawn Gustafson for typing various drafts of this paper and Juliana Goldberg for her editorial help. Richard M. Scheffler is currently an Associate Professor of Economics at George Washington University, and Gloria Ruby is a service fellow at the National Center for Health Services Research, Department of Health, Education, and Welfare. Neil Weisfeld is now on the staff of the National Commission for Health Certifying Agencies, Washington, D.C. Sunny Yoder is a staff associate at the Institute of Medicine and also a doctoral student in the School of Public Health, Johns Hopkins University.

Richard M. Scheffler



INSTITUTE OF MEDICINE  
National Academy of Sciences

Participants

F. Philip Caper, M.D.  
Vice Chancellor of Health Affairs  
University of Massachusetts Medical  
School

Karen Davis, Ph.D.  
Deputy Assistant Secretary for  
Planning and Evaluation  
(Health)

Robert H. Ebert, M.D.  
President  
Milbank Memorial Fund

E. Harvey Estes, Jr., M.D.  
Professor and Chairman  
Department of Community Health  
Sciences  
Duke University

Rashi Fein, Ph.D.  
Professor of the Economics  
of Medicine  
Harvard Medical School

Henry Foley, Ph.D.  
Administrator  
Health Resources Administration

Eli Ginzberg\*, Ph.D.  
Director, Conservation of  
Human Resources  
Columbia University

Ruth Hanft, M.A.  
Deputy Assistant Secretary for  
Health Policy, Research and  
Statistics

David A. Kindig, M.D.  
Director  
Montefiore Hospital and Medical  
Center

Richard M. Scheffler, Ph.D.  
Director  
Division of Health Manpower and  
Resources Development  
Institute of Medicine  
National Academy of Sciences

Michael Zubkoff, Ph.D.  
Chairman and Professor  
Department of Community  
Medicine  
Dartmouth Medical School

---

\*Chairman of the meeting

OBSERVERS\*

Leo Corbett  
Executive Assistant to the  
Undersecretary

Larry Gage  
Special Assistant to the Deputy  
Assistant Secretary for  
Legislation (Health)

Georgia Jones  
Special Assistant to the Deputy  
Assistant Secretary for  
National Health Insurance

John Kelso  
Deputy Administrator to the  
Health Services Administration

Linda Miller  
Special Assistant to the  
Secretary

James Mongan  
Deputy Assistant Secretary  
for Health

Gloria Ruby, M.A.  
Research Associate  
Division of Health Manpower  
and Resources Development  
Institute of Medicine

Iris Schneider  
Special Assistant to the  
Administrator  
Health Resources Administration

Alvin R. Tarlov, M.D.  
Professor and Chairman  
Department of Medicine  
University of Chicago

Neil Weisfeld, J.D., MSHyg.  
Research Associate  
Division of Health Manpower  
and Resources Development  
Institute of Medicine

Bruce Wolff  
Special Assistant to the  
Secretary  
Office of the Secretary

Sunny G. Yoder  
Research Associate  
Division of Health Manpower  
and Resources Development  
Institute of Medicine

GROUP LEADERS

Brian Biles, M.D.  
Director  
National Health Insurance  
Office of the Assistant  
Secretary for Planning and  
Evaluation (Health)

Joseph Eichenholz, Ph.D.  
Director  
Office of Economic Analysis  
Office of the Assistant  
Secretary for Health

Robert Graham, M.D.  
Deputy Director  
Bureau of Health Manpower  
Health Resources Administration

Bonnie Lefkowitz  
Director of Resources and  
Services  
Office of the Assistant  
Secretary for Planning and  
Evaluation

Clay Simpson, Ph.D.  
Associate Administrator  
Office of Health Resources  
Opportunity  
Health Resources Administration

Sam Seeman  
Director of Resources and  
Services  
Health Policy, Research and  
Statistics

\*The titles listed are as of the date of the meeting, June, 1978.

## C O N T E N T S

	Page
Introduction	ix
Section 1    The Future of the National Supply of Physicians	1
The Federal Role	1
The Current Supply of Physicians	1
The Future Supply of Physicians	2
Alternative Methods for Assessing the Adequacy of the Supply of Physicians	4
Policy Approaches	6
Section 2    Physician Distribution--A Long Range View	9
Defining Distribution Goals	12
Factors Influencing Physician Specialty and Location Choices	14
Efforts to Improve the Distribution of Physicians	16
Non-federal Efforts to Improve Physician Distribution	20
Conclusions	21
Section 3    The Future of Minority Enrollments in Medical Schools	23
Historical Perspective	25
Range of Minority Programs	26
The Size of the Minority Applicant Pool	27
Retention of Minority Students in Medical Schools	29
Post-Graduate Placement of Minority Physicians	30
In the Aftermath of <u>Bakke</u>	31
Policy Approaches	33
Section 4    The Future Role of New Health Practitioners	37
The Federal Presence	37
Major Issues--Past and Present	38
The Emerging Role of New Health Practitioners	40
Conclusions	45
Policy Approaches	46
References	49

## THE FUTURE OF THE NATIONAL SUPPLY OF PHYSICIANS

### THE FEDERAL ROLE

The expanding supply of physicians is one of the major developments in the health care system during the last two decades. A major cause of this expansion was the financial support provided by the federal government. This direct support (construction, renovation, and student loans) of medical schools began in 1963 with the passage of the Health Professions Educational Assistance Act (HPEA). 1/ The comprehensive Health Manpower Act of 1971 shifted federal support of medical schools from general institutional support to capitation payments, which were intended to increase enrollment by providing a fixed amount of grant money per student to the school. 2/ The 1976 Health Professions Educational Assistance Act provided capitation support for medical students, and added requirements to maintain or increase the number of first year residents in primary care. Authorized funds under the HPEA Act grew from 30 million for the fiscal year 1964 to a total of about 1 billion by 1974.\* In 1976 alone, excluding outlays for construction, the federal government spent approximately 560 million dollars supporting the training of physicians. 3/ Federal funds helped to increase the number of first year medical students from 8,772 in 1963-1964 to more than 16,000 in 1977-1978.

The federal effort to stimulate the expansion of medical schools was based on the assumption that there was a shortage of physicians and that they were an important "national resource." This view was partly the result of several private and governmental reports and commissions. 4/ With very few exceptions, there was agreement in the 1960s that there was indeed a shortage of physicians. 5/

### THE CURRENT SUPPLY OF PHYSICIANS

About midway through the 1970s the assumption that there was a shortage of physicians began to be replaced by the view that the supply of physicians was, or soon would be, adequate and that a potential oversupply of physicians was a real possibility. The HPEA Act of 1976 in its preamble declared the country had a sufficient supply of physicians to warrant the end of immigration preferences for foreign medical graduates, and that the major problem was maldistribution both geographically and by

---

\*These figures do not include federal funds awarded for biomedical research or patient care dollars paid to teaching hospitals.

medical specialty. In his speech on October 24, 1978 before the American Association of Medical Colleges, Secretary of HEW Joseph A. Califano iterated this view:

"The first tenet of national policy in the health professions area is this: overall, we face in the next decade an oversupply of doctors. Unless we change direction, we will seriously aggravate the oversupply by the end of this century."

A recent report by the Institute of Medicine, A Manpower Policy for Primary Health Care, recommended that there be no further expansion of medical schools. 6/ A report by the Carnegie Council on Policy Studies in Higher Education concluded that there is no longer a shortage of physicians. Health manpower researchers have also echoed this judgment. 7/ There appears a consensus emerging that the current national supply of physicians is adequate and that the current level of training could lead to an oversupply while both geographic and specialty distribution problems remain. (See Section 2)

#### THE FUTURE SUPPLY OF PHYSICIANS

In 1977 there were 390,000 active physicians in the United States, more than a 30 percent increase since 1968 8/ The Bureau of Health Manpower, Health Resources Administration, estimates that by 1990 there will be 594,000 physicians, an increase of about 60 percent from current levels 9/ (Table 1). Moreover, this increase will be at a rate much faster than the population, thereby increasing the ratio of physicians to 242.2 per 100,000 population in 1990, compared with 177.3 in 1975. The projected growth through 1990 in the number of other providers is also significant (see Table 1); for dentists and optometrists it is about one-third; for pharmacists approximately 50 percent; and for podiatrists and nurses it is more than 70 percent.

Two important adjustments to the projection for physicians are in order. Both adjustments reflect the fact that we are really interested, for policy purposes, in the supply of physician services and not the supply of physicians per se. The productivity of physicians and their hours of work are crucial determinants of the available physician services. It seems likely that, if the numbers of physicians increase, the average hours that they work will decline. The average number of hours worked by physicians in urban (physician-rich areas) is lower than in rural (physician-poor areas). 10/ An increase in the number of female physicians will only reduce office hours, because they typically work fewer hours than male physicians. 11/ Moreover, as more physicians enter organized settings, such as group practices and health maintenance organizations, they will work fewer hours. An adjustment for hours worked could significantly affect the supply of physician services. For example,

Table 1. Health Manpower Supply: Trends and Projections, Selected Years

Discipline	Year	Supply		
		Number (000's)	Professionals per 100,000 Population	Professional to Population Ratio
Physicians (MD's and DO's)	1960 ...	259.5	143.6	1:696
	1970 ...	323.2	157.8	1:634
	1975 ...	378.6	177.3	1:564
	1980 ...	444.0	199.3	1:502
	1985 ...	519.0	221.7	1:451
	1990 ...	594.0	242.4	1:413
Dentists	1960 ...	90.1	49.4	1:2,024
	1970 ...	102.3	49.6	1:2,016
	1975 ...	112.8	52.9	1:1,890
	1980 ...	127.0	57.1	1:1,751
	1985 ...	141.7	60.5	1:1,653
	1990 ...	153.0	62.4	1:1,603
Optometrists	1960 ...	16.1	8.9	1:11,236
	1970 ...	18.4	9.0	1:11,111
	1975 ...	19.9	9.3	1:10,753
	1980 ...	22.0	9.9	1:10,101
	1985 ...	24.4	10.4	1:9,615
	1990 ...	26.7	10.9	1:9,174
Podiatrists	1960 ...	7.0	3.9	1:25,641
	1970 ...	7.1	3.5	1:28,571
	1975 ...	7.3	3.4	1:29,412
	1980 ...	8.7	3.9	1:25,641
	1985 ...	10.5	4.5	1:22,222
	1990 ...	12.5	5.1	1:19,608
Pharmacists	1960 ...	92.7	51.3	1:1,949
	1970 ...	109.6	53.5	1:1,869
	1975 ...	122.6	57.4	1:1,742
	1980 ...	144.3	64.8	1:1,543
	1985 ...	165.2	69.5	1:1,439
	1990 ...	185.4	75.7	1:1,321
Veterinarians	1960 ...	19.5	10.8	1:9,259
	1970 ...	25.9	12.6	1:7,937
	1975 ...	31.1	14.6	1:6,849
	1980 ...	37.5	16.8	1:5,952
	1985 ...	45.6	19.5	1:5,128
	1990 ...	54.9	22.4	1:4,464
Registered Nurses	1960 ...	504.0	282.0	1:355
	1970 ...	722.0	356.0	1:281
	1975 ...	906.0	427.0	1:234
	1980 ...	1,152.0	520.0	1:192
	1985 ...	1,345.0-1,380.0	579.0-584.0	1:171-1:173
	1990 ...	1,484.0-1,587.0	616.0-653.0	1:153-1:162

Projections made by the Health Resources Administration of DHEW. (1978)

if the average work week of more than 50 hours were reduced to 45 hours, the supply of physician services would be reduced by about 10 percent. 12/

The projections of the Health Resources Administration do not make any adjustments for changes in physician productivity. 13/ A measure of productivity often used is the number of patient visits that are produced by the physician's practice per week or per year. Because of data limitations, it is difficult to make precise estimates of overall productivity over time, although many estimates are available. 14/ These estimates range from an increase of two percent to slightly more than four percent per year, compared with the longterm productivity increase of about three percent for the whole economy. Whether these productivity trends will be altered depends partly on the specialty distribution of physicians and the organizational patterns used to deliver services. If we assume that productivity of the physician's practice increases at one-half a percent per year (low estimate) then by 1990 productivity should have increased about eight percent. This means that the supply of physicians in 1990 should be able to provide a level of services that would have required about 45,000 more physicians without the productivity increase. 15/ The decrease in hours worked by physicians is likely to be offset, in part, by an increase in productivity.

Given the projections of the supply of physicians, the question of the adequacy of the supply remains. The Bureau of Health Manpower projections of the requirement for physicians in 1990 use the 1975 ratio of 177.3 physicians per 100,000 population. They assume that the supply of physicians was in balance with the requirements in 1975. They estimate that the need for physicians in 1990 will be 221.4 to 233.0 per 100,000 population and that the supply will be 242.2 physicians per 100,000 population. Those estimates would pose a surplus of 23,000 to 51,400 physicians in 1990.

The Manpower Supply and Utilization Branch, which is another component of the Health Resources Administration, uses a needs-based projection to estimate that 510,800 physicians will be required in 1990. Including osteopaths (to make it consistent with the other projections) the projected supply of physicians is 564,200, or a surplus of about 50,000 physicians. Thus, both projections indicate a surplus of physicians in 1990. 16/

Needs-based projection of the required number of physicians, based on either current use or professional judgment, may ignore a number of considerations. Included among these are the development of new services, quality changes, and factors what would influence the use of services. Organizational changes, such as group practices and health maintenance organizations, and financial changes, such as national health insurance, are some of the important factors ignored.

#### ALTERNATIVE METHODS FOR ASSESSING THE ADEQUACY OF THE SUPPLY OF PHYSICIANS

One approach to judging the adequacy of the supply of physicians is to use criteria derived from the medical care marketplace. The



question then becomes: is the supply of physicians large enough to meet the demand at the prevailing prices of medical services? This approach is of limited value because of some unique characteristics of the medical care market. 17/ Patients have little knowledge about many of these services and usually can only make a partial assessment of their usefulness or quality. The flow of information in the market is limited, in part because the information is difficult for the patient to understand and because of professional restrictions placed on the nature and scope of advertising. 18/ In addition, the physician has a significant amount of control in determining the amount and type of the patient services that are delivered. 19/ Once the patient enters the health care system, most of the decisions are made by the physician including the amount, type, cost, and quality of medical care delivered. 20/ Each of these decisions also helps to determine the income of physicians. Moreover, partly because of the increase in insurance, both public and private, the patient is not concerned about the cost at the time the services are being delivered. 21/ Eventually price increases will be reflected in insurance premiums or taxes.

The usefulness of the medical services delivered by the physician is an important but a somewhat separate issue. The point is that the physician may be able to influence the amount of services delivered to the patient with little or no resistance from the patient. 22/ The validity of so-called "supplier-induced demand" has been debated by researchers because it is difficult to measure empirically. 23/ Some empirical work shows that as the relative supply of physicians increases in an area the price of physician services increases. This relationship is consistent with the supplier-induced demand hypothesis, that is, physicians increase the demand for services and thus increase prices when the supply of physicians increases. It is also possible that the increase in supply is a response to a need or demand that existed previously but was not being met. Another possibility is that physicians increase the quality of services when the supply of physicians increases, thereby raising the cost of services. These alternative explanations do not reduce the possibility that an increased supply of physicians may result in higher prices and increased expenditures. 24/ If physicians do induce demand, health care expenditures will increase. Whether this increase in expenditures is of concern depends in part on the efficacy and effectiveness of the services that are delivered. One method of judging the value of these services is to assess their effect on the health status of the population. Although this approach is conceptually appealing, measurement problems and data limitations make its application difficult at this time. 25/

Another important aspect of the medical care market is its relationship to what we will call the "trickle-down" hypothesis. The trickle-down hypothesis is based on the impact of market forces (supply and demand) on distribution problems--by both specialty and geography. 26/ As the supply of physicians increases, market forces may make physicians more inclined to practice in underserved areas and perhaps in specialties with shortages, such as primary care. Physicians would be encouraged to move to these areas partly because the economic climate would make it more difficult to practice in overserved areas and in specialties that have a



large supply of providers. This is because, according to the trickle-down theory, these areas and specialties would have fewer good opportunities and lower income potential. For the most part, the evidence shows that the trickle-down theory has been of only limited usefulness. The recent increase in the supply of physicians had a sizeable effect on increasing overall utilization of health care, but only a small effect on improving the geographic or specialty distribution of physicians. Projected significant increases in the supply of physicians may make the trickle-down effect more important in the future.

Some researchers have suggested that we cannot draw conclusions about the adequacy of physicians without considering the supply of other health professionals. 27/ This notion is based on the fact that physicians can be more productive with the assistance of allied health manpower and new types of health professionals, such as physician assistants and nurse practitioners. 28/ For example, the physician assistant and nurse practitioner have been found to increase the output of some physician practices by 50 percent or more. 29/ Other health professionals, including dentists, optometrists, podiatrists, pharmacists, and nurses provide services that complement and improve, as well as substitute for physician services. 30/

#### POLICY APPROACHES

It is reasonable to assume that the adequacy of the supply of physicians will again be debated in the legislative process leading to the Health Professions Educational Assistance Act of 1980. Many will contend that the supply of physicians is inadequate in their area. Shortages of physicians in certain areas, even with large increases in the total supply of physicians, will likely remain. Thus, even with an adequate or oversupply of physicians in the aggregate, inequities of distribution will be of great concern.

Federal policy proposals are likely to be aimed at slowing the rate of growth in the overall supply of physicians. These include funding policies, such as refusing to fund new medical schools, the repeal of financial distress grants to medical schools, penalizing states for developing new medical schools by withholding HEW funds, or the elimination or phasing out of capitation support to medical schools. Financial incentives could also be used to reduce class size or increase minority enrollments.

Other policy options include the use of a national certificate of need (CON) approach to the development of new medical schools or perhaps to the expansion of existing ones. This approach would have some similarities to the current health planning legislation that permits health systems agencies at the local level to set guidelines for the expansion of hospital beds in their areas. However, it may also raise some constitutional issues related to the rights of the states to control licensure and certification. The policy would require new regulatory or legislative authority.

About one out of five physicians practicing in the United States was trained abroad. 31/ There are several policy options that may be

directed at reducing the supply of foreign medical students. These policies may further increase the number of restrictions on foreign medical graduates and reduce the number entering the United States. 32/ Policies may also attempt to reduce the supply of residency positions for FMGs, thus making it more difficult for them to receive graduate medical training. Reducing the number of residency positions would also make it less attractive for students to study medicine. Presumably, a reduction in residency slots would reduce their choice of specialty as well as location.

The focus of the HPEA of 1980 will be on the reduction of capitation payments to medical schools. However, because of long training periods for physicians, it appears that the short run effect of altering the amount or level of capitation (in the next ten years) on the overall supply of physicians will probably be quite small. It is likely that future increases in the supply of physicians will continue to increase utilization and health care expenditures. Existing programs to improve utilization and control costs, such as professional standards review organizations (PSROs) and second-opinion policies need to be improved and expanded in order to be more effective. The alternatives are likely to include more government regulation or perhaps increased use of financial incentives by private insurance companies, states, and the federal government. Developing and implementing policies that will encourage efficient utilization of physicians to improve the health of the population while moderating health care expenditures is a major challenge to be met in the next decade.



## PHYSICIAN DISTRIBUTION--A LONG RANGE VIEW

Although many researchers and policymakers believe that an adequate overall supply of physicians exists, or will soon, the lack of access to health services for some populations in the United States continues to be a matter for concern. Federal legislation during the 1960s and early 1970s was intended to improve access by increasing the supply of physician manpower. Increasingly apparent, however, was that a rapidly growing supply of physicians by itself did not necessarily improve access to basic health services. The Health Professions Educational Assistance Act of 1976 31/ and subsequent federal policy discussions have turned toward efforts to improve the distribution of physicians and other health manpower. The Secretary of Health, Education, and Welfare underscored this policy in a 1978 address to the Association of American Medical Colleges, stating that the overproduction of medical specialists relative to primary care physicians and the geographic maldistribution of physicians are two of the basic concerns in national health policy. 32/ Federal manpower policies attempt to improve access to health services; however, the presence of health manpower is only one factor influencing access. Others include distance from health resources, their productivity, ability to pay for services and to bear other costs such as waiting time and lost wages, as well as social or cultural factors. Manpower policies may improve physician distribution, but parallel efforts are needed to address these other factors affecting access.

Tables 2 and 3 present some data on physician distribution in the United States. Between 1963 and 1976, the number of active physicians increased by 33 percent, from 261,788 to 348,443; the proportion of primary care physicians in the total decreased from 42 percent to 39 percent,\* although their absolute number went up. The Health Resources Administration's Division of Manpower Analysis projects that the percentage of primary care physicians will be no higher in 1990 than it was in 1963, assuming no major changes in the determinants of specialty distribution. 33/ The geographic distribution of physicians varies widely

---

\*If obstetrics and gynecology are included in primary care, as some argue they should be, the proportion of primary care physicians becomes 48 percent in 1963 and 45 percent in 1976.

Table 2  
 Numbers of Active Physicians (M.D.) and Percentage  
 Distribution by Specialty Group, 1963, 1968, and 1976

Specialty	1963		1968		1976	
	Number	Percent 1/	Number	Percent	Number	Percent
All specialties	261,788	100.0	296,312	100.0	348,443	100.0
Primary care specialties 2/	110,071	42.1	116,760	39.4	135,881	39.0
Other medical specialties	12,291	4.7	15,762	5.3	18,955	5.4
Surgical specialties	67,745	25.8	81,820	27.6	98,667	28.3
All other specialties	71,621	27.4	81,970	27.7	94,940	27.3

Source: Adapted from DHEW, HRA, GMENAC Staff Papers, "Supply and Distribution of Physicians and Physician Extenders," Table 3, pp. 8-9.

1/Percentages may not add to 100.0 percent due to rounding.

2/Includes general practice, family practice, general internal medicine, and general pediatrics.

Table 3. Number of Active, Non-federal M.D.'s per 100,000 Population, 1976, and Number of Manpower Shortage Areas by State, 1978.

State	Number of Physicians <sup>1</sup> per 100,000 Population		Number of Manpower Shortage Areas		
	Total	Primary Care	Total	Metro	Non-Metro
Alabama	96	40	39	8	31
Alaska	79	35	15	0	15
Arizona	149	59	12	3	9
Arkansas	94	42	19	4	15
California	186	71	34	13	21
Colorado	164	65	13	11	2
Connecticut	199	74	9	8	1
Delaware	137	52	3	1	2
District of Columbia	410	155	1	1	0
Florida	146	53	5	5	0
Georgia	115	42	44	10	34
Hawaii	151	58	0	0	0
Idaho	93	42	5	0	5
Illinois	146	61	32	17	15
Indiana	107	47	28	9	19
Iowa	104	47	34	0	34
Kansas	119	50	16	14	2
Kentucky	111	49	27	2	25
Louisiana	115	42	9	3	6
Maine	119	48	13	0	13
Maryland	191	73	20	11	9
Massachusetts	209	77	16	14	2
Michigan	130	50	27	13	14
Minnesota	156	70	13	4	9
Mississippi	85	37	18	2	16
Missouri	133	51	39	5	34
Montana	108	46	15	0	15
Nebraska	122	59	25	1	24
Nevada	113	39	26	14	12
New Hampshire	145	57	3	0	3
New Jersey	153	59	17	16	1
New Mexico	114	45	2	0	2
New York	220	84	42	26	16
North Carolina	121	49	29	6	23
North Dakota	100	46	21	0	21
Ohio	133	54	25	13	12
Oklahoma	104	42	26	7	19
Oregon	151	59	25	6	19
Pennsylvania	153	60	53	20	33
Rhode Island	171	71	2	1	1
South Carolina	99	44	18	2	16
South Dakota	80	37	46	0	46
Tennessee	127	49	33	30	3
Texas	121	47	45	17	28
Utah	144	55	5	1	4
Vermont	184	77	8	0	8
Virginia	129	51	40	4	36
Washington	148	58	25	9	16
West Virginia	110	42	40	6	34
Wisconsin	126	51	28	5	23
Wyoming	93	44	12	0	12

Sources: Physicians per population from DHEW, HRA. Designated shortage areas are listed in Federal Register, September 28, 1978, based on data from the Division of Manpower Analysis.

<sup>1</sup>Active non-federal M.D.'s engaged in patient care.

among states as well as within states (Table 3). That physicians are unevenly distributed within states is illustrated by the large number of areas designated as having manpower shortages in relatively physician-rich states such as Illinois and Pennsylvania.

Developing policies to change physician distribution requires defining what distribution is desired. It also requires informed judgments about what policies are likely to achieve that distribution. These judgments are based on an assessment of the available evidence on factors that influence physician distribution and the effectiveness of past policies to change the distribution. These judgments also require a political assessment: what legislation can be passed by Congress and signed by the President? Because new evidence becomes available and the political environment changes over time, policies must be reexamined periodically.

#### DEFINING DISTRIBUTION GOALS

To date, defining the distribution that is desired has involved identifying geographic areas or specific populations that need additional health manpower. The criteria vary for such designations as "underserved areas," "underserved populations," or "manpower shortage areas." The Health Resources Administration defines a Health Manpower Shortage Area as a geographic area, population, or facility with a ratio of primary care physicians to population of 1:3500 or less. Other factors also are taken into account, including health status of the population (measured by infant mortality rates), distance from health services, waiting times for appointments with existing providers, and income levels. <sup>34/</sup> Other government agencies use different criteria. Medically Underserved AREAs are designated by the Health Services Administration's Bureau of Community Health Services on the basis of physicians per population, percentage of the population below the poverty level, percentage of the population age 65 or over, and the infant mortality rate. <sup>35/</sup> These variables are combined statistically to form a composite index. Infant mortality rates alone are used in designating shortage areas by the Rural Health Coordinating Committee. <sup>36/</sup>

The criteria used to define distribution goals have an effect on policy development. If the principal criterion is the ratio of physicians to population, for example, policies to improve distribution will tend to be aimed at getting physicians into areas where this ratio is low. Thus it is important that the general approaches that have been-- or might be--used to define distribution goals be well understood before addressing specific policies for changing distribution.

Physician-to-population ratio illustrates the oldest and simplest method for defining distribution goals, which ranks areas (or populations) according to some measure and then selects a cutoff point, usually arbitrary, that separates shortage areas from non-shortage areas. This approach has been criticized as too simplistic, especially when the cutoff point is the average. <sup>37/</sup> Using this method guarantees



that some areas or populations will lie below the average, but this knowledge does not provide much help with policy formulation. The fact that there is variation around the mean of physicians per population indicates an uneven distribution of physicians, but not necessarily "maldistribution." A number of factors, such as those reviewed in the above discussion of physician supply, might cause some populations to require more physicians than others. On the other hand, if better variables to rank populations or geographic areas were available--variables which measured manpower or service needs more accurately--such rankings could be more helpful in targeting federal programs.

A second approach used to define distribution goals entails comparisons with other developed countries or with organized delivery systems in the United States. These comparisons have been used mostly in examining the specialty mix of physicians, although they might be applied to geographic distribution as well. Most Western European countries have more primary care physicians relative to physicians in other specialties than does the United States. <sup>38/</sup> Organized health systems in this country, such as Kaiser or Group Health, also have different manpower configurations than the United States as a whole. Although these groups vary widely in their use of physicians, they tend to employ relatively more primary care physicians and also to use fewer total physicians. <sup>39/</sup> Unlike the first approach, which defines a continuum and then establishes a cutoff point somewhere on that continuum, this approach defines a norm and then compares the existing distribution to that norm. Using other countries or organized health systems as the norm is problematical, since their staffing patterns exist in an environment that is not duplicated in the general United States health system. Examining patterns of manpower utilization by various organized systems, however, may be helpful in illuminating the factors accounting for their different staffing patterns. <sup>40/</sup>

A third approach defines the health service needs of a given population and from there determines what manpower are required to deliver those services. Defining service needs is difficult, however. Although historical utilization patterns can be used, for some populations historical patterns are inadequate. Service needs can be determined normatively, but then another set of judgments is needed to determine the number of physicians required to meet those needs. A 1975 study asked pediatricians and internists to estimate the need for primary care physicians using data on the 250 most common pediatric and internal medical problems; they estimated that 133 such physicians were needed per 100,000 population. <sup>41/</sup> The total number of M.D.'s per 100,000 population in 1975 was 157, <sup>42/</sup> so 85 percent of all physicians would need to be in pediatrics and internal medicine according to this study. Even with improved data on demographic and socioeconomic characteristics of the population, on health services utilization, health status, and manpower productivity, defining manpower needs still remains largely a matter of informed judgment.

While the needs approach contains the implicit assumption that a given set of services or manpower results in better health, that assumption remains untested. As expressed by one health economist, "health manpower is not a goal in itself but a means for providing services to



a population. Services should be provided to the extent that they make a worthwhile contribution to the health of a population." <sup>43/</sup> The "marginal contribution to health" <sup>44/</sup> approach explicitly recognizes that health services--and by extension, health manpower--are only one of the factors that determine health. Under this approach, which has its origins in the economic theory of production, the desired distribution of health services is the distribution that provides the greatest contribution to health, which would be the one that equalizes the marginal contribution to health across all geographic areas or populations. Once the optimal distribution of services is defined, the desired manpower distribution is that which would provide those services at the least cost. This approach yields the distribution of manpower that achieves the greatest possible improvement in health per dollar spent.

The marginal contribution to health approach is very appealing, because it provides a way of defining manpower distribution goals in terms of improvements in health. Its problems are more practical than conceptual. Data are not available at a sufficiently disaggregated level to allow the use of this approach in defining "shortage" areas. Determining the least cost combination of manpower requires information on the production of health services that is currently unavailable and is likely to vary among areas. Finally, the approach needs a better measure of health status than now exists.

At present, no single approach to defining the appropriate distribution of physicians is totally satisfactory. Better data on small areas would be useful. It would also be helpful if our fundamental social goals were clearer. Do we want a more even distribution of physicians per se? Do we want to achieve equal access to physicians' services or equal opportunity of obtaining needed health care? Or, do we want to achieve the maximum possible health status for the U.S. population with our health resources, including physicians? Such clarification could contribute greatly to the development of operational goals for physician distribution.

#### FACTORS INFLUENCING PHYSICIAN SPECIALTY AND LOCATION CHOICES

In addition to a clear definition of distribution goals, policies to improve the distribution of physicians are dependent on available evidence about the factors that influence physician distribution. The factors are reviewed below, followed by a discussion of specific distribution strategies.

Factors affecting physicians' choice of specialty and practice location can be addressed in three categories. The first is the set of personal characteristics of physicians--their family and geographic origins, their educational experiences before medical school, their personal tastes and preferences. The second category includes the physician's education experiences in medical school and residency training. The third category includes economic factors.

### Personal Factors

Personal characteristics are a major influence on physicians' choice of specialty and geographic location. 45/ Certain personality traits have been associated with different specialties. Women have tended to enter such specialties as pediatrics and psychiatry, while physicians entering general practice have been shown to be older, married, and of lower ranking academically than those who choose other specialties. Because personal characteristics are least amenable to influence by government initiatives, they have not received as much attention from researchers as education and economic factors. However, if the relation between personal factors and career choices were better understood, these factors could be taken into account in medical school admissions policies.

Personal preferences about their work content and the degree of professional stimulation in their work environment are major determinants of physicians' career choices. In an Institute of Medicine survey of more than 3,500 house officers in 1975, more than 3,000 of them listed "interest in area of specialization" as the main factor in their choice of specialty training. 46/ In a survey of primary care physicians who graduated from medical school in 1965, the largest number reported that their choice of practice location was influenced by the opportunity to join a desirable partnership or group practice. 47/

### Education Factors

There is some evidence and considerable opinion that the content and location of medical education have a significant effect on physicians' specialty and location choice. 48/ Although different medical schools consistently produce different specialty mixes of graduates, research so far has not identified specific medical school characteristics that account for these differences. The interests and influence of the faculty are important; the survey of residents by the Institute of Medicine showed faculty influence to be a major factor in their choice of specialty. Although specialization results from the graduate medical education process, the choice of a specialty training program is made during medical school.

Considerable attention has been given to the relation between the location of residency training and subsequent practice location. Some studies have shown residency location to be an important influence on location choice; on the other hand, some have suggested that, instead, physicians probably select a residency training program in an area where they intend to practice. 49/ The direction of causality between location of training and location of practice has yet to be clearly established. 50/

## Economic Factors

Researchers have devoted considerable attention to the influence of economic factors on physician distribution, including differences in incomes among specialties and locations, differences in fees, differences in training costs, and differences in hours worked. <sup>51/</sup> Economic research on specialty choice, particularly, is based on human capital theory, which assumes that physicians choose a specialty (actually, choose to invest in training leading to a specialty) in order to maximize their economic rate of return, taking into account the personal and educational factors discussed above. <sup>52/</sup> This rate of return is the one "which equates the current value of future income from a given career with the current costs of the training necessary to prepare one for the career." <sup>53/</sup>

Research to date has not shown a strong relation between economic factors and physician distribution. Neither incomes nor rates of return have been shown to be significant influences on specialty choice. No comparison of rates of return to practice in different locations has been made, although it is easy to imagine that physicians take into account the income implications of their location choices. Both fees and incomes vary considerably around the country and between urban and rural locations. Except for Canadian studies, research relating physician location, or geographic distribution, to income differences has not shown a strong relationship. This may be due in part to the lack of good income data. On the other hand, fee levels have been shown to be positively associated with the number of physicians in an area. <sup>54/</sup> It is possible that physicians do take fee levels--which are more easily ascertained than income levels--into account in making location decisions.

On the whole, the available evidence on factors influencing physicians' specialty and location choices is not consistent enough to provide very specific policy direction. Medical school admissions policies, medical education itself, and, possibly, the structure of health care financing presently appear to be the most promising policy tools.

EFFORTS TO IMPROVE THE  
DISTRIBUTION OF PHYSICIANS

Federal programs to improve the distribution of physicians include loan repayment and scholarships, Area Health Education Centers, and the National Health Service Corps. To encourage more physicians to enter primary care specialties, special project funds are available for training programs in family medicine, general internal medicine, and general pediatrics. To qualify for federal capitation support, medical schools are required, as a whole, to have 50 percent of their first year residencies in primary care. Other approaches have been suggested, including direct regulation of residency positions, modification of third

party payments for health care, and changing the financing of residency training.

The 1976 Health Professions Educational Assistance Act, P.L. 94-484, authorizes a series of education loans and scholarships for students in medicine and other health professions. The scholarships, known as National Health Service Corps Scholarships (formerly Public Health Service Scholarships), pay education expenses plus a living allowance to all scholarship holders. After graduation, these students are obligated to serve in the National Health Service Corps or to practice privately in a shortage area; their obligation is one year of service for each scholarship year with a minimum of two years. Under the insured loan program medical students may borrow up to \$10,000 a year, for a total of up to \$50,000, to cover education expenses. At the option of the Secretary of DHEW, these loans may be forgiven at the rate of \$10,000 per year for service in a manpower shortage area, either in private practice or in the National Health Service Corps. These loans and the scholarships provide an economic incentive to choosing practice in underserved areas by lowering the education costs of students who elect to do so.

The National Health Service Corps was established in the Emergency Personnel Act of 1970 (P.L. 91-623). Its stated purpose was to "improve the delivery of health services to persons living in communities and areas of the United States where health personnel and services are inadequate to meet the health needs of residents...." 55/ The Corps places salaried physicians and other health professionals in designated shortage areas. According to the Health Resources Administration, there were about 930 physicians deployed by the Corps in FY 1978. 56/ Currently, about half of the members of the Corps are serving in organized settings, principally federal health centers. 57/ Others are in independent practice or in shortage institutions.

The Corps enlists physicians through the scholarship and loan programs described above as well as through direct recruitment in medical schools. Its ultimate goal is to make previously underserved areas viable practice sites where physicians will settle permanently. Short of that goal, it can provide those areas with a series of physicians, each remaining for a brief period. To make the practice sites more attractive, the program makes funds available to subsidize practice costs. Attempts are made to match Corps personnel to sites they prefer in order to increase the probability that they will remain. In 1977, 47 percent of Corps personnel elected to stay at least one year beyond their required service, up from 26 percent in 1975. 58/ This increasing retention rate suggests some success in inducing physicians to stay longer in underserved areas, although it is too early to tell if this trend will continue. How effective the Corps will be in meeting the long-term needs of underserved populations is difficult to judge, because the program is still evolving. If it expands very quickly it can provide a substantial number of physicians to these areas and institutions but might be less likely to increase the retention rate. Program administrators face a difficult problem in projecting the number of Corps physicians needed four to eight years in advance. Another continuing issue is the terms under which physicians may buy out of their



service obligation. The 1976 legislation contains severe penalties for those who default on their service obligation; it remains to be seen how these provisions will affect application and buy-out rates. Finally, although the Corps has had some success in rural areas, its ability to solve access problems in other areas and special institutions has not been well documented.

Area Health Education Centers are intended to provide links between medical schools and community health care institutions and providers. They are often located in small communities at some distance from the medical school. These centers provide exposure to community practice for both medical students and residents. They are established by agreements between medical schools and communities that are designed to provide mutual benefits. 59/ The goals of the program are to improve community health services while giving medical students and residents community experience, with the expectation that some of them might locate in the communities with AHEC's. Although AHEC programs in some states are generally considered successful, the performance of AHECs nationally and their impact on physicians' location choices require further research.

Federal efforts to increase the proportion of physicians in primary care specialties, efforts which principally have been directed at the medical education process, are discussed briefly below. The Health Professions Educational Assistance Act of 1976, P.L. 94-484, stated the production of more primary care physicians as one of its major goals. The Act stipulated that, as a condition of participation in federal capitation grants, the nation's medical schools must increase the percentage of first-year positions in residency programs under their influence to 50 percent by 1980. 60/ In addition, the 1976 legislation provides authority for special project assistance to medical schools to support residency training programs in family practice, general internal medicine, and general pediatrics.

A recent Institute of Medicine study, A Manpower Policy for Primary Health Care, endorsed federal support for primary care residency programs but recommended that more than 50 percent of first year residency positions be in primary care. 61/ This recommendation was based on the judgment that primary care physicians could manage the majority of health problems presented to physicians and on the observation that a substantial number of physicians start out in primary care but end up in non-primary care specialties. 62/ As with geographic distribution, defining the optimal mix of specialties is partly a matter of judgment as to what kinds of health care services are needed and the best method for delivering the needed services.

Given a consensus that a greater proportion of primary care physicians is desirable, two additional major policy actions have been suggested. One is to regulate the specialty distribution of residency positions directly in order to limit opportunities for training in other specialties. The second is to institute changes in third party payment practices in order to provide greater incentives for primary care practice.

Centralized regulation of residency positions was recommended by an Institute of Medicine committee in 1976. 63/ Its study report suggested that a quasi-public commission "monitor and control the number

of residency positions, by specialty." 64/ Later that year, the HEW Secretary established the Graduate Medical Education National Advisory Committee to advise him on physician requirements and the translation of those requirements into graduate training positions needed "to approach a more desirable distribution of physician services...." 65/ In the future the Secretary could regulate training positions directly, using Medicare and Medicaid reimbursements to teaching hospitals as sanctions if necessary. For example, reimbursements could be reduced for hospitals that do not comply with national goals, or the costs of training programs with excess positions could be disallowed under reimbursement formulas. Private bodies such as the Liaison Committee on Graduate Medical Education or the Coordinating Council on Medical Education also have been suggested as the appropriate locus for a regulatory effort. 66/

An increasing number of observers are suggesting that the incentive structure of third-party payments might be modified to encourage more physicians to choose primary care practice. The majority of health expenditures in this country are made by third parties, including commercial insurers, Blue Cross-Blue Shield, and the government. 67/ Their payment practices are thought to encourage high technology procedures over primary care, inpatient over outpatient services, and urban over rural practice. The recent Institute of Medicine study, A Manpower Policy for Primary Health Care, recommended several changes in third party payments to provide greater incentives for primary care: third party payers should pay all physicians at the same level for the same primary care service irrespective of their specialty, should reduce differentials in payment levels between primary care and nonprimary care procedures, and should institute payments for effective preventive services.\* 68/ Third-party payments could be changed to be more favorable to rural practice as well.

Although federal programs could adopt these changes, they do not represent a majority of health care payments. If private insurers also adopted them, the impact would be much greater. However, such a uniform approach would be unprecedented and the barriers to it are not insignificant. 70/ Finally, the impact of changes in the payment structure--even if they were to be implemented universally--may not be great; as discussed above, the evidence on the extent to which financial factors affect distribution is still incomplete.

Besides influencing practicing physicians, the structure of third party payments has an impact on residency programs, which are mostly financed through hospitals. Some reimbursement policies may make it less attractive for hospitals to provide primary care residencies.

---

\*These recommendations are similar to those made in another Institute study, which recommended that health insurance benefit structures should not encourage the use of inpatient over outpatient care and that fees should be restructured to encourage primary care services, in particular that fees for primary care services should be "at least equal," whether those services are delivered by primary care or other physicians. 69/

Outpatient services, for example, tend to generate less revenue for the hospital than inpatient services because these services are less well insured. A large proportion of the cost of residents in primary care specialties is allocated to outpatient care; these costs generally are not fully recovered under current reimbursement methods used by Medicare, Medicaid, and most Blue Cross plans. 71/ In addition, many teaching hospitals provide outpatient services to a substantial number of patients with no insurance coverage. An Institute of Medicine study of third party payments to teaching hospitals recommended that "financing mechanisms be changed to provide more equitable support for ambulatory care services" to make it easier for these hospitals to support primary care training programs. 72/

Third party payments also could be used to affect the mix of residency positions directly. It would be possible to reimburse hospitals for graduate medical education costs only in selected specialties, or to provide fuller coverage of training in primary care specialties, or even to make "bonus" payments to primary care training programs. 73/ At present there is no evidence on how effective such changes might be in increasing the number of primary care residency positions.

#### Non-federal Efforts to Improve Physician Distribution

Efforts to improve the distribution of health manpower are not all federal. State governments and the private sector also have an important role to play. A number of state governments have programs that parallel federal programs. Some state efforts have even served as models for federal programs, for example, the Area Health Education Centers in North Carolina. A number of states--among them California, Minnesota, and North Carolina--have programs similar to the National Health Service Corps. California's Song-Brown program provides funds for expansion and ongoing support of family practice residencies statewide; the program emphasizes the recruitment of residents who are likely to practice in the area where they are trained and the support of programs in areas needing additional primary care physicians. 74/ In general, states have considerable authority over health manpower distribution through their appropriations for education and their role in credentialing health professionals. California's health planning office has called for "a deliberate and significant reduction in the number of residency positions" for certain specialties. 75/ Other physician-rich states may move in this direction. Groups of states acting collectively in programs such as WICHE (Western Interstate Commission for Higher Education) and WAMI (Washington, Alaska, Montana, Idaho) have had some success in attracting physicians into underserved areas.

The public and private medical schools and their associated teaching hospitals have a central role in determining the distribution of physicians. The criteria used to select students for admission, the curriculum, the clinical experience provided, and the nature of graduate medical education surely influence physicians' subsequent career choices. Recognizing this, medical educators are concerned that medical education prepare physicians to meet society's needs for basic services. 76/ These

institutions, with their multiple missions of education, research, and service, are focal points for conflicting social goals. How they balance their purposes with these pressures over time has a great deal to do with the kinds of physicians produced and how these physicians deliver medical care.

Private institutions such as foundations, labor unions, and business firms also are engaged in efforts to improve access to physicians' services generally or for their own constituents. Some medical specialty societies are taking steps to slow the growth of their specialty, most notably the American College of Surgeons. Collectively these efforts may influence physician distribution to a greater degree than federal programs.

### CONCLUSIONS

In the 1980s physician distribution problems will remain. Developing effective policies to deal with those problems will depend in part on improvements in defining distribution goals. As one observer noted, "the problem manifests itself for the most part as a shortage of primary health services in some locations....The ideal geographic distribution of physicians is thus not likely to be one assuring all counties (or even states) a single standard mix of specialists and a single standard physician-population ratio." 77/ A number of factors influence a population's need for physician services, not least of which is the availability of other health manpower and facilities. Health services can be delivered by various combinations of manpower and facilities, "which must be carefully reviewed before reaching a conclusion about whether maldistribution exists." 78/ The final section of this paper looks at nurse practitioners and physician assistants as alternative providers.

A variety of approaches to dealing with distribution problems can allow for creativity and build on existing resources. "If the criteria utilized to identify underserved areas are sensitive to the unique set of characteristics that limit accessibility of these populations to health care services, they may suggest actions for meeting the differing needs of various underserved groups." 79/ Currently the process for designating "shortage" areas is iterative. Tentative lists of shortage areas and populations are submitted to Health Systems Agencies, State Health Planning and Development Agencies, and Governors for review. Their recommendations are then considered along with national criteria in making the final designations. 80/ Thus the national criteria are supplemented with information and judgments from local and state levels that help to better account for specific local needs and may point to possible solutions.

A careful evaluation of current government programs is needed as we enter the 1980s. In particular, the National Health Service Corps needs to be scrutinized to determine if it is improving distribution in a cost-effective manner, and the impact of grants to family practice programs should be examined. In addition, successful efforts by states and private institutions may suggest future directions for federal manpower policies.





## THE FUTURE OF MINORITY ENROLLMENTS IN MEDICAL SCHOOLS

A major issue affecting both medical education and health care in the United States is the disproportionately small number of minority students in medical schools.\* This issue is especially timely now, as minority enrollments have leveled off and the direction of special admission programs is unclear in the wake of the Supreme Court's historic Bakke decision.<sup>81/</sup> The issue of minority enrollment involves the federal government in its roles of financial supporter of medical schools, lender to medical students, promoter of equal opportunity and affirmative action, and distributor of manpower and other health resources to medically underserved populations.

One purpose in increasing minority enrollments is equity--affording members of minorities an equal chance to enter medical school and successfully complete training. Another purpose is adequate health care, and rests on the assumption that underserved minorities may stand the best chance of obtaining adequate services from professionals in the same minority group. There also are other possible purposes, such as a reduction in racial prejudice and fostering of upward mobility for minorities.

According to estimates that DHEW uses, blacks, Hispanics, and American Indians now make up 18 percent of the U.S. population but less than seven percent of U.S. physicians.<sup>82/</sup> Table 4 shows that, for the last three years, total minority enrollments have been about eight percent of all enrollments. These aggregate figures do not reveal distributional aspects of the problem. For example, over three-fifths of all black medical students attend school in the seven jurisdictions of California, the District of Columbia, Massachusetts, New York, Pennsylvania, Tennessee, and Michigan; more than one fifth attend the predominantly black medical schools of Howard and Meharry.<sup>83/</sup>

---

\*This paper addresses the persistent problem of minority enrollments. Enrollment of women is not discussed. Less progress apparently has been made in increasing minority enrollments than in increasing the enrollment of women. See, e.g., Eli Ginzberg, "Women in Medicine: What Is Really Happening," Journal of Medical Education 53: 843-844 (1978).

Table 4. MINORITY ENROLLMENT IN  
U.S. MEDICAL SCHOOLS, 1972-73 to 1977-78

MINORITY GROUP	1972-73		1973-74		1974-75		1975-76		1976-77		1977-78	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Blacks	2,582	5.4	3,049	6.0	3,355	6.3	3,456	6.2	3,517	6.1	3,587	6.0
Mexican- Americans	361	0.8	496	1.0	638	1.2	699	1.3	780	1.4	831	1.4
Mainland Puerto Ricans	90	0.2	123	0.2	172	0.3	197	0.4	232	0.4	261	0.4
American Indians	69	0.2	97	0.2	159	0.3	172	0.3	186	0.3	201	0.3
TOTAL	3,102	6.6	3,765	7.4	4,324	8.1	4,524	8.1	4,715	8.2	4,880	8.1

Source: Association of American Medical Colleges, preliminary data, mimeographed, Washington, D.C., 1977.

A more sensitive index to change than total enrollments is first-year enrollments. In 1977-78, 9.0 percent of first-year students were black, Mexican Americans, mainland Puerto Ricans, or American Indians, with blacks making up 6.7 percent of the first-year students but only 6.0 percent of all students.<sup>84/</sup>

#### HISTORICAL PERSPECTIVE

Authoritative recognition of the inferior position of blacks in the United States health care system dates back at least to 1932, when the report of the Committee on the Costs of Medical Care noted that blacks generally are accorded inferior care. Later, concerns about the small number of black physicians emerged. A study published in 1958 noted that, in 1950, blacks made up ten percent of the population and only 2.2 percent of all physicians, and the black physician-to-population ratio was declining.<sup>85/</sup> (Indeed, in 1970, blacks were more than 11 percent of the population and still only 2.2 percent of all physicians.)

Medical school action to redress these imbalances may have originated in 1968, partly in response to pressures following the assassination of Martin Luther King, Jr.<sup>86/</sup> That year the Assembly of the influential Association of American Medical Colleges (AAMC) passed a resolution declaring: "Medical schools must admit increased numbers of students from geographic areas, economic backgrounds and ethnic groups that are now inadequately represented." In the next four years, almost all medical schools became involved in equal opportunity efforts.<sup>87/</sup>

The AAMC has promoted increases in minority enrollments. In 1969, with assistance from the Office of Economic Opportunity, the Association established an Office of Minority Affairs. In 1970, an AAMC task force issued a landmark report, noting that blacks then made up 2.2 percent of all U.S. physicians, 2.8 percent of all medical students, and 11 to 12 percent of the population, and calling for an enrollment increase to 12 percent of the 1975-76 first-year class.<sup>88/</sup> The task force found the lack of financial aid to be the "main barrier" to minority enrollment, and it recommended increases in minority student retention in undergraduate colleges as the best strategy for raising minority enrollments in medical school.<sup>89/</sup> The report favored increases in class size, more counseling, and the establishment of regional centers to provide information on medical career opportunities. For the short run, the task force recommended a coordinated loan program offering progressively greater sums up to \$6.2 million in 1975-76; for the long run, establishment of an "educational opportunity bank" was advocated.

The task force's 12 percent goal was not met. Exclusive of repeaters, enrollment increases in the years 1970-71 to 1975-76 were only half of what was needed to meet the goal.<sup>90/</sup> A 1978 AAMC follow-up to the earlier report attributed this failure to a decline in the medical school admission rate of minority applicants from 75 percent in 1969-70 to 38 percent in 1976-77, to massive increases in white enrollments that increased the denominator in the minority enrollment rate, and to a decrease in white support for equal opportunity since the 1960s, due

partly to inflation and other economic factors.<sup>91/</sup>

First-year enrollments of minority students peaked at ten percent in 1974-75.<sup>92/</sup> Minority applications rose only nine percent from 1973-74 to 1976-77.<sup>93/</sup> But if the most recent trend data are discouraging, the overall trends since 1968-69 are encouraging: From that academic year to 1975-76, for example, enrollments rose from 783 to 3,456 for blacks, from 59 to 699 for Mexican Americans, from three to 197 for mainland Puerto Ricans, and from nine to 172 for American Indians.<sup>94/</sup>

Particular historical factors affect the issue of minority enrollments. Some believe that the disparity between the black experience and that of most other ethnic groups accounts for the need for special efforts to bring blacks into the economic mainstream of society.<sup>95/</sup> In a sense, the problem is not simply one of minority pressure but of the dissonance between our society's expressed values and minority opportunities.<sup>96/</sup> The Flexner reforms initiated in 1910 to improve the scientific basis of medical education and the use of standardized tests long have been regarded as deterrents to minority enrollments.<sup>97/</sup> And it is the predominantly black schools, Howard and Meharry, that are responsible for much of the education of black physicians to date; not only did these schools train the great majority of black physicians before 1968, but they continue to account for over one-fifth of black enrollments. However, these schools have required an unusually high level of federal financial support. Other minorities such as Native Americans and Hispanics have been pressing for their own federal support for development of medical schools. The nation is faced with having to decide whether to increase representation of minorities in the medical profession through support of predominantly minority schools or through additional efforts to increase their representation in existing schools. The former may be more effective in the short run, but could be inconsistent with achieving an integrated educational system. In addition, the current estimates of future physician supply and need make it inappropriate to foster the opening of any new medical schools. (See Section 1)

#### RANGE OF MINORITY PROGRAMS

Special programs have been established on the medical school level to enhance recruitment, admission, and retention of minority students. Significant efforts to increase the pool of applicants have ranged from a Morehouse outreach program <sup>98/</sup> to a Harvard summer school program providing not only course work but also counseling.<sup>99/</sup> Summer programs are highly favored, <sup>100/</sup> and requirements for establishing such programs are said to include a large summer school with strong science courses, a nearby medical school with an affiliated hospital and other clinical facilities, an opportunity for participants to function as part of the regular student body, and an adequate number of minority student role models.<sup>101/</sup>

The existence of special admission programs is well-known and will be discussed later. Special retention programs offer counseling, tutoring, and limited repetition of courses, as well as financial aid. To

facilitate recruitment or applications, the AAMC maintains Med-MAR (Minority Applicant Registry, distributing biographic information about potential minority applicants to all schools) and publishes an annual catalog on minority admissions to all schools.

In terms of schools' commitment to, or success with, such programs, available data indicate that obvious school characteristics are not predictive of minority enrollments. No statistical relationship has been found between minority enrollments, or changes in minority enrollments, on one hand, and a school's total enrollment, region, public or private status, or area population or population density or percentage of non-whites on the other hand.<sup>102/</sup> What is known is that black students tend to be slightly older, have a higher female-to-male ratio in the aggregate, and be more likely to have graduated from a small college than other students.<sup>103/</sup>

#### THE SIZE OF THE MINORITY APPLICANT POOL

The most obvious cause of low minority enrollment is minorities' lower application rate. During the three years ending in 1975-76, 43 percent of minority applicants, compared with only 35 percent of other applicants, received offers to enroll in medical school.<sup>104/</sup> But in 1975-76, among minorities, only 2.2 percent of a number equal to first-year college students applied to medical schools, whereas among others, the comparable percentage was 2.6.<sup>105/</sup> The problem may therefore be the application rate, not the acceptance rate.

The size of the pool appears to require additional attention. To achieve a minority share of enrollments commensurate with the minority proportion of the population, a doubling in minority enrollment would be required. This in turn requires an increase in programs to motivate and inform potential applicants; however, foundation support for such programs had declined.<sup>106/</sup> Greater attention to the science education of minority undergraduates also may be necessary.

Several suggestions have been made for increasing minority admissions. Grant programs could make medical school more competitive, given that promising minority students can enter various professional fields. Special admission programs and changes in admission criteria, such as less emphasis on standardized tests, <sup>107/</sup> could facilitate increases in minority admissions. Research efforts could be accelerated to determine reasons for relatively low minority admissions; such reasons might include not only academic and economic factors but also cultural factors, which perhaps make medicine a less attractive career to minorities than to whites.

The undergraduate college experience itself may discourage many potential minority applicants to medicine. Evidence suggests that more minority college freshmen than other college freshmen plan to enter medical or other professional or graduate schools.<sup>108/</sup> Attrition rates in college are higher for blacks than whites, and many blacks seem to avoid certain pre-med courses, particularly in mathematics.<sup>109/</sup>

Much of the paucity of the minority applicant pool may be due to pre-college factors. College prerequisites often are not even



available to minority high school students, or such students are "tracked" into courses that are not preparatory for college.110/ Pre-college influences are especially important in light of the fact that more than three-fifths of successful medical school applicants decide on a medical career before entering college.111/ In the formulation of academic plans, money is a crucial factor and operates to the severe disadvantage of minority aspirants to college.112/

College entrance rates reflect the importance of pre-college factors as a barrier to minority medical school enrollment. Minority high school graduates consistently have had only half the probability of other graduates of entering college.113/ In 1970-71, only 26.7 percent of black graduates entered college.114/ Among Mexican Americans, the entrance rate is even lower than for blacks.115/ Also, it is not clear that, on the whole, the college education of minority students is as academically rigorous as the education of white undergraduates. Colleges may need funded programs to recruit, support, and educate minority students who are potential physicians.116/

Greater effort also appears necessary on the high school level. As of 1971, barely half of black and mainland Puerto Rican high school juniors were making it through to graduation.117/

To increase the size of the minority applicant pool, DHEW could enhance support for programs of "...outreach, identification and encouragement of promising undergraduates, aid to undergraduate schools, pre-enrollment and compensatory education and other approaches..."118/ Specific options identified in the Department 119/ include:

- (1) Increasing federal support for medical school outreach and compensatory education programs,
- (2) Funding undergraduate college programs to identify and encourage potential minority applicants and to strengthen the pre-med curriculum of minority colleges,120/
- (3) Funding early decision programs to accept minority applicants before their final year of college and then provide them with special tutoring and other services, and
- (4) Initiating career education programs among minorities in elementary and secondary schools.

DHEW Health Resources Administration officials have proposed an increase from 125 to 157 programs, reaching 4,900 more students for a total of 23,400, to recruit minority applicants and provide "curriculum enrichment" experience such as summer employment in biomedical facilities. Coupled with new projects providing information on educational opportunities, the proposed price-tag for the increased federal effort is \$22.9 million in fiscal 1980, an increase of about 28 percent over the year before.121/

Other suggestions related to pool size have been made. A task force

of the AAMC has proposed that medical schools establish "feeder" systems with colleges and high schools.<sup>122/</sup> Medical schools already have reduced the emphasis on grade point average Medical College Admission Test (MCAT) scores as admissions criteria.<sup>123/</sup> Authorities increasingly recognize that these criteria do not adequately measure many indices of success in medical school or medical careers; such indices are believed to include compassion, coping capabilities, decision-making, interprofessional relations, realistic self-appraisal, sensitivity in interpersonal relations, and perseverance.<sup>124/</sup>

Various arguments are involved in issues related to efforts to increase the pool size. For example, the use of standardized tests such as the MCAT are purported to be so unfair to minority aspirants as to justify special admission programs.<sup>125/</sup> On the other hand, special admission programs for disadvantaged applicants are opposed by individuals who assert that no college graduate is disadvantaged.<sup>126/</sup> Arguments also are made to substantiate new approaches to the problem, such as increasing student tuition aid because medical schools probably can recruit minority students more easily from out-of-state, or offering special incentive grants to schools with particular success in recruiting and educating minority students.<sup>127/</sup> Issues surrounding the Bakke Supreme Court case are discussed later in this paper.

#### RETENTION OF MINORITY STUDENTS IN MEDICAL SCHOOLS

Although retention rates among all medical students are high, among minorities they are significantly lower than other students. Minority students are required to repeat courses relatively often; this slows slightly the rate of production of minority physicians, indicates a need for greater preparation for regular course work, and conceivably suggests to some that minority physicians are not necessarily as well-qualified as other physicians. The three-year retention rate for all minority (black, Mexican Americans, mainland Puerto Ricans, and American Indian) students admitted to medical school in 1973-74 was 88 percent, compared to 97 percent for all students. There was little difference among minorities, except that mainland Puerto Ricans had a 98 percent rate (50 out of 51 graduating).<sup>128/</sup> In 1975-76, repeat rates were as follows:

REPEAT RATES OF MEDICAL STUDENTS BY  
SELECTED GROUPS, 1975-76, IN PERCENT

Year in School	Whites	Blacks	Mexican American	Mainland Puerto Rican	American Indian
First year	1.1	15.1	6.6	9.2	10.3
All other years	0.7	5.7	5.2	5.3	6.7

Source: U.S. Department of Health, Education, and Welfare, Note 3, p. 24.



In general, retention rates for all groups are considered high. 129/ But repeat rates for minority students are about ten times as high as for other students. 130/

The retention problem can be addressed through special academic programs, financial aid, or social support. Minority students with academic problems sometimes are placed in decelerated programs, and the possibility of a five-year curriculum has been raised. Verbal as well as science skills are important to the success of special academic programs.

The financial need was identified in the AAMC 1970 report. 131/ But financial aid actually has declined in recent years, 132/ and the AAMC 1970 task force's proposals to establish a central loan authority and an educational opportunity bank have not been realized. 133/ Financial assistance through participation in the National Health Service Corps may supply sufficient aid, geared to the expectation that scholarship recipients will practice in shortage areas after graduation.

In terms of social support, faculty members have been urged to meet with academic specialists in other fields to learn to become more sensitive to minorities, and to reduce medical school regimentation. 134/ The presence of more minority faculty models appears especially important, given existing inadequacies in some minority students' interaction with faculty members. 135/ More research may be needed on the success of various types of counseling programs and the possible need for the population of students of a particular minority group in a medical school school to be big enough for mutual support.

#### POST-GRADUATE PLACEMENT OF MINORITY PHYSICIANS

Because medical education does not end at graduation from medical school, issues of minority enrollment are related to issues of post-graduate placement of minority physicians. A study undertaken in 1974 revealed that 62 percent of minority graduates participating in the National Intern and Resident Matching Program obtained their first choice of placement, 17 percent attained their second choice, 11 percent their third choice, and 10 percent did not obtain any of their first three choices. The authors of the study asserted that this success was achieved despite lax enforcement of equal opportunity requirements in law. 136/

One reason for the importance of post-graduate placement is that residency can have a major bearing on the graduate's chances for obtaining faculty status in medical school. Minority faculty members can serve as behavioral models and motivators for minority students. Minority students are showing a "strong preference" for positions in teaching hospitals affiliated with universities. 137/ But much progress may be needed. In 1975-76, the proportion of minority members on medical school faculties, rounded to the nearest one-tenth of one percent, were Blacks, 1.8 percent; Mexican Americans, 0.2 percent; Puerto Ricans, 0.7 percent (including 0.5 percent at the University of Puerto Rico); and American Indians, zero percent. 138/

## OTHER HEALTH PROFESSIONS

This paper has focused on minority enrollments in medical schools alone. Problems may be considered generally comparable in other types of health professions education, with the added factor that medical school recruitment of able minority students may reduce the already limited pool of qualified minority applicants to other types of schools.

In schools of osteopathic medicine, minority enrollment in the 1978-79 first-year classes is below five percent, with 19 of the 59 minority students enrolled at one institution (Michigan State University College of Osteopathic Medicine); total minority osteopathic school enrollment in 1976-77 was 4.4 percent (including 1.1 percent Orientals), and minorities exhibited a far higher repeater rate than whites.<sup>139/</sup> In dental schools in 1976-77, ten percent of students overall and 11 percent of first-year students were members of minority groups (including about three percent Orientals).<sup>140/</sup> In 1973, 2.5 percent of active optometrists (including about 1.5 percent Orientals) were members of minority groups.<sup>141/</sup>

IN THE AFTERMATH OF BAKKE

The issue of minority group enrollments in medical schools should be viewed in light of the Supreme Court's decision in the Bakke case.<sup>142/</sup> The case involved a challenge by a rejected applicant, Alan Bakke, a white male, to the medical school admissions policy of the University of California at Davis. This policy, by which 16 out of 100 positions in the entering class were filled with candidates applying to a special admissions program, originally was intended to benefit applicants who wished to be considered "economically and/or educationally disadvantaged"; ultimately, however, the program was designated for "minority group" applicants, considered by the University to include blacks, Chicanos, Asians, and American Indians. Although disadvantaged whites applied to the program in large numbers, none were even accepted through that process.

In addition to Bakke's claim that this policy violated the Equal Protection Clause of the Constitution, <sup>143/</sup> the Court requested the parties to address the applicability of Title VI of the Civil Rights Act of 1964.<sup>144/</sup> Consequently, a clear statement of "the law" as decided by the Court is difficult to make. Four justices were willing to uphold the program under the Constitution alone, believing the Civil Rights Act not to prohibit any racially compensatory conduct that would be permissible under the Constitution. These justices thus found race to be an acceptable admissions criterion. Four other justices did not reach the constitutional issue, but wanted to invalidate the program on statutory grounds. The purpose of the Civil Rights Act was clear, they stated, in preventing race from being "the basis of excluding anyone from participation in a federally funded program."<sup>145/</sup>

The crucial "swing" vote was provided by Justice Powell, who favored invalidating the program on constitutional grounds. As a result of Justice Powell's vote, Bakke was ordered admitted to the school. More critically, however, Justice Powell joined the four justices who voted to uphold the Davis policy, in stating that race or ethnic background could be considered as an admissions criterion, provided that race "...is simply one element--to be weighed fairly against other elements-- in the selection process."146/ Although Justice Powell asserted that promoting "diversity" within the student body was a "compelling state interest" justifying the use of race in admissions policy, he found the Davis medical school's program an unnecessarily restrictive means of promoting this interest. Thus, what seemed to be the decisive factor in Bakke's favor was the university's use of a "quota" system for admitting minority applicants rather than affording each applicant "individualized consideration."147/

As an example of the type of case-by-case consideration that Powell would approve, he cited the Harvard College Admissions Program. Under this program, the College did not set "target-quotas" for the admission of applicants from particular racial, cultural, social, or academic backgrounds, although race was admittedly a factor in some admissions decisions. In addition, the College provided "some attention to numbers," believing that "there is some relationship between numbers and the benefits to be derived from a diverse student body." 148/

Although it was recognized in the Bakke decision that such a system of "individualized" attention might merely be a more subtle type of quota system, Justice Powell was willing to rely on the good faith of the nation's schools in implementing their admissions policies with due regard for the concept of equal protection.149/ Traditionally, the Supreme Court has accorded considerable latitude to "academic decision making,"150/ and this philosophy is reflected generally in the Bakke opinions. However, Justice Powell's opinion contained a caveat which may be relevant to determining the extent to which the Court will review the admissions decisions of educational institutions:

So long as the university proceeds on an individualized, case-by-case basis, there is no warrant for judicial interference in the academic process. If an applicant can establish that the institution does not adhere to a policy of individual comparison, or can show that a systematic exclusion of certain groups results, the presumption of legality might be overcome, creating the necessity of proving legitimate educational purpose.151/

Thus, although the Bakke decision reflects, in part, the "hands off" policy of the courts when dealing with the academic process, it provides a warning to the educational community to avoid the systematic exclusion of certain groups. How strictly this can, or will, be enforced is unclear. Certainly, the difficulty involved in proving

that policies have an illegitimately harsh effect on minorities may allow educational institutions to avoid making a commitment to an effective affirmative action program. On the other hand, except for the use of a quota system, educational institutions appear relatively free to formulate their admissions policies without judicial interference, provided they afford individualized attention to applicants.

Despite this latitude, however, several schools have revised their admissions policies by eliminating special committees for screening minority applicants, and by focusing the admissions process on an individualized determination of the "disadvantages" of applicants.<sup>152/</sup> While such an approach would seem to meet the standards established by the Supreme Court, it is not clear that Bakke requires that special admissions be completely eliminated; rather, these committees probably would be legally suspect only if their decisions always determine whether the minority applicants are accepted or rejected, and only if these committees do not, in fact, consider the applications of non-minority group applicants. It may be permissible to establish an advisory special admissions committee to meet any of a number of special situations. For example, such a committee could recommend minority group applicants to the full admissions committee. The full committee could, in turn, consider the recommendations of the special committee in making its final applicant selections.

(In order to survive a legal challenge after Bakke, it may be important that the special committees' recommendations in fact be only advisory; that is, the recommendations must be evaluated individually against the applicants from other groups, preferably with some consideration given to the "disadvantages" of all the applicants, and without the use of any "quota" system guaranteeing a certain number of places for racial or ethnic groups.)

The Bakke case, therefore, does not mandate an end to affirmative action. Educational institutions could involve their own counsel in reviewing plans for affirmative action to protect valid minority opportunities. On the other hand, the court decision may make it somewhat easier to circumvent affirmative action. Civil rights advocates now may find it more difficult to require an institution to admit specified percentages of racial and ethnic minorities, or to insist that the failure to admit such specified numbers of applicants amounts to an illegal "systematic" exclusion of these groups.<sup>153/</sup>

#### POLICY APPROACHES

The 1978 AAMC task force report exhorted government to act more aggressively to promote minority enrollments in medical schools. The task force concluded:

[T]he federal government must regain its concern for increasing opportunities for racial minority groups, furnish leadership in the continuation of these special programs, and provide as much financial



support as possible toward their continuation. Because of the recent decrease in federal support, state governments should also increase their support and leadership in the development and continuation of special programs for racial minority groups in the health professions.154/

The report also called for accelerated efforts on the part of the AAMC, medical schools, and private funders.155/

There appears to be general interest on the part of public and private organizations in increasing minority enrollment in medical schools.156/ But there are no federal financial incentives for schools to increase minority enrollments, such as payments made in exchange for minority enrollment increases or negative weighting of applications for government research funding from schools with unsatisfactory minority enrollments; nor is it clear that minorities receive the major share of benefits of DHEW programs to aid disadvantaged populations.157/ In terms of programs to increase the pool, there is little information on results per unit cost. Programs geared to earlier educational stages, such as elementary schools, are likely to be less efficient than programs geared to later stages, such as entry to medical school; but in fiscal 1978, only \$14.5 million was expended on special programs for health careers education, and that sum was spent on the Health Careers Opportunity Program, which is not limited to minorities or medicine.158/

Minority medical schools present another challenge to the federal government. The phasing out of financial distress to these institutions is under consideration.159/ Yet these schools are financially weak and depend heavily on federal support.160/

University and medical school efforts are intricately involved with policy initiatives involving minority enrollments. Policy needs are different if schools have generous quotas for minorities, no special program at all, or an intermediate device. One such device is the University of California at Davis' method, adopted after the Bakke decision, awarding minority applicants five points, and disadvantaged applicants five points, in a 100-point admissions system.161/

Majority attitudes are particularly important on the university and medical school level. A reluctance to share power with minorities is perceived as paternalism and may lead minorities to resist well directed efforts.162/ Minority students sometimes feel resented; a student speaker at a 1977 conference on minority enrollment remarked that "[m]ost people around you do not realize that no one gets into medical school because of being black but rather in spite of it."163/

Finally, the policy issues are complicated by a lack of definition as to what constitutes a minority. The claim sometimes is made that if special programs are justified for certain groups, then they also might be appropriate for other groups as well. One perspective on this issue is that, to qualify for special treatment as a minority, a group on the whole must be geographically identifiable, culturally and physically identifiable, have a low index of intellectual achievement, and have a

low economic level.<sup>164/</sup>

There are many possible policy approaches to issues of minority enrollment. The choice of strategies ultimately may reflect the basic goal. A program intended to provide minorities with an equal chance to attend medical school may differ from a program to improve the delivery of health care to underserved minority populations. Although minority physicians are more likely to treat minority populations services will still need to be obtained from other physicians. Even if the total supply of minority physicians were adequate their specialty and geographic distribution still could pose problems. Moreover, programs that probably would succeed over a long term may fail to meet immediate needs, or vice versa. Both a clearer delineation of purpose and a unified strategy may be needed now to increase minority medical school enrollment nationwide.





## THE FUTURE ROLE OF NEW HEALTH PRACTITIONERS

In the past fourteen years, two new types of health practitioners, the physician assistant and the nurse practitioner, have been trained to provide many of the services that previously were delivered only by physicians. By 1976, there were 5,800 graduates of nurse practitioner programs funded by the Department of Health, Education, and Welfare (DHEW), and 4,600 graduates of physician assistant programs funded by DHEW.<sup>165/</sup>

This section discusses the involvement of the federal government in developing the physician assistant and nurse practitioner and examines some of the major issues of the past and present bearing upon these two health providers. The role of the nurse practitioner and physician assistant in the next decade is discussed and policy options are presented.

### THE FEDERAL PRESENCE

The use of trained persons other than physicians to deliver medical services, particularly primary care services, has been common in many countries for decades.<sup>166/</sup> In the United States, the first training program for physician assistants started in 1965 at Duke University and the first training program for nurse practitioners began at the University of Colorado in that same year. It was not until the 1970's that the United States government became interested in the potential of new health practitioners in part as a result of an apparent shortage of primary care services in rural areas. In his Annual Health Message of 1971, President Nixon recognized the value of nurse practitioners and physician assistants in increasing the availability of primary care. Congress revealed a similar attitude by providing funds for the training of certain types of nurse practitioners in the Nurse Training Act of 1971, <sup>167/</sup> and the training of nurse practitioners and physician assistants in the Comprehensive Health Manpower Act of 1971.<sup>168/</sup>

Continuing congressional concern with the issues of the quality and the availability of primary care and continuing congressional reliance on the nurse practitioner and physician assistant as partial solutions to the problems are reflected in four more recent pieces of legislation.

Concern about the rising costs of health care, and the potential of the new health practitioners to moderate the rate of price increases were also involved in the passage of the laws. The Nurse Training Act of 1975 169/ establishes new authorities for project grants and contracts for training programs for nurse practitioners and provides traineeships for individuals in nurse practitioner programs. The Health Professions Educational Assistance Act of 1976 170/ provides grants and contracts for physician assistant training programs, as amended by the Health Services Extension Act of 1977 171/ and, for the first time, directly addresses the need for primary care manpower in underserved areas. It authorizes traineeships for nurses who are residents of a health manpower shortage area and who promise to practice in such areas when they complete their training as nurse practitioners, and also provides that special consideration be given to training nurse practitioners who will train in health manpower shortage areas.

Support for the employment of new health practitioners in health manpower shortage areas is further advanced in the Rural Health Clinics Service Act of 1977, 172/ which allows payment under Medicare and Medicaid programs for medical services furnished by a nurse practitioner or physician assistant in clinics located in rural, medically underserved areas: previously third party payers had not paid for services typically provided by a physician when delivered by a nonphysician. The act also authorizes funds for demonstration projects in paying for the services of nurse practitioners and physician assistants under the Medicare and Medicaid program in urban medically underserved areas.

#### MAJOR ISSUES--PAST AND PRESENT

The emergence of new health practitioners has raised several issues that are now at different stages of resolution. The issues of patient acceptance, physician acceptance, quality of care, and productivity have been resolved for the most part. Patients appear to be generally satisfied with physician assistants and nurse practitioners, 173/ and physicians are sufficiently accepting of the new health practitioners so that unemployment is not a problem. New health practitioners enjoy a high rate of employment in organized settings and those who employ them express general satisfaction with their performance as members of a team. 174/ The limits of the acceptance by physicians and patients have not been established. Nurse practitioners and physician assistants provide care similar in quality to that provided by physicians for a wide range of services. 175/ Although the estimates differ by practice setting and physician specialty, the addition of a new health professional to a physician's practice can increase the productivity of the practice by as much as fifty percent. 176/ Among the factors that influence the size of the increases in productivity are the size and the organization of the practice, 177/ the location of the practice, and the type of new health professional. 178/

The cost issues surrounding new health professionals are complex and difficult to resolve. For example, determining the cost-effectiveness to a practice of employing a physician assistant or nurse practitioner requires detailed information on their level of productivity,

their mode of utilization in the practice (are new health practitioners improving the quality of the services or increasing the case load?), the amount of physician supervision, and the physician's altered work effort. Cost effectiveness also depends on factors external to the practice, such as the demand for medical services and reimbursement policies. Current studies indicate that new health practitioners can be cost effective.<sup>179/</sup> Among the many other cost issues that remain to be decided is the effect on national expenditures for medical care of using new health practitioners.

Many legal issues and reimbursement policies are open to question. State medical practice acts, state nurse practice acts, and state regulations tie the medical practice of physician assistants and nurse practitioners directly to that of physicians and limit the medical services the new health professionals can perform.<sup>180/</sup> Legislation and regulation vary widely from state to state, but, in general, require the identified physician supervisor to be legally responsible for the professional activities of the new health professionals.<sup>181/</sup> As may be expected, laws and regulations of new professions are in a state of flux and are often ambiguous. Still unanswered are such questions as: Should state laws and regulations be changed to allow nurse practitioners and physician assistants greater responsibility in medical practices? Should there be one board to regulate physician assistants and nurse practitioners?

Current reimbursement policies of private third party payers and public programs also link the new health practitioner to the physician. For the most part, public programs and private insurers have been slow to recognize the nurse practitioner and physician assistant for payment purposes, and payment for their services, when provided, has gone to the employing physician or institution. With some exceptions, the services of the new health practitioner are not reimbursed under federal programs if the services were traditionally performed by a physician. The federal policy for non-reimbursement was established before the beginning of federal programs to train physician assistants and nurse practitioners. The basic Medicare Part B rule declines to provide reimbursement for medical services rendered by non-physicians, except for such services "furnished as an incident to a physician's professional services, of kinds which are commonly furnished in physicians' offices and are commonly either rendered without charge or included in physicians' bills."<sup>182/</sup> The Rural Health Clinics Services Act overrules this provision in the case of rural clinics and also permits payment for services provided by new health practitioners in the clinic when the physician is not physically present at all times.<sup>183/</sup> These changes are modest, and broader long-term considerations--such as the scope of services to be reimbursed, the payment for the services of new health professionals in physicians' offices, the level of payment for physician services, the payment for the services of new health practitioners in adequately served areas, and the recipient of the payment for the services of new health practitioners--have not been sufficiently addressed by public and private third party payers.

THE EMERGING ROLE OF  
NEW HEALTH PRACTITIONERS

The future of the new health practitioners is uncertain, partly because of the rapidly expanding supply of physicians. The number of physicians is expected to be approximately 596,800 by 1990, an increase of about 60 percent from today's level.<sup>184/</sup> Because patient volume is a factor in new health practitioners, an increase in the number of physicians may adversely affect their employment. Nurse practitioners and physician assistants remain dependent on physicians for employment because of state laws requiring physician supervision and reimbursement policies that restrict payment directly to new health practitioners. However, if physicians can create a demand for their own services, as some have suggested, there would be less of a decline in patient load and, thus, in the employment of new health professionals.<sup>185/</sup> There is, however, a limit to the amount of health care that the public will need. On the other hand, practicing physicians may perceive the growing number of entrants into medical practice as competitors. They therefore may refrain from hiring a nurse practitioner or physician assistant, and hire recently graduated physicians, unless it can be demonstrated that the new health practitioner can improve the profit margin of their practice more than another physician. The cost effectiveness of adding new health practitioners to physician practices varies with the mode of practice, reimbursement practices, and other factors.

The situation is particularly important in light of the expected supply of new health practitioners by 1990. If federal support for training continues at current levels, there will be approximately 18,520 physician assistants and 23,030 nurse practitioners at that time.<sup>186/</sup> The 1978 Nurse Training Amendments, <sup>187/</sup> which would have authorized the development and expansion of nurse practitioner programs for the new year, were vetoed by President Carter in November of 1978. However, his veto was directed at provisions of the bill other than the one dealing with nurse practitioner programs.<sup>188/</sup> In the message accompanying his veto, the President reaffirms the Administration's interest in nurse practitioner training programs, and points out that the program will continue through 1979 under a continuing appropriations resolution. There are, as well, indications that legislation will be introduced in the next session of congress to continue such support until 1980.

Although federal investment in training programs for new health practitioners is large, (the level of federal support for nurse practitioners and physician assistants for the past two fiscal years has been 22 to 25 million dollars: 22.1 million dollars are allocated for the 1979 fiscal year) a number of new health professionals train and graduate without federal support. Sixty percent of present nurse practitioner training programs (118 out of 198) and 26 percent of programs training physician assistants (13 out of 50) are operating without federal assistance.<sup>189/</sup>

In his message of November 17, 1978, the President refers to a major administrative review of support for the training of all health



professionals and the submission of new legislative proposals to the 96th Congress. In December, 1978, the Office of Management and Budget requested drastic reductions in spending for training of health professionals. The uncertainty surrounding administrative and congressional actions in this area precludes a definitive projection of the supply of new health practitioners and other health personnel. Irrespective of further government actions, there will be an increased supply of physicians by 1990 as a result of the long period required for training physicians, the demand for admission to medical schools, and the current enrollment levels in medical schools.\* (See Section one of this paper).

Although the expected increase in the number of practicing physicians need not prevent the utilization of the new health practitioners, it does make it necessary to reconsider the future role of nurse practitioners and physician assistants. There are unmet national needs they may fill, including providing primary care in underserved areas, delivering preventive care, and providing care in hospitals. Unresolved issues will influence how well the new health practitioners can respond to these opportunities. As noted previously, nurse practitioners and physician assistants now lack flexibility mainly because of legal and reimbursement restrictions that require that most be employed by a physician or an institution and that all must practice under a physician's supervision.

The expectation that new health practitioners can play a larger role in providing preventive care, supplying primary care to underserved areas and populations, and provide needed specialized care in hospitals, is based on their current contributions, which are documented in the following discussions. Information on the current and future need for these services is also presented.

#### Underserved Geographic Areas

Although the supply of physicians in the United States has increased dramatically in recent years, physicians in the primary care disciplines are inadequately supplied, particularly in rural areas and in inner city neighborhoods of large cities.<sup>190/</sup> Indeed, DHEW recognizes that one of every six people live in areas where access to primary care services is minimal. About half of the underserved population of 34 million people live in urban settings and half in rural areas.<sup>191/</sup> The anticipated growth in the supply of physicians in the primary care fields will probably not be adequate to meet all of the primary care needs of the nation under current patterns of organizing and delivering health care.<sup>192/</sup> Nor, is it probable that the geographic distribution of physicians will be adequate in the near future. (See section 2 of this paper).

New health practitioners, even with existing legal, reimbursement, and other restrictions, can increase the availability of primary care.

---

\*The Association of American Medical Colleges notes that in 1978 enrollment in the nation's 124 medical schools was at an all-time high of 62,242, a four percent increase over 1977.



Nurse practitioners and physician assistants are most commonly employed in the delivery of primary care. About 69 percent of nurse practitioners are providing primary care 193/ and 71 percent of physician assistants practice with primary care physicians.194/ More than 36 percent of physician assistants--compared to 25 percent of the population and 13 percent of all physicians--reside in non-urban areas (Table 5).

Table 5. Distributions of PAs, Medex\*, Population and Physicians by Type of County, for 1975

Type of County	Percent PAs and Medex* N=1403	Percent Patient Care Physicians 1/	Percent U.S. Population
SMSA <u>2/</u> 500,000 +	40.6	17.2	54.7
SMSA 50,000-500,000	20.8	67.7	20.6
Non-SMSA	35.6	12.8	24.7
Other	3.0	0.9	0.0
Totals	100.0	100.0	100.0

\*U.S. Armed Forces corpsmen, specially trained.

1/ Nonfederal patient care physicians from, Distribution of Physicians in the U.S., 1973. G.A. Roback, American Medical Association, Chicago, Illinois.

2/ SMSA (Standard Metropolitan Statistical Areas) from Richard M. Scheffler and John Kushman, "New Health Practitioners and Rural Health Care" American Journal of Agricultural Economics, November 1978.

If physician assistants are trained in schools emphasizing rural practice, redistribution efforts are even more successful. Programs in Washington, Utah, and Oklahoma have placed 58 percent, 72 percent, and 62 percent, respectively, of their graduates in communities of less than 25,000. 195/ Preliminary evidence indicates as well that physician assistants brought up in rural areas are more likely to work in rural locations.196/

Nurse practitioner training programs have had some success in placing their graduates in underserved areas. About 36 percent of the 1971-74 classes of nurse practitioners are practicing in inner city neighborhoods; 17 percent practice in rural communities.197/

### Underserved Populations

The participants in a recent conference on critical issues in health manpower concluded that physicians prefer not to deliver care to such population groups as the poor and socially deprived.<sup>198/</sup> It is also apparent that certain age groups, such as the elderly, experience serious gaps in health care without regard to income or social status. The elderly represent ten percent of the population of the United States and have much greater health care requirements than other age groups. About 10-20 percent of those over 65 are functionally disabled, in contrast to only two to three percent of the population of 17 to 64 year olds.<sup>199/</sup> The over-65 population will require even more health care in the future because it is the fastest growing segment of the population. Chronic illnesses, which are a large proportion of the problems of this age group, <sup>200/</sup> have psychological, social, and economic aspects, as well as disease manifestations. It means that many physicians do not have the expertise or the desire to spend the time required to manage the health problems of the elderly. If the training of physicians included more information about the aging process and the problems of the elderly, some, but not all, of the deficit in the health care needs of the elderly could be remedied.<sup>201/</sup>

New health practitioners have demonstrated the professional ability and the necessary empathy to manage most aspects of chronic illnesses characteristic of the elderly.<sup>202/</sup> Nurse practitioner/physician teams are particularly effective in assisting the home-bound and the institutionalized elderly -- groups in special need of health services -- to attain their health goals.<sup>203/</sup> The future role of the nurse practitioner and physician assistant in providing primary health care to these populations deserves attention.

Another underserved group that benefits from the primary care services provided by new health practitioners is psychiatric patients, both outpatient and inpatient.<sup>204/</sup> At one facility, physician assistants were responsible for discovering that fifty percent of the patient population had previously undetected medical problems.<sup>205/</sup> In that kind of setting, the physician assistants were cost effective relative to physicians in the overall delivery of primary care.<sup>206/</sup>

It may prove useful to increase the use of new health practitioners in psychiatric settings in the future. More than one-half of the physicians in state mental hospitals graduated from foreign medical schools,<sup>207/</sup> and federal initiatives are expected to reduce the number for foreign trained physicians practicing in the United States.<sup>208/</sup> Notwithstanding the unresolved issue of the quality of care, foreign-trained physicians serve as the only source of psychiatric and medical care for some psychiatric patients. In the short run, replacement of foreign-trained physicians by graduates of U.S. medical schools will be difficult unless radical changes are instituted in state and county mental hospitals. The provision of primary care in such institutions by new health practitioners appears to be a reasonable alternative.<sup>209/</sup> Physician assistants who have graduated from accredited training programs

and then received additional training in psychiatry also have assisted with psychiatric treatments.210/

#### Preventive Services

In a recent report of the Institute of Medicine, A Manpower Policy for Primary Health Care, 211/ new health practitioners were said to enhance the delivery of education and preventive services to patients. Nurse practitioners, in particular, emphasize preventive services, patient education, counseling, and chronic care.212/ In some settings they have been shown to deliver as much as 75 percent of the well person care for adults and children.213/

If major initiatives in prevention are begun in the near future, there may not be sufficiently trained health manpower to participate. Physicians will probably not be able to meet this need immediately.214/ Other efforts to increase the availability of preventive services delivered by physicians, such as incorporating the skills and knowledge basic to prevention into the medical school curriculum, residency training and continuing medical education and covering more preventive services under health insurance, may require an extended period of time before they are adopted. New health professionals, as well as other underutilized health professionals, may offer a short-term, and perhaps a long-term, answer to the need for preventive services. The physician assistant and nurse practitioner also may, if properly utilized, constrain rising health expenditures.

#### The Hospital Setting

A major emphasis in health manpower policy is to increase the availability of primary care services. The federal government is encouraging the production of physicians in primary care disciplines by increasing the number of training slots in primary care specialties,215/ which may limit the number of training slots available in non-primary care disciplines. Professional organizations of surgeons have expressed interest in decreasing the number of physicians in the surgical specialties. They are concerned that specialty skills cannot be maintained if there are limited opportunities to use them, for example, in geographic areas where some types of specialists are abundant.216/

If the number of training slots in non-primary care fields is curtailed, the availability of quality specialized services may be reduced. New health practitioner have demonstrated they can provide many of the specialized services now supplied by surgical house staff to hospitalized patients. Physician assistants have been successfully used in many types of hospitals--university teaching hospitals, community hospitals, children's hospitals, and county hospitals.217/ Their duties vary with the type of hospital. In general, they expand the services available to patients, improve patient care, and provide routine pre-operative and postoperative care. Because most remain in their positions

for long periods of time, they may provide better continuity of services, policies, and procedures. In some hospitals, physician assistants free residents from the more routine work load, and function as assistants to staff surgeons, thereby allowing an increased surgical volume without increasing the number of fellows and residents. By using physician assistants, hospitals also have been able to decrease the number of junior residents they require. If properly utilized, three surgical assistants can perform the work of two surgical residents, it is estimated by one source.<sup>218/</sup> Surgical assistants can also be employed in remote areas, thereby decreasing the absolute number of surgeons required in such localities.

In the future, new health professionals may be called upon to assume a larger place in the hospital setting due to changes in our national policy concerning foreign medical graduates. As noted before, the number of foreign-trained physicians and the services they provide to patients will be reduced soon. Based on distribution data of foreign-trained house officers, it appears the effect will be more serious among certain specialties, institutions, and localities.<sup>219/</sup> At a recent forum held in New York City, it was noted that 42 percent of New York City house staff were trained outside the United States and Canada.<sup>220/</sup> The possibility of a physician shortage in internal medicine, rehabilitation medicine, pathology, anesthesiology, and other specialties in certain neighborhoods and hospitals in New York City requires a variety of strategies. One suggested option is to use nurse practitioners and physician assistants to substitute for physicians in those hospitals that have an inadequate house staff.

#### CONCLUSION

The work of nurse practitioners and physician assistants is closely linked with that of physicians in private practice and in organized medical settings. Inasmuch as the numbers of physicians have considerably increased in response to federal initiatives and support, the possibility of an oversupply of physicians exists. Partly due to this projected increase in the supply of physicians, questions are now being raised about the future role of new health professionals.

If there is an oversupply of physicians, nurse practitioners and physician assistants may find it more difficult to find employment. There is reason to believe that an increased supply of physicians will mean that new health practitioners will need to adapt themselves to new roles in the health care system. The problem may become exacerbated in the next five or six years when the major influx of new physicians is expected to occur.

The "trickle-down" effect may also effect employment of new health practitioners, but so slowly that its impact may be negligible in the next decade.\* If so, under current patterns of organizing and delivering

---

\*For a discussion of the "trickle-down" effect see Section #1 of this paper.

health care, some national health policy goals will remain unrealized. The availability of primary care is not universal: some geographic areas and certain population groups will continue to have limited primary care available. The country may also lack the types of health manpower needed to supply preventive services nationwide. If major initiatives in prevention are launched in the near future, this situation will worsen.

### Policy Approaches

In discussing policy alternatives for the future role of the new health practitioners, the ramifications of a possible oversupply of physicians are of primary importance. If one assumes there will be an oversupply of physicians the employment possibilities for nurse practitioners and physician assistants may be curtailed as will federal funds for the training of new health practitioners.

Changes in reimbursement policies may be forthcoming. There are indications that federal enforcement of the "incident to" provision of the Medicare Part B rule governing payment for medical services provided by non-physicians may be accelerating. This provision, noted previously, limits payment under Medicare for nurse practitioners' and physician assistants' services to those not usually performed by physicians, and specifically and individually ordered by the physician. Accordingly, payment for services performed by new health professionals is limited to such technical tasks as blood tests and changing dressings. The wording of the provision is general and its interpretation by Medicare Part B carriers and physicians has varied. Most physicians have billed for all services performed in their offices irrespective of who performs the service, and most carriers have chosen to ignore this widespread practice. In 1975, they were instructed to inform physicians that "physician services rendered by physician assistants are not covered under Part B of Medicare."<sup>221/</sup> For the most part, these instructions continue to be ignored by both physicians and carriers. Recently the North Carolina carrier for Medicare Part B has begun to audit physician practices and has requested repayments for services performed by physician assistants that were not "incident to" those performed by the physician.<sup>222/</sup> At the moment it appears that this enforcement action has been limited to North Carolina. Whether or not this action is causally related to a possible projected oversupply of physicians cannot be ascertained. However, a federal policy directed to invoking a strict interpretation of the "incident to" provision would significantly lower the employment potential of new health practitioners.

Assuming that some health care services will remain unavailable to some populations even if there is an oversupply of physicians, federal efforts toward the optimal use and distribution of new health practitioners are required. These initiatives would include expanding federal support of training programs for nurse practitioners and physician assistants, associating federal support of training programs and of individuals in training programs with services to areas and



populations in short supply of primary care, and altering reimbursement and legal requirements. In light of the expanded supply of physicians, the first option does not appear likely. As noted previously, the second option, i.e., associating federal support of training programs and of individuals with service requirements, has been successfully used in some physician assistant training programs. Continuing and increased support of this approach should improve the availability of primary care to underserved areas and groups to some degree.

In addition, altering reimbursement policies to permit payment for services of nurse practitioners and new health practitioners would alleviate some of the current restrictions on their ability to practice. The evidence on the past and current performance of new health practitioners is indicative and not conclusive because of such restrictions. Possible effects of modifying reimbursement policies to allow for payment of the services of new health practitioners include a greater demand for their services, and a greater availability of primary care services in areas, populations and institutions that are short of physician services. The resulting increased use of the health care system might increase total expenditures for health care.

In designing a new reimbursement policy to augment the efficient use of health practitioners, many questions will have to be considered. For example, should payment be direct to the new health practitioner or to the physician's practice? Should there be payment for all services rendered by physician assistants and nurse practitioners or only for medical procedures? Other questions that require serious examination include payment for services of nurse practitioners and physician assistants only in medically underserved areas and with underserved populations, the level of payment for their services and the degree of physician supervision required for payment, and payment for efficacious preventive services. This last question transcends payment to new health practitioners and includes physicians as well.

Legal barriers to implementing changes in reimbursement practices will also have to be removed. In the case of Medicare and Medicaid, additional legislation appears necessary. Currently, authorization for payment of services of nurse practitioners and physician assistants is on a reasonable cost basis and is limited to services provided in rural clinics, and urban clinics on a demonstration basis. Under Medicare, legislation will also be needed to provide payment for necessary preventive services. Payment is now limited by law to services needed in diagnosing and treating an illness or injury.

Licensure requirements affecting reimbursement policies also will require changes. New health practitioners can now only receive payment for those services the licensure mechanism allows them to permit. Some of the state medical practice acts and state nurse practice acts which control the scope and conditions of practice of new health practitioners will likely require modification.



#### REFERENCES AND NOTES

1. Reinhardt, U. E., "Health Manpower Policy in the United States: Issues for Inquiry in the Next Decade," Princeton University, November 1976.
2. Leroy, L., P. Lee, Deliberations and Compromise: The Health Professions Educational Assistance Act of 1976, Ballinger, 1977.
3. Reinhardt, Ibid., Leroy, Ibid.
4. Fein, R., The Doctor Shortage: An Economic Diagnosis, The Brookings Institution, Washington, D.C., 1967.  
Bane Committee, The Surgeon General's Consultant Group on Medical Education, 1959.
5. Ginzberg, E., "Physician Shortage Reconsidered," New England Journal of Medicine, Vol. 275, No. 2 (July 14, 1966).
6. Scheffler, R., N. Weisfeld, G. Ruby, E. H. Estes, "A Manpower Policy for Primary Health Care," The New England Journal of Medicine, May 11, 1978.
7. Bishop, C., R. Fein, Employment Impacts of Health Policy Developments, A special report of the National Commission for Manpower Policy, October 1976. Also see Ginzberg, E., "Health Reform: The Outlook for the 1980's," Inquiry, Vol. XV, December 1978, p. 316.
8. This figure includes about 14,000 doctors of osteopathy in 1977.
9. Miike, L., "Federal Support for Health Professions Training," Office of Health Policy, Research, and Statistics, Office of the Assistant Secretary for Health, Department of Health, Education, and Welfare, July 1978.
10. In 1976 physicians in non-metropolitan areas worked an average of 53.5 hours and had an average of 116.1 patient visits per week as compared to physicians in metropolitan areas of over 1 million who worked an average of 51.1 hours per week and delivered an average of 77.6 patient visits. Profiles of Medical Practice, 1978, Center for Health Services Research and Development, American Medical Association, John C. Gaffrey, Editor 1978, pp. 196, and 208.
11. Kehrer, B., "Factors Affecting the Incomes of Men and Women Physicians: An Exploratory Analysis." Journal of Human Resources, Vol. XI, No. 4, Fall 1976.
12. This calculation is based on the assumption that factors such as the productivity of the physician and the quality of care delivered remains unchanged.
13. The Health Resources Administration does make productivity adjustments for dentists and nurses. For work on the productivity of dentists see, Scheffler, R., J. Kushman, "A Production Function for Dental Services Estimation and Economic Implications," Southern Economic Journal, Vol. 44, No. 1, July 1977. Kushman, J., R. Scheffler, L. Miners, C. Mueller, "Nonsolo Dental Practice: Incentives and Returns to Size," Journal of Economics and Business, Vol. 30, No. 1, Fall, 1978. For some work on nurse productivity see Sloan, F., "The Geographic Distribution of Nurses and Public Policy," DHEW (HRA) 75-53, May 1975, and Altman, S., "The Present and Future Supply of Registered Nurses," DHEW (NIH) 72-13, Nov. 1971.

14. Reinhardt, U.E., Physician Productivity and the Demand for Health Manpower, Ballinger, Cambridge, Mass., 1975, Chapter 3. Scheffler, R., "Productivity and Economies of Scale in Medical Practice," in Health Manpower and Productivity, Edited by J. Rafferty, Lexington Books, 1974. Hadley, J., "Research on Health Manpower Productivity," Ibid.
15. This calculation assumes that the type and quality of the services remains unchanged.
16. For a critique of the manpower projection models that are used see Reinhardt, Ibid., Fein, R., Ibid., Klarman, H., "Economic Aspects of Projecting Requirements for Health Manpower," Journal of Human Resources, Vol. 3, Summer 1969, and Lave, J., L. Lave, and S. Leinhardt, "Medical Manpower Models, Need, Demand, Supply," Inquiry June 1975, pp. 97-125.
17. Klarman, H., The Economics of Health, Columbia University Press, New York, 1965, Chapter 1.
18. Pauly, M., "The Economics of Moral Hazard: Comment," American Economic Review, Vol. 58, No. 3, pp. 531-37, June 1968. Also, Pauly, M., "Is Medical Care Different?" Paper given at a Federal Trade Commission Conference on Competition in the Health Care Sector, Past, Present, and Future, Washington, D.C. (June 1977). Arrow, K. J., "Uncertainty and the Welfare Economics of Medical Care," American Economic Review, Dec. 1963, Vol. 53, pp. 941-73.
19. Evans, R., "Supplier-induced Demand: Some Empirical Evidence and Implications," in The Economics of Health and Medicare Care: Proceedings of a conference held by the International Economic Association of Tokyo, Edited by M. Perlman, London, MacMillan, 1974. Sloan, F., R. Feldman, "Monopolistic Elements in the Market for Physicians' Services," paper given at a Federal Trade Commission conference on Competition in the Health Care Sector: Past, Present, and Future. Washington, D.C., June 1971.
20. Ibid.
21. Pauly, M., Ibid.
22. Ibid.
23. Sloan, F., R. Feldman, Ibid., also U.E. Reinhardt, Ibid.
24. The same relationship between fees and the supply of health manpower has also been found for dentists, Kushman, J., R. Scheffler, "Pricing Health Services: Verification of a Monopoly Pricing Model for Dentistry," The Journal of Human Resources, Vol. XIII, Fall 1978.
25. For a recent empirical study of the supplier-induced demand theory which provides an interesting test of that theory see: Fuchs, V., "Physician Supply and Demand for Surgical Operation," Journal of Human Resources, Vol. XIV, No. 3, Fall 1978.
26. The "trickle-down hypothesis" is not meant to suggest any quality differences between physicians in different areas, it simply acknowledges the fact that market forces may make some areas more attractive and others less attractive.
27. Reinhardt, U. E., Ibid., R. Fein, Ibid.
28. Reinhardt, U. E., K. Smith, "Manpower Substitution in Ambulatory Care," in Health Manpower and Productivity, edited by J. Rafferty, Lexington Books, 1977.

29. Scheffler, R., "The Productivity of Physician Assistants," in Research in Health Economics, Vol. I, forthcoming, May, 1979.
30. Much research needs to be done on how different categories of health manpower substitute for and complement each other.
31. HPEA of 1976, P.L. 94-484.
32. Remarks of Secretary Joseph A. Califano, Jr., Department of Health, Education, and Welfare before the Association of American Medical Colleges, New Orleans, Louisiana, October 24, 1978.
33. Division of Manpower Analysis, Bureau of Health Manpower, HRA, "Projections of the Supply of Physicians to 1990," Report No. 79-1, November 16, 1978.
34. "Health Manpower Shortage Areas, Criteria for Designation," Federal Register, Tuesday, January 10, 1978, Part II.
35. Office of Planning, Evaluation, and Legislation, Health Services Administration, "The Relationship Between Health Services Administration Programs and National Health Insurance Development," January 1978, mimeo.
36. Hadley, J., "Alternative Measures of Evaluating Health Manpower Distributions," Medical Care (forthcoming.)
37. Ginzberg, E., Health Manpower and Health Policy, Montclair, New Jersey: Allanheld Osmun and Co., Inc., 1978.
38. HRA background paper, "Encouraging Shifts in the Specialty Distribution of Health Manpower" June 1978; Institute of Medicine, Medicare-Medicaid Reimbursement Policies, March 1976, Part II.
39. Institute of Medicine, op cit.
40. Perkoff, G. T., M.D., "An Effect of Organization of Medical Care Upon Health Manpower Distribution," Medical Care, Vol. 16, No. 8, August 1978.
41. Schonfeld, H. K., et al., "Numbers of Physicians Required for Primary Medical Care," New England Journal of Medicine, Vol. 286, p. 571, 1975.
42. DHEW, Public Health Service, HRA, A Report to the President and Congress on the Status of Health Professions Personnel in the United States, DHEW Publication No. (HRA) 78-93, August 1978.
43. Klarman, H., "Economic Aspects of Projecting Requirements for Health Manpower," Journal of Human Resources, Vol. 4, p. 205, 1966.
44. Hadley, op cit.
45. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, Part II, "Physician Choice of Specialty and Geographic Location: a Survey of the Literature"; IOM, Division of Health Manpower and Resources Development, "Issues in Health Manpower and Resources Development" (draft, 1977); Lee, P., et al., Primary Care in a Specialized World. Cambridge, Mass.: Ballinger, 1976.
46. Institute of Medicine, ibid.
47. Cooper, J. K., et al., "Rural or Urban Practice: Factors Influencing the Location Decisions of Primary Care Physicians," Inquiry, Vol. 12, March 1975.
48. Hadley, J., Models of Physicians' Specialty and Location Decisions, NCHSR Technical Paper Series, No. 6, Rockville, Md., December 1975; Institute of Medicine, "Physician Choice of Specialty and Geographic Location: a Survey of the Literature;" Lee, et al., Primary Care in a Specialized World.

49. Fein, R., and Weber, G., Financing Medical Education: An Analysis of Alternative Policies and Mechanisms, New York: McGraw-Hill, 1971.
50. Hadley, J., Models of Physician Specialty and Location Decisions.
51. This discussion of financial factors draws on several reviews of the literature: Hadley, Models of Physicians' Specialty and Location Decisions; Institute of Medicine, "Physician Choice of Specialty and Geographic Location: a Survey of the Literature"; Scheffler, et al., "The Impact of Economic Factors on the Specialty and Spatial Distribution of Physicians," November, 1978; and Lee, et al., Primary Care in a Specialized World.
52. Becker, G. S., Human Capital, 2nd ed., New York: Columbia University Press, 1975.
53. Scheffler, et al., "The Impact of Economic Factors on the Specialty and Spatial Distribution of Physicians," page 7.
54. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, Part II, Chapter 10, pp. 14-17.
55. P.L. 91-623.
56. Health Resources Administration, "Background and Options Statement: Increasing Primary Health Care Capacity in Medically Underserved Areas," 1978.
57. Ibid., Federal centers include Comprehensive Ambulatory Health Centers, and Health Underserved Rural Area Projects.
58. Office of the Assistant Secretary for Health, "The National Health Service Corps," by L. Miike and C. Zuckert, June 28, 1978.
59. "Area Health Education Center Programs," Federal Register, Vol. 43, No. 228, Monday, November 27, 1978.
60. P.L. 94-484.
61. Institute of Medicine, A Manpower Policy for Primary Health Care. Washington, D.C.: National Academy of Sciences, May 1978, page 72.
62. Holden, W. D., and E. J. Levit, "Migration of Physicians From One Specialty to Another: A Longitudinal Study of U.S. Medical Graduates," Journal of the American Medical Association, Vol. 239, pp. 205-209, 1978.
63. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, Part I, chapter 2.
64. Ibid., p. 64.
65. "Graduate Medical Education National Advisory Committee, Notice of Establishment," Federal Register, Vol. 41, No. 98, May 19, 1976.
66. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, p. 64; Health Resources Administration, "Encouraging Shifts in the Specialty Distribution of Health Manpower," p. 17.
67. Gibson, R. M. and S. Mueller, "National Health Expenditures, Fiscal Year 1976," Social Security Bulletin, April 1977.
68. Institute of Medicine, A Manpower Policy for Primary Health Care, chapter 4.
69. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, p. 67.
70. Yoder, S. G., "Reimbursement Policies for Primary Health Care," Report of a Health Policy Forum, Institute of Medicine, National Academy of Sciences, October 1978.



71. Institute of Medicine, Medicare-Medicaid Reimbursement Policies, Part I, pp. 61-63.
72. Ibid., p. 63.
73. Office of the Assistant Secretary for Health, "Financing of Graduate Medical Education," by L. Miike, June 26, 1978.
74. California Health Manpower Policy Commission, "The Fourth Annual Report to the California Legislature," December 15, 1977.
75. Office of Statewide Health Planning and Development, Division of Health Professions Development, 1977 California Health Manpower Plan, supplement No. 3: "Graduate Medical Education, A Position Paper".
76. Petersdorf, R. G., M.D., "The Doctor's Dilemma," The New England Journal of Medicine, Vol. 299, No. 12, September 21, 1978; also G. T. Perkoff, M.D., "General Internal Medicine, Family Practice or Something Better?"; J. M. Colwill, M.D., "Primary Care Education in Multiple Specialties,"; and S. Relman, M.D., "Who Will Train All Those Primary Care Physicians?" in the same issue of the Journal; D. E. Rogers, M.D., "The Challenge of Primary Care," Daedalus, Vol. 106, No. 1, Winter, 1977.
77. Reinhardt, U. E., Physician Productivity and the Demand for Physicians, Cambridge, Mass.: Ballinger, 1976, p. 23.
78. Ginzberg, E., Health Manpower and Health Policy, Montclair, N.J.: Allanheld Osmun and Co., Inc., 1978, p. 78.
79. Lee, P., et al., Primary Care in a Specialized World, p. 166.
80. DHEW, Health Resources Administration, "Health Manpower Shortage Areas Designated under Section 332 of the Public Health Service Act," Federal Register, Vol. 43, No. 251, Friday, December 29, 1978.
81. Bakke v. Regents of the University of California, 96 S. Ct. 2733 (1978).
82. U.S. Department of Health, Education, and Welfare, "Health Systems Reform Initiative," Health Resources Administration, mimeographed, October 19, 1978, p. 24.
83. Ibid., "Minority Medical Students," DHEW Publication No. (HRA) 78-625, pp. 15, 30.
84. Association of American Medical Colleges, preliminary data, mimeographed, Washington, D.C., November 4, 1977.
85. Reitzes, D., Negroes and Medicine (Cambridge, Mass.: Harvard Press 1958).
86. See Odegaard, C. E., Minorities in Medicine: From Receptive Passivity to Positive Action 1966-76 (New York: Josiah Macy, Jr. Foundation, 1977), p. 20 ff.
87. Ibid., pp. 12, 32.
88. Association of American Medical Colleges, Report of the AAMC Task Force to the Inter-Association Committee on Expanding Educational Opportunities in Medicine for Blacks and Other Minority Students, mimeographed, 1970.
89. Ibid. Alternative strategies identified in the task force report were (1) increasing minority admissions to undergraduate schools, (2) increasing medical school recruitment of minorities, and (3) increasing the admission rate of minority applicants to medical schools. Retention in medical school was not identified as a problem area.

90. U.S. Department of Health, Education, and Welfare, "An Exploratory Evaluation of U.S. Medical Schools' Efforts to Achieve Equal Representation of Minority Students," DHEW Publication No. (HRA) 78-635, 1977.
91. Association of American Medical Colleges, Report of the AAMC Task Force on Minority Student Opportunities in Medicine, Washington, D.C., 1978, p. 14.
92. U.S. Department of Health, Education, and Welfare, supra note 82, p. 24.
93. Calculated from figures in Ibid., supra note 90, p. 34.
94. See Odegaard, supra note 86, p. 31, based on AAMC data.
95. See, e.g., Sowell, T., Race and Economics (New York: David McKay Co., 1975).
96. See Odegaard, supra note 86, p. 43.
97. Ibid., p. 67; Reitzes, supra note 85.
98. Gayles, J. N., "Training at the Collegiate and Pre-Collegiate Interface: STRIKE as an Example," in Minorities in Science: The Challenge for Change in Biomedicine, edited by Vijaya L. Melnick and Franklin D. Hamilton (New York: Plenum Press, 1977), p. 243.
99. Wallace, W. D., "The Harvard Health-Careers Summer Programs," in Melnick and Hamilton, supra note 98, p. 232.
100. E.g., Odegaard, supra note 86, p. 126.
101. Wallace, supra note 99, p. 234.
102. U. S. Department of Health, Education, and Welfare, supra note 90, pp. 22-23.
103. In 1974: white matriculants averaged just over 22 years of age while blacks averaged almost 23.5; the female-to-male ratios were 1:4 for whites and 1:2 for blacks; and 30 percent of white but 47 percent of black matriculants came from colleges with fewer than 5,000 students. U.S. Department of Health, Education, and Welfare, supra note 83, pp. 17-18.
104. Ibid., supra note 90.
105. Ibid.
106. Association of American Medical Colleges, supra note 91, p. 18. As an illustration, recruitment programs--including such diverse approaches as counseling, clubs, and campus tours--were partially credited with raising minority enrollment at the University of Illinois medical school to 15 percent by 1973. James C. Plagge et. al., "Increasing the Number of Minority Enrollees and Graduates: A Medical Opportunities Program," Journal of Medical Education 49: 735-745 (1974).
107. See National Board on Graduate Education, Minority Group Participation in Graduate Education (Washington, D.C.: 1976), p. 94. This report states that, whether or not standardized tests are biased, "the effects stemming from their use constitutes a barrier to minority participation."
108. U. S. Department of Health, Education, and Welfare, supra note 90, p. 43; National Board on Graduate Education, supra, p. 100. But see Boyd C. Sleeth and Robert I. Mishell, "Black Under-representation in United States Medical Schools," New England Journal of Medicine 297: 1146-1148 (1977).



109. Sleeth and Mishell, supra note 108.
110. National Board on Graduate Education, supra note 107, p. 92.
111. Reitzes, D. C., and H. Elkhaniyaly, "Black Students in Medical Schools," Journal of Medical Education 51: 1001-1005 (1976).
112. In 1972, three-fourths of black and less than one-third of white high school seniors had family incomes below \$9,000 a year. National Board on Graduate Education, supra note 107, p. 79.
113. U. S. Department of Health, Education, and Welfare, supra note 90.
114. Ibid.
115. According to the National Board on Graduate Education, supra note 107 (1976), only one-third of Mexican American high school graduates graduates were entering college, compared to almost one-half of blacks and 57 percent of whites.
116. Reitzes and Elkhaniyaly, supra note 111.
117. Marshall, C. L., "Minority Students for Medicine and the Hazards of High School," Journal of Medical Education 48: 134-140 (1973).
118. Health Resources Administration, "Theme IV: Rationalizing the Existing Service Network," mimeographed, 1978, p. 8.
119. Ibid., p. 9.
120. On September 5, 1978, DHEW issued interim-final regulations for administering a \$15 million program for health professional schools' outreach and compensatory education services directed toward minorities. The program was authorized in the Health Professions Educational Assistance Act, P.L. 94-484, Secs. 787, 798 (1976). U. S. Department of Health, Education, and Welfare, HEW News release by the Health Resources Administration, September 5, 1978.
121. U. S. Department of Health, Education, and Welfare, supra note 82, pp. 24-26.
122. Association of American Medical Colleges, supra note 91, p. 21.
123. U. S. Department of Health, Education, and Welfare, supra note 90.
124. These indices are recognized by the AAMC and others. Odegaard, supra note 86, p. 103.
125. See Justice Douglas' dissenting opinion in De Funis v. Odegaard, 416 U. S. 312 (1976).
126. See National Board on Graduate Education, supra note 107, p. 77.
127. Watson, J. W., "Some General Proposals for Increasing the Production of Minority Professionals in the Basic Sciences," in Melnick and Hamilton, supra note 98, p. 96.
128. Association of American Medical Colleges, supra note 91, p. 40.
129. All racial or minority groups entering medical school in 1970-71 had at least a 91 percent retention rate. Davis G. Johnson, Vernon C. Smith, Jr., and Stephen L. Tarnoff, "Recruitment and Progress of Minority Medical School Entrants 1970-72," Journal of Medical Education 50: 713-755 (1975). These authors hopefully state in regard to their conclusion (p. 738): "[T]his should dispel the rumor of exceptionally high attrition among minority students." Despite this view, however, high retention of academically inferior minority students could reflect laxity in the academic standards applied to them.
130. U. S. Department of Health, Education, and Welfare, supra note 90.

131. Association of American Medical Colleges, supra note 88.  
 132. U. S. Department of Health, Education, and Welfare, supra note 90.  
 133. Ibid.  
 134. Odegaard, supra note 86, pp. 94, 136.  
 135. National Board on Graduate Education, p. 101.  
 136. Curtis, J. L., "Minority Student Success and Failure with the National Intern and Resident Matching Program," Journal of Medical Education 50: 563-570 (1975). He states (pp. 563-564):

[L]aws have not been vigorously enforced. Specifically, the Civil Rights Act of 1964, especially Title VI, Title VII (as amended in 1972), Executive Order 11246 (1965), and Regulations of the Department of Labor, Revised Order No. 4, require that any institution, including hospitals, receiving federal government contracts may not deny equal employment opportunity on account of race, ethnic, or other such background factors and must document their affirmative actions to recruit qualified professionals who were formerly excluded if they do not have such individuals currently on their staff.

137. Ibid., p. 570.  
 138. Association of American Medical Colleges, supra note 91, p. 46.  
 139. American Association of Colleges of Osteopathic Medicine, personal communication, December 7, 1978.  
 140. U. S. Department of Health, Education, and Welfare, Report to the President and Congress on the Status of Health Professions Personnel in the United States, DHEW Publication No. (HRA) 78-93 (1978), p. V-34.  
 141. Ibid., p. A-40.  
 142. Bakke v. Regents of the University of California, supra note 81 (hereafter referred to as "Bakke").  
 143. "...[N]or shall any State...deny to any person within its jurisdiction the equal protection of the laws." U.S. Const., 14th Amend.  
 144. 42 U.S.C. see 2000d.  
 145. Bakke, supra note 81, pp. 2813-2814.  
 146. Ibid., p. 2763.  
 147. Ibid., n. 132.  
 148. Ibid., p. 2766.  
 149. Ibid., p. 2763.  
 150. See, e.g., Board of Curators of the University of Missouri v. Horowitz, 435 U.S. 78, 89-92 (1978), in which the Supreme Court refused "to formalize the academic dismissal process" by requiring a hearing for a student dismissed from medical school. In addition, the Court warned against "judicial intrusion into academic decision making."

151. Bakke, supra note 81, p. 2763, n. 53.
152. See Washington Post, "Bakke Aftermath," p. 1. Col. 3 (December 7, 1978).
153. Bakke, supra note 81, p. 2763, n. 53.
154. Association of American Medical Colleges, supra note 91, pp. 2-3.
155. Ibid., pp. 5-10.
156. U. S. Department of Health, Education, and Welfare, supra note 82, p. 24.
157. Health Resources Administration, supra note 118, p. 10.
158. Ibid., pp. 5-8.
159. U. S. Department of Health, Education, and Welfare, supra note 82, p. 21. After adjournment of the 95th Congress, President Carter vetoed as inflationary a nurse training bill that included a rider providing aid to minority medical schools.
160. Health Resources Administration, supra note 118, p. 1. In fiscal 1978, Meharry, Howard, and Morehouse received a combined \$30.5 million in federal support, Id., p. 3.
161. Chronicle for Higher Education, "Post-Bakke Admission Plan Adopted at Davis," October 30, 1978.
162. Goodwin, J. C., "Rules of the Game: An Essay in Two Parts," in Melnick and Hamilton, supra note 98, p. 206.
163. Myers, W. A., "Problems of Minorities at Majority Institutions: A Student's Perspective," in Melnick and Hamilton, supra note 98, p. 66.
164. Martinez, J. V., "Spanish-Surnamed Americans in Science: Availability and Barriers," in Melnick and Hamilton, supra note 98, p. 11.
165. U. S. Department of Health, Education, and Welfare, "Report of the Physician Extender Work Group," Prepared for the Health Resources Policy Board, June 1977, pp. 6, 8.
166. Sidel, V. W., "Feldshers and Feldsherism," New England Journal of Medicine 278 (1968): 934-42.
167. P.L. 92-150, 1971.
168. P.L. 92-157, 1971.
169. P.L. 95-63, 1975.
170. P.L. 94-484, 1976.
171. P.L. 95-83, 1977.
172. P.L. 95-10, 1978.
173. Ruby, G., "Consumer Acceptance of Nurse Practitioners and Physician Assistants," Institute of Medicine resource paper (Washington, D.C.: National Academy of Sciences, January 1977).
174. Ruby, G., "Physician Acceptance of Nurse Practitioners and Physician Assistants," Institute of Medicine resource paper (Washington, D.C.: National Academy of Sciences, June 1977); Scheffler, R., "The Employment, Utilization and Earnings of Physician Extenders," Social Science and Medicine, Feb. 1977; Scheffler, R., "The Market for Para-professionals: The Physician Assistant," The Quarterly Review of Economics and Business, Vol. 14, No. 3, 1974; Scheffler, R., "Estimating the Private Rate of Return to the Physician's Assistant," Industrial Relations, Vol. 14, No. 1., Feb. 1975.

175. Lawrence, D., "The Impact of Physician Assistants and Nurse Practitioners on Health Care Access, Costs, and Quality: A Review of the Literature," Health and Medical Care Services Review, (1978): 1-12.
176. Institute of Medicine, A Manpower Policy for Primary Health Care, (Washington D.C.: National Academy of Sciences, 1976); R. M. Scheffler, The Supply and Demand for New Health Professionals: Physician Assistants and Medex. (Final Report, Department of Health, Education, and Welfare. Contract No. 1-44L84). Srpín Springfield, Virginia, National Technical Information Service, November 1977; R. M. Scheffler, "The Productivity of New Health Practitioners: The Physician Assistant and Medex" in Health Manpower, Vol. 1; R. M. Scheffler, Research in Health Economics: An Annual Compilation (Greenwich, Conn.) AI Press, April 1979.
177. Record, J., "Primary Care by Nonphysicians: What a Decade of Experience Offers to Policy Makers," Draft and Final Report to the Division of Medicine, Bureau of Health Manpower, Health Resources Administration, Department of Health, Education, and Welfare, under Contract No. 227-77-0077, 1978.
178. Mendenhall R. C. and P. A. Repicky, Collection and Processing of Baseline Data for the Physician Extender Reimbursement Study, Final Report to the Health Care Financing Administration, Department of Health, Education, and Welfare, under Contract No. HEW-05-100-75-0034, August 31, 1978.
179. Scheffler, R. M., The Supply and Demand for New Health Professionals; J. C. Record and J. E. Bannon, Cost Effectiveness of Physician Assistants, Final Report; HMIEA Contract No.1-MB-44173 (P) U.S. Department of Health, Education, and Welfare, 1976.
180. Weisfeld, N., "Licensure of Primary Care Practitioners," Institute of Medicine resource paper (Washington, D.C.: National Academy of Sciences, January 1977).
181. Bliss, A. A. and E. D. Cohen, "Issues Confronting the New Health Professional," Journal of Allied Health 7 (1978): 64-71.
182. Sec. 1861(s)(2)(A) of the Social Security Act, 42 U.S.C. Sec. 1395(s)(2)(A); 20 CFR 405-231(b).
183. P.L. 95-10.
184. U. S. Department of Health, Education, and Welfare, Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, "Projections of the Supply of Physicians to 1990," Report No. 79-1, October 16, 1978.
185. There is no consensus as to whether there is a free market for physician services or whether physicians create their own demand. Arguments for supplier-induced demand are presented by G. Evans, in "Supplier Induced Demand: Some Empirical Evidence and Implications," in The Economics of Health and Medical Care, ed. M. Perlman, (London: MacMillan, 1974), pp. 15-77.
186. U. S. Department of Health, Education, and Welfare, "Supply and Distribution of Physicians and Physician Extenders: A Background Paper Prepared for the Graduate Medical Education National Advisory Committee," March 1, 1977.
187. S. 2416, 1978.

188. Presidential Documents, Veto of Bill to Extend Certain Nurse Training Programs: Memorandum of Disapproval of S. 2416, November 10, 1978.
189. "To Develop Additional Non-Physician Practitioner Capacity in Medically Underserved Areas," A background paper prepared at the Office of the Assistant Secretary for Policy, Research and Statistics for a meeting on Critical Issues in Health Manpower Policy held at the Institute of Medicine, National Academy of Sciences, Washington, D.C., June 21, 1978. (mimeographed).
190. Goodman, L. J., and H. R. Mason, Physician Distribution and Medical Licensure in the U.S., 1975 (Chicago: American Medical Association, 1976); U.S. Department of Health, Education, and Welfare, Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, "Health Manpower Shortage Area Statistics," Report No. 79-4, October, 1978.
191. 43 Fed. Reg. 44758 (September 28, 1978).
192. Institute of Medicine, A Manpower Policy for Primary Health Care.
193. Sultz, H., M. Zielezny and L. Kinyon, "Highlights: Phase 2 of a Longitudinal Study of Nurse Practitioners," State University of New York at Buffalo, New York, 1977. (mimeographed).
194. Scheffler, R. M., The Supply and Demand for New Health Professionals: Physician Assistants and Medex.
195. Fisher, D. and W. Stanhope, "Physician Assistants Achieve Wide Acceptance in Health Care Field," Forum 2 (1978): 6-10.
196. Scheffler, R. M. and J. E. Kushman, "New Health Practitioners and Rural Health Care," American Journal of Agricultural Economics 60 (November, 1978): 691-694.
197. Sultz, Kielezny, and Kinyon, "Highlights: Phase 2 of a Longitudinal Study of Nurse Practitioners."
198. Scheffler, R. M. and G. Ruby, "Critical Issues in Health Manpower Policy," summary of a meeting held at the Institute of Medicine, National Academy of Sciences, Washington, D.C., June 21, 1978. (mimeographed).
199. U.S. Department of Health, Education, and Welfare, Health Resources Administration, National Center for Health Statistics, Health Interview Survey (Washington, D.C.: 1975).
200. Eighty percent of the elderly have one or more chronic conditions; see U. S. Department of Health, Education, and Welfare, Public Health Service, Health Resources Administration, Health - United States 1976-77. Washington, D.C.: U.S. Government Printing Office, DHEW Publication No. (HRA) 77-1232-1977.
201. United States Congress, Senate Special Committee on Aging: Medicine and Aging: An Assessment of Opportunities and Neglect, 94th Congress, 2d. Sess., 13 October 1976; A. N. Exton-Smith and J. G. Evans, ed. Care of the Elderly: Meeting the Challenge of Dependency (New York, Gene and Stratton: 1977).
202. Beeker, R. G., "Physician Assistants in Geriatric Long Term Care," Gerontologist 16 (August 1976): 218-21; F. B. McGlone and P. R. Schultz, "Problems in Geriatric Health Care Delivery," Journal of the American Geriatric Society 21 (December, 1973): 533-7.



203. Schultz, P. R. and F. B. McGlone, "Primary Health Care Provided to the Elderly by a Nurse Practitioner/Physician Team Analyses of Cost Effectiveness," Journal of the American Geriatric Society 25 (October 1977): 443-6.
204. Manners, S., "Patient Visits and the Incidence of Medical Problems in the Psychiatric Setting," Report to the Division of Medicine, Bureau of Health Manpower, Health Resources Administration, Department of Health, Education, and Welfare, Project number 1-MB-44170, August 1977.
205. Manners, S., "Patient Visits and the Incidence of Medicine Problems in the Psychiatric Setting."
206. Morelle, J., "A Cost Analysis of the Use of Physician Assistants Providing Primary Care in a Psychiatric Setting," Report to the Division of Medicine, Bureau of Health Manpower, Health Resources Administration, Department of Health, Education, and Welfare, September, 1977.
207. United States Department of Health, Education, and Welfare, National Institutes of Mental Health, Mental Health Statistical Note, No. 13, July 1976, (mimeographed); American Association of Chairman of Departments of Psychiatry, "The Crisis in Psychiatric Manpower: Toward a National Psychiatric Manpower Policy," American Psychiatric Society, January 1977.
208. P.L. 94-484, 1976; P.L. 95-83, 1977.
209. Personal communication on December 1978 with Mr. Lilley of the Division of Mental Health and Mental Retardation Services, North Carolina, Raleigh, North Carolina.
210. American Association of Chairmen of Departments of Psychiatry, "The Crisis in Psychiatric Manpower: Toward a National Psychiatric Manpower Policy."
211. Inst. of Medicine, A Manpower Policy for Primary Health Care, p. 34.
212. Mendenhall and Repicky, Collection and Processing of Baseline Data for the Physician Extender Reimbursement Study, Final Report to the Health Care Financing Administration, Department of Health Education and Welfare under Contract No. HEW-05-100-75-0034, August 31, 1978.
213. Levine, D. M., et. al., "The Role of New Health Practitioners in a Prepaid Group Practice: Provider Differences in Process and Outcome of Medical Care," Medical Care 15 (April 1976): 326-47.
214. The current proportion of physicians in primary care disciplines (44.8 percent in 1975) is projected to increase to only 50 percent by 1990 after adjusting for changes currently underway. U.S. Department of Health, Education, and Welfare, Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, "Projection of the Supply of Physicians to 1990."
215. P.L. 94-484, 1976.
216. The American College of Surgeons and the American Surgical Association, Surgery in the United States: A Summary Report of the Study on Surgical Services for the United States, 1975.

217. Miller, J. I., J. M. Carver, and C. R. Hatcher, Jr., "The Use of Physicians' Assistants in Thoracic and Cardiovascular Surgery in the Community Hospital," American Surgeon 44 (1978): 162-64; J. I. Miller and C. R. Hatcher, Jr., "Physicians' Assistants on a University Cardiothoracic Surgical Service: A Five-Year Update," The Journal of Thoracic and Cardiovascular Surgery 76 (November, 1978): 639-42; H. L. Laws, et. al., "Training and Use of Surgeons' Assistants," Surgery 83 (April 1978): 445-50.
218. Laws, et. al., "Training and Use of Surgeons' Assistants."
219. Ruby, G., and K. Dolan, "An Analysis of the Distribution of Foreign Medical Graduates in the United States," in Graduate Medical Education in the United States: A Series of Papers by the Staff of the Division of Health Manpower and Resources Development, Institute of Medicine, National Academy of Sciences, 1978. (mimeographed).
220. "Foreign Medical Graduates in New York City," Health Policy Proceedings, (United Hospital Fund: New York City, 1979).
221. Intermediary Letter #75-38, October, 1975.
222. Private communication from Mr. A.P. Walsh of the North Carolina division of the Prudential Insurance Company of America.