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ABSTRACT

This publication presents abstracts, statistics, and references drawn from health manpower literature. It is divided into seven sections: the first section provides statistics on (1) estimated employment in selected health occupations that are potentially entry-level, (2) hospital indicators, and (3) percent distribution of personal health care expenditure by type of care and payment source. Section 2 lists sources for health manpower statistics. The third section contains a staff article on regional variations of health care delivery and utilization in the United States. In section 4, five books are abstracted; for example, the first two are "The Hidden Malpractice--How American Medicine Treats Women as Patients and Professionals," by Gena Corea and "Doing Better and Feeling Worse, Health in the United States," edited by John H. Knowles. In the next section seventeen journal articles are abstracted. For example, the first two are "Hospital Unionism and Employment Stability," by Brian Becker and "A Controlled Trial of the Impact of the Family Practice Nurse on Volume, Quality and Cost of Rural Health Services," by Larry W. Chambers, et al. Section 6 lists recent health articles; the final section lists journals searched for health manpower literature. (Volume 1 of this publication is available as ED 143 825.) (CSS)

HEALTH MANPOWER LITERATURE

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EDITOR's NOTE

The Health Manpower Indicators presented in the last issue remain unchanged since no new data are available. The list of health articles in the current issue has been brought up to date from the most recent issues of the Journal of Economic Literature.

The article included in this issue, "Regional Variations of Health Care Delivery and Utilization in the United States", was originally presented at the Fifth Pacific Regional Science Conference, Vancouver, British Columbia, August 1977. It assesses the regional variations in health care demand as a first step in the analysis of regional demand for health manpower. The abstracts included are from 1977 and 1978 published materials. The abstracts are true representations of the views by the author(s); a strong effort was made not to introduce the editor's views or opinions.

This publication is intended for researchers in the health manpower field and we welcome comments and suggestions for adjusting further issues.

We are indebted to Dr. Howard Rosen, Director, Office of Research and Development, Employment and Training Administration, U.S. Department of Labor and Mr. William Throckmorton, of the same office, for their ideas, encouragement and support. We also wish to thank Mr. Alec Cheloff and Ms. Lois Mclennan for their contributions in making this journal possible.

CONTENTS

Health Manpower Indicators

1. ESTIMATED EMPLOYMENT IN SELECTED HEALTH OCCUPATIONS THAT ARE POTENTIALLY ENTRY-LEVEL

Selected Years: 1950-1974

	1950	1960	1965	1968	1971	1973	1974
Clinical Lab. Tech. & Assistant	na	na	45000	61000	67000	67000	70000
Dental Assistant	55200	na	91000	95000	114000	116000	118000
Dental Lab. Assistant	21000	na	25500	27000	31150	32000	32000
Dietetic Technician	na	na	na	6000	7000	23000	24700
Medical Library Clark	na	na	5000	6000	4100	4100	7300
Record Technician	8000	20000	25000	26000	43000	45000	47000
Nurse's Aide	205246	391800	500000	786000	875000	910000	936000
Home Health Aide	500	2300	6000	14000	25000	28000	34000
Occupational Therapy Aide	na	na	na	5500	6500	6500	6500
Optometric Assistant	na	na	na	na	5000	5000	5000
Optometric Technician	na	na	na	na	1000	1000	1000
Physical Therapy Assistant	na	na	na	8000	9000	8100	8100
Radiologic Technician	na	na	41000	100000	100000	100000	100000
Respiratory Therapist	na	na	na	8000	12000	12000	19000
Health Office Services	na	na	na	275000	300000	300000	300000
Social Work Aide	na	na	na	1500	4300	4300	4300
Ambulance Attendant	na	na	na	na	5600	207000	260000
Animal Technician	na	na	na	na	na	5000	5000
EKG Technician	na	na	na	7000	9500	9500	9500
EEG Technician	na	na	1200	3000	3500	4000	4000
Total Selected Occupations	*na*	*na*	*na*	*1429000*	*1622650*	*1887500*	*1991400*
Total Health Personnel	*na*	*na*	*na*	*3706350*	*4502250*	*4448250*	*4707650*

Source: *Health Resources Statistics*, various years.

2. HOSPITAL INDICATORS

Selected Years: 1950-1975

	1950	1960	1965	1968	1970	1971	1972	1973	1974	1975
s of Hospitals	6788	6876	7123	7137	7123	7097	7061	7123	7174	7156
# of Beds (000's)	1456	1658	1704	1663	1616	1556	1550	1535	1513	1466
s of Full-time Personnel (000's)	1058	1598	1952	2309	2537	2589	2671	2769	2919	3023
# of Full-time Personnel per 100 Patients	84	114	139	168	196	209	221	233	250	269
# of Physicians/Dentists	na	na	na	na	na	na	49236	50078	53367	54712
s of RN's	na	na	na	na	na	na	425728	446387	478577	510118
# of LPN's	na	na	na	na	na	na	215692	222599	233534	239949
# of Others	na	na	na	na	na	na	1980106	2049543	2153258	2217818
# of Total Trainees	na	na	na	na	na	na	95028	96170	96699	92350
Inpatient Admissions (000's)	18483	25027	28812	29766	31759	32664	33265	34352	35506	36157
Outpatient Visits (000's)	na	na	125793	156139	181370	199725	219182	233555	250481	254044
Average Daily Census (000's)	1253	1402	1403	1378	1298	1237	1209	1189	1167	1125
Payroll (000's)	$2191	$5588	$8551	$11997	$15706	$17635	$19530	$21330	$23821	$27135
Total Assets (000's)	$7791	$17714	$24502	$31019	536159	$38625	$43157	$47369	$51706	$57302
Hospital Expenses per Patient Day	$7.98	$16.46	$25.29	$37.78	$53.95	$63.82	$73.89	$83.67	$97.23	$118.69

Source: *Hospital Statistics*, 1972-1976.

3. PERCENT DISTRIBUTION OF PERSONAL HEALTH CARE EXPENDITURES BY TYPE OF CARE AND SOURCE OF PAYMENT

Selected Years: 1950-1976

	1950	1960	1965	1970	1971	1972	1973	1974	1975	1976
Type of Care - Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Hospital Care	35.5	37.4	39.3	43.0	43.0	43.7	43.8	44.9	45.6	46.0
Physicians' Services	25.9	24.5	25.1	22.4	22.3	22.1	21.8	21.6	21.7	21.9
Dentists' Services	9.0	8.6	8.1	7.4	7.3	7.2	7.4	7.5	7.4	7.1
Other Professional Services	3.7	3.7	3.0	2.3	2.2	2.2	2.2	2.1	2.1	2.0
Drugs & Drug Sundries	15.8	15.8	13.9	11.8	11.3	11.0	10.9	10.3	9.7	9.3
Eyeglasses & Appliances	4.6	3.3	3.4	3.0	2.7	2.5	2.4	1.9	1.7	1.6
Nursing Home Care	1.7	2.1	3.8	6.4	7.2	7.8	8.1	8.2	8.6	8.8
Other Health Services	3.8	4.6	3.4	3.7	4.0	3.5	3.4	3.5	3.2	3.3
Source of Payment - Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Private - Total	*79.8*	*78.3*	*79.2*	*65.8*	*65.4*	*63.9*	*63.6*	*62.7*	*60.3*	*59.3*
Direct Payments	68.3	55.3	52.5	40.4	9 1	37.6	36.8	36.1	33.6	32.5
Insurance Benefits	8.5	20 7	24.7	24.0	24.9	24.9	25.4	25.2	25.4	26.0
Other	3.0	2.3	2.0	1 5	1.4	1.4	1.4	1.3	1.3	1.3
Public - Total	*20.2*	*21.7*	*20.8*	*34.2*	*34.6*	*36.1*	*36.4*	*37.3*	*39.7*	*40.8*
Federal	9.4	9.2	8.5	22.3	22.9	24.2	24.5	25.2	27.3	28.0
State & Local	10.8	12.4	12.3	11.9	11.6	11.9	12.0	12.1	12.4	12.2
Total Personal Health Care Expenditures (Millions $)	$10400	$22729	$33498	$60113	$67228	$74828	$82490	$91315	$105745	$120431
Personal Health Care Expenditures as % of GNP	3.9%	4.6%	5.1%	6.3%	6.6%	6.7%	6.7%	6.7%	7.3%	7.5%
Selected Per Capita Expenditures										
Personal Health Care	$67.75	$124.50	$170.32	$289.76	$320.84	$353.66	$386.84	$425.15	$488.23	$551.50
Private Contribution	54.05	97.50	134.95	190.73	209.98	225.90	245.87	266.59	294.47	329.78
Public Contribution	13.69	27.00	35.38	99.03	110.86	127.76	140.98	158.56	193.76	221.72

Source: *Social Security Bulletin*, 2/76, p.12; 4/77, pp.15, 18.

BASIC SOURCES FOR HEALTH MANPOWER STATISTICS

American Hospital Association, *Hospital Statistics*, Chicago: annual.

American Medical Association, *Profile of Medical Practice*, Chicago: annual.

_____, *Distribution of Physicians in the U.S.*, Chicago: 1963, 1964, 1965, 1967, 1970, 1971, 1972.

_____, *Distribution of Physicians, Hospitals, and Hospital Beds in the U.S.*, Chicago: 1966, 1968, 1969, 1970.

Bureau of Census, *U.S. Census of Population*, Washington: GPO, 1950, 1960, 1970.

_____, *Statistical Abstract of the United States*, Washington: GPO, annual.

National Center for Health Statistics, *A Country and Metropolitan Area Data Book*, Washington: GPO, 1971.

_____, *Health Resources Statistics: Health Manpower and Health Facilities*, Washington: GPO, annual.

_____, *Health United States, 1975*, Washington: GPO, 1976.

National Institutes of Health, *Health Manpower in Hospitals*, Washington: GPO, 1974.

_____, *Health Manpower Source Book*, Section 2: Nursing Personnel, Washington GPO, revised 1969. Section 21: Allied Health Manpower 1950-80, Washington: GPO, 1970.

Staff
Article

Regional Variations of Health Care Delivery and Utilization in the United States

Between 1946 and 1976 the number of hospitals in the United States increased by 15.6 percent. The most rapid increase occured in the non-federal short-term general and other special hospitals, which in 1976, comprised 84 percent of the 7,082 registered hospitals. These hospitals accounted for 67.0 percent of the beds, 92.6 percent of the admissions, and 76.7 percent of hospital-affiliated outpatient visits. Furthermore, over this period, the number of personnel employed in these hospitals increased threefold; from 1968 to 1976 alone the number of workers employed in hospitals increased by 34.6 percent. [1]

The occupational composition, as well as employment levels and trends in the health care industry varies geographically. Differences in the utilization of hospital personnel among regions is a determinant of these variations. Unfortunately, employment-by-occupation data are not readily available. Because of limitations of regional trends data, we entertain the modest goal of assessing the geographical distribution of health care and health personnel utilization by a partial analysis, calibrated to available data rather than vice versa.

Theoretically, one could assume that the wealthier an area, the better the health care provided to the population. However, standard health indices do not substantiate this. In 1970 twelve countries had a lower infant mortality rate than the United States, and most European countries and Japan sustained higher life expectancies. Other factors may be the principal cause, but it is possible that it is a reflection of individual national distributions of health care resources. In the United States there are fewer physicians per capita than in West Germany, Israel and the Soviet Union, and fewer nurses and hospital beds per population than in Canada, United Kingdom, the Netherlands and the Soviet Union.

International comparisons, however, can be misleading because under *ceteris paribus* assumptions, other variables of the socio-economy are not considered. The "barefoot doctors" of the People's Republic of China seem unacceptable even in remote areas of the United States. The substitution of physicians by physician aides or registered nurses in routine tasks are at times reluctantly accepted at most hospitals, HMO's and outpatient clinics in the United States. An international comparison of health care delivery in quantity and quality must, therefore, consider a whole range of social and cultural factors as well as the national milieu.

Similar comparison problems are also apparent within nations at regional levels, especially in large continental countries as the United States. Public policies aimed at improving the efficiency and quality of health care must be based on the particular socio-economic framework of each area or locality.

In this paper, we attempt to: (a) explain the variations of health care among the 50 states and the District of Columbia, (b) compare two areas that are similar in per capita income, the Pacific and New England regions, and (c) compare hospital utilization in the two urban centers of San Francisco and Boston.

The following three hypotheses have been tested:

1. Regional demand for health care is influenced by cost, health service availability and socio-economic variables for each region.
2. The deviation from the mean, i.e., health care in each region as compared with the total United States, is not very significant.
3. The mix and size of hospitals by type are regionally differentiated, and this is reflected in the regional utilization pattern.

A. *State variation of health care demand*

Demand for non-emergency health care is an in-

verse function of the price per unit of care. Price elasticity of demand is influenced by substitution possibilities and complementarity. Demand for emergency health care, however, is inelastic with respect to price. In our analysis, the proxy for demand for health care is 1973 state inpatient hospital admissions per capita (ADM). The explanatory variables utilized are proxies for price, supply and socio-economic factors. Since at least 85 percent of all hospitals are short-term non-federal, the results are heavily biased for this type of hospital.

The only price variable is the hospital cost per day (HSPC). Available number of beds per capita (BED), number of physicians per capita (PHYS), total hospital assets (AST) and per capita (ASTP) are all variables of the supply type. A state's percentage of persons 65 and over (AGE), degree of urbanization (URB), level of education (EDC), the percentage of population covered by Medicaid including the elderly (MCPD) and excluding the elderly (MCD), and per capita income (YP) are socio-economic and demographic characteristics for each state's population admitted to hospitals.

As a first approximation in our model, each and every explanatory variable is significant. Later in this paper we recant to more modest assertions. The general formulation is:

(1) ADM = F (BED, AGE, PHYS, MCD, ASTP, MCDP, YP, HSPC, EDC, URB, AST)* where,

ADM = Admissions per capita

BED = Number of beds per capita

AGE = Percentage of population 65 and over

PHYS = Number of physicians per capita

MCD = Percentage of population eligible for Medicaid 65 and under

ASTP = Total hospital assets per capita

MCDP = Number of people covered by Medicaid per capita.

YP = Per capita income

HSPC = Hospital cost per day

EDC = Percentage of family heads with 4 years or more college

URB = Percentage of population urbanized

AST = Total hospital assets

We estimated the general model by the stepwise regression technique, accepting only those equations with $R^2 > .50$. Even though this has a debatable "statistical" validity, it permitted us to partially explain health care provision within the limitation of scarce consistent regional data. The results are presented in Table 1.

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*BED, PHYS, ASTP and AST are closely related. Thus there exists a possibility of serious multicollinearity; i.e., independent (explanatory) variables are not *independent* from each other. Thus, $\beta=(X'X)^{-1}X'Y$, where $(X'X)^{-1}$ the inverse may not exist. In this case, the obtained results might be *accidental* numbers.

Table 1

MATRIX OF REGRESSION RESULTS

Equation		RED	AGE	PHYS	MCD	ASTP	MCDP	YP	NSPC	EDC	URB	AST	R_2
1	β	5.17411		9.42416			-.02074	-.00003					.53939
	σ	2.10629		5.88331			.03071	.00001					
	t	2.45651		1.60185			-.67526	-4.48367					
2	β	7.52486					-.01378	-.00002					.51369
	σ	1.53586					.03090	.00001					
	t	4.89945					-.44590	-4.15254					
3	β	5.08252		8.86328				-.00003					.53482
	σ	2.08971		5.79037				.00001					
	t	2.43216		1.53052				-4.46101					
4	β	7.11586	.00209	27.84466	-.20473	-.00012		-.00001	-.00011	-.00319	.00029	0	.64882
	σ	2.72164	.03143	10.37580	.11972	.00009		.00001	.00027	.00179	.00028	0	
	t	1.91202	.06660	2.68362	-1.73184	-1.32615		-.94665	-.41015	-1.78105	.69829	-1.54763	
5	β	8.64404	.00096		-.15297			-.00002			.00026		.53647
	σ	1.81620	.03344		.10312			.00001			.00024		
	t	4.75942	.02879		-1.73204			-3.67633			1.04037		
6	β	5.49760	.00913	19.08530	-.28058			-.00003					.53712
	σ	1.99712	.03133	6.73963	.10636			.00001					
	t	2.77887	.29151	2.83180	-.26378			-4.02012					
7	β		.01220	31.33353	-.24304			-.00003			-.00025		.53752
	σ		.03355	6.56130	.11412			.00001			.00026		
	t		.36370	4.77551	-2.12973			-4.54041			-.96341		

Note: The coefficients and standard errors have been rounded off to five decimal places, while the t-statistics are calculated from eight significant places.

Two variables, BED and PHYS, seem to be the most important influence on the regional distribution of health care demand. The significance of these supply variables in determining utilization patterns is reminiscent of Say's law: "An increase of health care facilities (supply) will determine the increase in demand of health care." Indeed, in our case, the larger BED (number of beds per capita) and PHYS (number of physicians per capita), the more admissions per capita. The elimination of either variable [see eqs. (2) and (7)] does not change the results significantly, suggesting a high degree of collinearity between the two variables.

With regard to the other variables, a few observations are in order. There is a positive correlation between the number of people over 65 years of age as a share of total population (AGE) but this relationship is not significant at a 95 percent confidence level. We expected to find variations among the 50 states between the percentage of elderly and inpatient admissions, but it is possible that often the aged form only a small fraction of all admissions, thus having little impact on regional variation.

The relationship between the majority of people covered by Medicaid excluding the elderly (MCD) and including the elderly (MCDP) as a share of each state's population presents a stronger - even though negative - correlation but is hardly significant in

explaining hospital admissions. Based on the correlation matrix, we can tentatively conclude that since there is a strong correlation between the number of physicians per capita (PHYS) and the percentage of people covered by Medicaid (MCD) and only in one case is there a significant correlation between MCD and ADM, it would seem that those covered by Medicaid prefer outpatient or office-based visits rather than hospital stays.

Generally, hospital assets absolutely (AST) or per population (ASTP) relate negatively but not significantly with admissions per capita. A strange result and very difficult to explain, is the influence of regional per capita income (YP). The larger the income the lower the admissions. This is contrary to what one might expect according to economic theory - that wealthier people purchase "higher quality" services, e.g., tend to seek hospital care more often. The regional data of 1973 does not sustain this hypothesis. The same applies to the level of education (EDC) as an influence on number of admissions. Also in this case, we obtain a negative and non-significant relationship. Two variables that are not significantly correlated but fulfill the expected signs are hospital cost per bed (HSPC) and percentage of population urbanized (URB). As expected the higher the cost, the less the number of consumers and the higher the degree of urbanization, the larger the

number of admissions.

Based on these preliminary tests regional demand for inpatient health care (as approximated by hospital admissions per capita) is a function only of availability of services and not greatly influenced either by local cost of health care or particular socio-economic characteristics.

B. *Health Care Differences between the Pacific and New England Regions*

The cross-regional analysis for 1973 indicated only that the variation of hospital admissions among regions is a function of availability of beds and physicians. In order to improve specificity we limited further analysis to two regions (groups of states): the Pacific and New England. In 1971, the Pacific and New England had the same income per capita and hospitals per capita (approximately 10 percent above the United States average). However, New England has a density of population per acre six times larger than the Pacific and three times that of the United States.

Government intervention in the health care sector has served to prevent a tremendous imbalance between states and regions with regard to inpatient health care facilities. Without such government intervention, market forces would certainly favor the wealthier states even more. Even so, facilities that do not involve public funds are more readily

available in the wealthier states. Nancy Milio states:

> "There is a clear difference in the distribution of facilities that are not publicly funded. Skilled nursing establishments, for example, are more available in the more affluent states. Even so, the two affluent subregions of New England and the Pacific illustrate how imbalanced combinations of services can limit access to certain groups, such as elders. The fact that the Pacific has almost twice as many Medicare enrollees, more than twice as many skilled nursing facility beds, but fewer than half as many home health agencies means that persons eligible for home services must be limited to the types of services available. Some, who might otherwise live at home, will be more likely to remain inpatients in the Pacific than in New England. The ambulatory services provided by medical groups are less available to the people of the less affluent states, except for nonspecialty groups. General practitioners in groups or solo practice are more available in those states." [2, p. 68]

The degree of hospital financing by the public sector is markedly different even between such regions as the Pacific and New England. Both the Pacific and New England have about the same share of non-federal hospitals and beds per population, but New England has 15 percent more beds in its private non-profit hospitals while the Pacific has ten times more beds in private for-profit hospitals. This difference is reflected in the hospital care indices shown in Table 2. New England admits 60 percent more

Table 2

HOSPITAL CARE INDICES, NEW ENGLAND/PACIFIC, 1973

	Hospitals Per Pop.	Beds Per Pop.	Admissions Per Pop.	Occupancy Rate	Outpatients Per Pop.	Medical and Dental Trainees Per ADC	Other Trainees Per ADC	Total Expenses Per ADC and OPV	Payroll Expenses Per ADC and OPV	Total Assets Per ADC and OPV	Personnel Per ADC	Physician Per ADC and OPV	RNs Per ADC and OPV	LPNs Per ADC and OPV	Other Salaried Personnel Per ADC and OPV
I. Size of Hospital:															
Total Number	.99	1.46	1.01	1.12	1.00	.95	1.07	1.04	1.02	1.19	.97	1.33	1.00	.85	1.10
6-49	.50	.53	.46	1.08	.68	7.66	1.02	.85	.92	1.08	1.11	2.61	1.03	.76	.92
50-199	.93	.99	.78	1.14	1.05	2.30	1.38	.82	.92	.97	.95	1.65	.96	1.00	.96
200-499	1.50	1.48	1.22	1.11	1.09	1.07	1.15	1.10	1.10	1.20	.99	2.05	1.21	1.04	2.74
500 & Over	2.20	2.03	1.30	1.06	2.60	.50	.85	.94	.98	1.53	.80	.92	.98	.67	1.10
II. Relative Share NE/Pacific 1973 by Type of Hospital**															
Federal	.86	.63	.54	1.10	.45	.38	.17	.53	.55	.50	.51	.32	.65	.29	.52
Non-federal total	1.01	1.05	1.03	1.13	1.19	1.21	1.37	.94	1.07	1.04	1.06	1.58	1.04	1.06	1.07
Non-federal non-Profit	1.52	1.15	1.48	1.11	1.60	2.00	1.86	1.27	1.39	1.33	1.36	4.56	1.38	1.55	1.31
Non-federal for profit	.09	.08	.07	1.06	.05	0	0	.06	.08	.04	.07	.06	.07	.14	.07
State and Local	.21	.22	.31	1.17	.37	.32	.25	.26	.30	.21	.27	.17	.33	.31	.25

Source: American Hospital Association, *Hospital Statistics*, 1974 [1]

ADC = Average Daily Census

OPV = Outpatient Visits

*Includes dentists on hospital payrolls

**Part II of the table is calculated in the following way: for both New England and Pacific, the percent distribution by type of hospital is determined for each region separately. The result for New England is divided by Pacific to arrive at the relative share.

outpatients in private non-profit hospitals and the Pacific has 20 times as many outpatients in the private for profit hospitals. It appears that in the Pacific region (with the highest weight in the state of California), the private hospital has been developed as a business enterprise aiming at profit maximization. Specific historical developments in New England and the Pacific might explain this difference.

The type of hospitals influences the size of hospitals. There are twice as many hospitals with less than 50 beds in the Pacific than in New England; but New England has twice as many large hospitals (over 500 beds) than the Pacific. Yet, overall per capita admissions in both regions are equal while beds per capita and occupancy rates differ greatly. The inference is that New England utilizes its facilities more economically than does the Pacific region, but only a cost effectiveness analysis could verify this.

Since annual occupancy rates for hospitals on the average seldom reach 90 percent, one may conclude that there is no excess demand for health care facil-

ities in either region for any one-year period.* For all types of hospitals together, supply appears to exceed demand in the United States as a whole and in the two regions as well. On a national level, during the late 1960's and early 70's there was a 15.4 percent increase in admissions coupled with a lesser decline in available beds. These phenomena should have prevented the drastic fall of the occupancy rate; however, the occupancy rate declined from 82.6 percent in 1968 to 77.5 percent in 1973 largely because the length of stay in hospitals decreased.

C. *Regional Health Manpower Utilization*

The most recent data on a comprehensive breakdown of professional and technical personnel in hospitals are available for 1969, and only at the national level. Detailed regional health manpower data are limited to physicians, RNs and LPNs for 1972 and 1974 as reported in Table 3. By using 1969 national data as rough estimates to adjust the 1972 figures, it appears that professional and technical employees comprise approximately 73 percent of total hospital personnel, with the remaining being non-professional

*This assumption could be challenged because it is policy for most hospitals to leave a certain number of beds free for emergency situations. The only sure method we have of measuring demand is after the fact. This does not take into account queuing - the amount of time a patient has to wait before being admitted. Therefore, surplus demand might exist even if all the beds are not occupied. Also, occupancy rates represent an annual average, but for any short-eriod the occupancy rate might exceed 100%.

Table 3

UTILIZATION AND PERSONNEL - U.S., NEW ENGLAND AND THE PACIFIC REGION

1974

	Population	No. of Hospitals	Percent Distribution of Hospitals	No. of Short-Term Hospitals Non-Fed.	Total Number of Hospital Beds	Beds per thousand	Admissions per capita	Total Hospital Personnel	Number of Physicians	Physicians as % of Total Hospital Personnel	Number of RN's	RN's as % of Total Hospital Personnel
I United States	211,390,000	7,174	100.0	5,977	1,512,684	7.16	5.9	2,918,736	53,367	1.8	478,577	16.4
II New England	12,150,000	399	5.6	282	98,467	8.10	6.3	203,450	5,106	2.5	37,652	18.5
(a)Massachusetts	5,800,000	190	2.8	133	52,223	9.00	6.0	112,582	3,369	3.0	21,276	18.9
III Pacific	27,833,000	921	12.8	782	159,250	5.72	6.3	336,575	7,090	2.1	63,178	18.8
(b)California	20,907,000	650	9.0	558	123,951	5.93	6.5	262,901	5,806	2.2	47,894	18.2

1972

I United States	208,230,000	7,061	100.0	5,843	1,549,665	7.44	6.1	2,670,762	49,236	1.8	425,728	15.9
II New England	12,105,000	404	5.7	284	106,101	8.77	6.3	191,822	4,959	2.6	34,402	18.0
(a)Massachusetts	5,796,000	207	2.9	138	57,582	9.93	6.0	108,054	3,394	3.1	19,827	18.3
III Pacific	27,156,000	906	12.8	765	159,444	5.87	6.4	301,012	6,095	2.0	57,224	19.0
(b) California	20,411,000	685	9.0	543	121,674	5.96	6.1	232,551	4,797	2.0	43,242	18.6

*Includes dentists on hospital payrolls

Table 3 (cont.)

		No. of LPN's	LPN as % of Total Personnel	Percent Distribution of Hospital Personnel	Percent Distribution of Physicians	Percent Distribution of RN's	Percent Distribution of LPN's	Occupancy Rate
	1974							
I	United States	233,534	8.0	100.0	100.0	100.0	100.0	77.0
II	New England	14,305	7.0	7.0	9.6	7.6	7.9	79.8
	(a)Massachusetts	7,650	6.8	3.9	6.3	4.5	3.3	79.9
III	Pacific	29,839	8.9	11.5	13.3	13.2	12.8	70.2
	(b)California	23,194	8.8	9.0	11.0	10.0	9.9	70.4
	1972							
I	United States	125,692	8.1	100.0	100.0	100.0	100.0	78.0
II	New England	13,634	7.1	7.2	10.0	8.1	6.3	79.2
	(a)Massachusetts	7,655	7.0	4.1	6.9	4.7	3.6	77.5
III	Pacific	28,059	9.3	11.3	12.4	13.4	13.0	71.2
	(b)California	21,345	9.2	8.7	9.7	10.2	9.9	71.7

Source: American Hospital Association, *Hospital Statistics*, 1972 and 1975, [1];
U.S. Department of Commerce, *Statistical Abstract*, 1971 and 1975, [4].

and technical employees (maintenance, kitchen help, clerks, etc). Physicians (excluding interns and residents), RNs and LPNs comprise approximately 38 percent of this total. Their importance in relationship to hospital staffing is obvious.

In the early 1970's the utilization of physicians in both Pacific and New England regions was above the national average. From 1972 to 1974, physicians and dentists as a percentage of total hospital personnel remained relatively stable; however, in both years, New England continued to show a higher percentage of physicians and dentists than did the Pacific. Intuitively one would expect that agglomeration factors should explain this phenomenon. Registered nurses in hospitals as a percentage of total hospital personnel in the Pacific and New England are also above the national average. Between 1972 and 1974 the use of RNs in the U.S. and New England increased slightly and in the Pacific declined slightly, while the ut ization of LPNs in the U.S. and New England remained relatively stable but declined in the Pacific. These minor changes, over a short period of time, are difficult to assess. One possibility is that substitution was occurring among tions, although this cannot be verified with our limited data. In general, the number of personnel to total admissions has increased in both regions and

nationally as a whole, implying that hospital employment is increasing more rapidly than total hospital admissions. This may be partly explained by the fact that more technical functions are being performed on patients.

As mentioned above, demand for health care in a given area influences greatly the number of allied health workers hired. A breakdown of health care demand by inpatients and outpatients and by type of provider would show variations in demand for specific occupations. Hospitals, however, are the traditional health provider and they continue to employ eight out of every ten health workers in the majority of allied health professions.

Earlier in this study we indicated that there is a strong correlation between inpatient admissions per capita (the dependent variable) and the number of physicians and number of beds per capita (the independent variables). One can therefore infer that the number of health care workers and the degree of technology utilized in a given region will be a function of these two independent variables. More importantly, we could conclude that the composition of hospital employment of allied health workers is determined to a great degree by the physicians affiliated with a particular hospital. Leveson and Rodgers state that the goal of a physician is to maximize personnel and

technology in a hospital in order to maximize his profits; i.e., the greater the number of personnel and technology employed, the more patients the physician can admit and the more services he can provide them. Whether or not the physicians' expectations are realized will depend upon the power structure in a particular hospital. [3]

Studies at the Center for Medical Manpower Studies show that in the Boston-Cambridge area, between 1968 and 1973, the occupancy rate rose only 1.8 percent while employment rose by over 25 percent.[5] As stated above, one possible explanation is that there has been a substantial rise in the amount and type of medical services performed per patient. It seems that physicians in the region have influenced these increases in services. We could not quantify this factor in our regression analysis but believe that a large portion of the unexplained variations are attributable to this factor.

Technology and the size and composition of allied health personnel are interrelated. Increases in technology have changed the composition of employment in hospitals over the years. The rapid growth in technology has required that health workers be more highly trained and therefore better paid than in previous years. It seems that the desire by each hospital for more sophisticated technology is partial-

ly a function of prestige (not wholly quantifiable), and partially of the hospital's ability to attract better physicians, which in turn provides the hospital with more patients.

Our data show that both the New England and Pacific regions utilize a greater proportion of physicians relative to total hospital personnel than the United States average. From this one could infer that hospitals in both regions are more technologically sophisticated than other regions, with New England slightly more so than the Pacific. Another inference is that physicians are attracted to hospitals with large technological endowments and facilities.

Ideally, the type of labor utilized depends upon the wages of specific occupations relative to the wages of other occupations. Substitution possibilities among occupations depend upon the elasticity of demand for a specific occupation, the cost of training and comparable skills. For some occupations demand is totally inelastic (e.g., physicians, because of institutions, not functions) whereas for middle level occupations, substitution possibilities do exist (e.g., between RNs and LPNs). It appears that in the hospital industry, certification barriers (especially with respect to hiring requirements) and unnecessarily high education requirements are erected that hinder the effectiveness of supply and demand forces.

Furthermore, unionization is a new element to be considered. The effect of unionization on hospital staffing patterns cannot yet be realized because it was only in August 1974 that the exemption of non-profit hospitals was removed from coverage of the National Labor Relations Act. The regional impact of unionization on the utilization of health personnel may not be evident for some years, but preliminary information indicates that unionization causes more variation across regions in non-pecuniary benefits than in wage benefits.

In our limited sample, health personnel wage rates show large differentials between 1963 and 1975 for Boston and San Francisco as proxies for the Pacific and New England regions. By normalizing wages in constant 1963 prices we were able to assess changes in wages in money and real terms. (See Table 4). The percentage change in real wages over the ten year period differ between occupations and cities. On the average the rate of increase of real wages in the Boston area was less than in the San Francisco area. Besides social workers and technologists, money wages and real wages in San Francisco for single occupations were 15-30 percent higher at the end of 1975. No analysis has been attempted at this point to explain the differences.

Table 4

WEEKLY WAGES IN CURRENT AND CONSTANT 1963 DOLLARS, BOSTON AND SAN FRANCISCO-OAKLAND, 1963 and 1975
(Excluding Federal Hospitals)

	BOSTON					SAN FRANCISCO				
Occupation	1963	1975	1975 (1963=100)	% Wage Change Current $	% Wage Change in Constant $	1963	1975 $	1975 (1963=100)	% Wage Change Current $	% Wage Change in Constant $
Head Nurse	$ 101.00	$253.60	$ 143.44	151.1	42.0	$113.00	$320.40	$191.06	183.5	69.1
General Duty Nurse	86.00	222.40	125.79	158.6	46.3	95.50	280.80	167.44	194.0	75.3
Licensed Practical Nurse	66.50	177.20	100.23	166.5	50.7	76.00	210.00	125.22	176.3	64.8
Nursing Aide	54.57	141.20	79.86	158.8	46.3	75.87	196.40	117.11	158.9	54.4
Dietitian	99.00	239.60	135.52	142.0	36.9	109.50	285.20	170.07	160.5	55.3
Medical Social Worker	107.50	253.20	143.21	135.5	33.2	137.00	312.40	186.29	128.0	36.0
Medical Technologist	84.16	222.00	125.57	163.8	49.2	122.54	314.80	187.72	156.9	53.2
X-Ray Technician	78.79	194.00	109.73	146.2	39.3	94.16	260.80	155.52	177.0	65.2
Total Average	84.69	212.90	120.40	151.4	42.2	102.95	272.60	162.55	164.8	60.1

Notes: - 1963 figures were taken directly from Bureau of Labor Statistics, *Industry Wage Survey*, Hospitals Mid-1963, Bulletin No. 1409 (June 1964), pp. 46-47. [6]
- 1975 figures were calculated from the hospital survey of August 1975-January 1976, Bulletin 1949 (1977), pp. 7-12. by multiplying the average hourly wage by 40. [6]
- The deflators for Boston and San Francisco were calculated from the consumer price indexes for selected cities and SMSA's found in the the *Statistical Abstract of the United States*, 1968 and 1976. [4]
- In the 1975/6 survey, the occupational category "radiologic technologist" is used instead of "X-ray technician".

Conclusions

We readily concede that the San Francisco-Boston relationship may not be truly representative of the Pacific and New England. Our intention was solely to assess a trend of the most important medical centers in the representative regions. We also note that the Pacific and New England may not represent the rest of the United States in health care utilization. The comparison of these areas allows one to ascertain, in relatively homogeneous regions rather than in a mixed sample, some variations in indices that we failed to detect in the overall analysis of the 50 states. Further analysis of regional variations is necessary and this is currently being done.

At this time, we may tentatively conclude that: (a) regional demand for health care is influenced mainly by health services available (beds, physicians, allied health personnel) and less by cost of services and socio-economic differences;* (b) specific size and type of hospitals vary by region; the regional access choice of health care - short-term or long-term hospitalization, ambulatory, home care - is dictated by the regional structure of the health care

*Our findings are not in line with Davis and Russel [7], who found that inpatient admissions are cost elastic with respect to insurance coverage and the relative price of outpatient facilities. It should be noted, however, that we used different cost variables and no insurance variable, which explains the discrepency between the two studies.

industry; (c) the level of technology and of allied health employment in any single hospital is influenced by the hospital's desire for prestige and by the affiliated physicians' desire for more patients and higher income. No definite relationship could be established at this time between health personnel utilization, productivity and wage levels.

Notes

[1] American Hospital Association, *Hospitals and Statistics*, 1977, 1976, 1975, 1974, 1973.

[2] Nancy Milio, *The Care of Health in Communities*, Macmillan Publishing Co., Inc., New York, 1975.

[3] Irving Leveson and Elizabeth Rodgers, "Hospital Cost Inflation and Physician Payment" *American Journal of Economics and Sociology*, April 1976.

[4] U.S. Department of Commerce, *Statistical Abstract*, 1968, 1971, 1973, 1974, and 1975.

[5] Harold M. Goldstein and Morris A. Horowitz, *Entry-Level Health Occupations, Development and Future*, John Hopkins University Press, Baltimore 1977.

[6] Bureau of Labor Statistics, *Industry Wage Survey, Hospitals*, mid-1963, Bulletin No.1409(June 1964) and August 1975 - January 1976, Bulletin No. 1949 (1977).

[7] Karen Davis and Louise B. Russel, "The Substitution of Hospital Outpatient Care for Inpatient Care," *The Review of Economics and Statistics*, Vol. LIV, No.2, May 1972, pp. 109-120.

Books Abstracted

Corea, Gena, *The Hidden Malpractice - How American Medicine Treats Women as Patients and Professionals*, William Morrow and Company, Inc., New York, 1977, pp. 309.

The author believes there is a direct bias against women physicians and that medical schools feel a medical education is wasted on a woman since she will only marry and leave the profession. Ms. Corea refers to six studies which refute this notion. These studies conducted in 1881, 1900, 1938, 1942, 1950, and 1965 all found little variation in the number of years men and women physicians practice. The study, conducted in 1965 by the Association of American Medical Colleges, indicated that fewer than nine percent of women physicians graduates since 1931 are not employed. Although women physicians did take several years of leave, on average, for childbearing, overall length of medical practices were approximately equal because they retired later than their male counterparts.

The author states that many excellent internship services would not choose female physicians since this action would be considered a sign of the institutions failure to attract good male candidates. "Indeed, women applicants are primarily compared against each other rather than the entire pool".

In 1972 women represented only one percent of the

general surgeons in the United States, a specialty traditionally yielding high income. At the same time women represented twenty six percent of the nation's public health physicians, a modestly paid specialty.

The author traces the proliferation of the female dominated health occupations after the second World War. Allied health employees, like inhalation therapists and cardiopulmonary technicians, followed the representative model, the physicians, and established professional associations and licensure and accreditation standards in an attempt to raise their status above that of other health employees. Little, if any, attention was paid to the development of rational and meaningful career ladders. Job rigidity was the name of the game and with little exception, women, who made up over 90 percent of the health work force, were frozen into their jobs. "Ward girls changed water pitchers but were not trusted to empty bed pans. Nurse's aides took temperatures but not blood pressures. Licensed practical nurses changed dressings but did not dispense pills. Regardless of her ability, each would be taught more complicated duties only if there were a shortage of workers at the next level."

The author feels that health workers should be organized horizontally rather than vertically. A strong feeling exists that the work of the registered nurse and LPN is every bit as valuable as the work of the male dominated physician.

Knowles, John H., ed., *Doing Better and Feeling Worse, Health in the United States*, W.W. Norton and Company Inc., New York, 1977 pp. 287.

This study is a collection of essays by eighteen authors ranging in topics from "Medical Education in the United States" by Robert H. Ebert, and "Institutional Organization, Incentives and Change", by Ernest W. Saward, to "Health Services, Power Centers, and Decision-Making Mechanisms", by Eli Ginzberg.

Most of the authors generally agree that the present system of health care delivery in the United States is not acceptable. Some of the authors are very concerned with the inaccessiblity of services; unnecessary surgery, expensive prescription of drugs, unexplained hospital bills and the misuse of health personnel.

At the same time a balanced view is presented. Many of the very tangible medical accomplishments over the last several decades are noted. The essays are a detailed inquiry into many of the conditions that prevail in American health care today, touching institutions as various as hospitals, insurance companies, medical schools, research laboratories, health-care centers, and governmental agencies.

Many of the contributors referred to the extent health care problems of the country depend on numerous political decisions made in Washington and by

individual providers and consumers of health care. The general topic of the labor intensive nature of the industry is discussed and the fact that the views and opinions of both professionals and workers weigh very heavily on the delivery system.

From the health personnel viewpoint one of the authors makes the following suggestions and conclusions:

1. Cost constraints are not realistic if one assumes that improvement in quality, access and other services must be associated with increased costs.

2. Quality control of medical services by the federal government is not likely to be successful. Quality control can only be achieved by the providers themselves - the physicians.

3. We might have already reached a point where additional health personnel could provide limited beneficial productivity increases.

4. We must expect more discussion over the distribution of the health dollar in the United States, especially between such groups as organizations of health workers, professional associations, and associations of paraprofessionals.

Krause, Elliott A., *Power and Illness: The Political Sociology of Health and Medical Care*, Elsevier North Holland, Inc., New York. 1977 pp. 383.

This book, which concerns itself with the relationship between modern health and medical care and their involvement with political, economic and social power struggles, is organized into three parts.

Part I concerns itself with the people involved, including the relationship between health care personnel and the public they serve. This section also discusses unionism and its effect on past and future power struggles.

Part II points out the discrepancy between the ideology of American medical systems and the reality of care offered. Specific examples are used to illustrate the positive and negative aspects of the system. Finally, the economic implications of such issues as ways of obtaining and using money, and the malpractice crisis are discussed.

Part III focuses on the politics of the health care industry. One specific area addressed is how laws effect what action can be taken in controversial areas of medicine (such as abortion and cancer research). Emphasis is placed on the negative role politics play in the environment of Americans. According to Krause, problems such as poverty and occupa-

ional injury are often perpetuated by politics.

Finally, the future of the American health care system is discussed and some possible alternatives are explored such as national health insurance or an American national health service.

Of special interest are Krause's comments on controlling the supply and demand of medical personnel. He discusses how, until recently, the AMA had a strategy of "monopoly creation" which restricted the supply of qualified physicians causing the cost of medical care to rise. This often put medical care out of the range of many Americans. More recently though, since the 1960's, the AMA has relaxed its stringency and many new governmental programs were created to train auxiliary personnel thereby allieviating the problem somewhat.

Yet there are still restrictive forces at work, one being the newest trend toward increasing the number of years of training necessary to qualify for a variety of health professions. This creates a small elitist group who can financially afford long-term (often university level) education.

Another example of where restrictive, manipulative strategy has been used concerns the status of foreign medical school graduates. Through the use of state level licensing boards and federal lobbying practices,

the number of foreign graduates allowed to practice medicine in America is limited (often in situations where a shortage of American personnel already exists).

Due to self-interest activity on the part of those who wield power, the needs of the consumer often go ignored. This is especially true for the poor who do not stand to benefit from the existing type of personnel innovation, since the overall structure of the health care industry has yet to be changed in any significant way.

Somers, Anne R. and Herman, M., *Health and Health Care, Policies in Perspective*, Aspen Systems Corporation, Germantown, Maryland, 1977, pp. 528.

This book is organized on two different, yet overlapping levels: that of the chronological and that of the thematic. It is divided into four parts and 13 chapters, each of which include several essays by the authors. Many of these essays have previously been published. By using these essays the authors hope to create an historical balance between them and the articles written specifically for this volume. The authors, by including these "historical" selections, try to give the reader a sense of the evolutionary development of health care for the past 25 years.

Part I introduces those who play a major role in the private sector arena of health care. These include the physician, the hospital itself, the patient (viewed as the modern consumer), the roles they play, the problems involved and their interrelationships. Although much of the material in Part I dates before 1970, the implications remain valid for today's health care industry.

Part II concerns itself with the development of and the controversies surrounding health care programs in the 1950's and 1960's. The role of both private and the proposed national health insurance programs

are discussed.

Part III deals with the disappointments and frustrations that followed the marred hope that opening wide the door of access would alone solve the problems of health care and health. A discussion of regulatory activity and the potential of exploring new policies is also included.

Finally, Part IV proposes an outline for redesigning the United States health policies (and practices) taking into account the important changes that have taken place in our attitudes, perceptions and in our society as a whole. The authors state that due to sophistication on the part of the health care consumer, present policies become untimely and virtually useless.

The overriding theme of this book is stated in its preface, "Can we learn to enjoy the multitude of advantages from advancing technology without becoming passive captives of its powers and dictates?" A vital aspect of this theme is the question of who will control the health care technology of the future. The authors see two possible alternatives, one being that the health professions and the consumers themselves would control the industry through their elected representatives, the other being the technologists themselves. Those who have the greatest stake in controlling the industry, professions and consumers, have

through default in their democratic controls lost to the other.

Yet, technology itself cannot be dismissed, for some forms appropriately applied to the industry (such as computerized data systems) are useful. Other authors feel that it is proper handling of the new technology that is essential to the survival of the industry and to humanity itself.

Walsh, Mary Roth, *Doctors Wanted, No Women Need Apply, Sexual Barriers in the Medical Profession, 1835-1975,* Yale University Press, New Haven, 1977, pp. XXII, 303.

It is no revelation that women historically are found in low-paying, low-status positions in the work force. However, the generally low status of professional women in medicine is discouraging. A review of the American Health Care Delivery System National Statistics indicate that women are the major consumers of health care in the United States. It has been estimated that two-thirds of the patient visits and nearly 90 percent of the health work force in the nation, many of whom have high technical skills, are women. The author notes that despite these figures most women have never been able to break through the barriers that prevent them from practicing medicine.

The author quickly points out that during the late nineteenth century women physicians were far from being an anomaly. In 1900 in Boston, women physicians accounted for 18.2 percent of the city's physicians. During this period women medical students and practicing physicians were far more represented in the United States than in any country of Western Europe. By 1974 the situation changed considerably in that only eight percent of American physicians were women, a figure that places the United States at the lowest end of the scale in comparison with most Western Europe

countries.

The author questions the prediction that by the year 2000 women will account for up to 50 percent of the United States physicians. Despite the significant increase in the enrollment of women in medical schools over the last five years the author cautions from the 1900 experience that these gains might be illusory and short lived. Women have failed to gain any substantial degree of major institutional control and therefore can do little more than protest the "old boy" methods of professional patronage. Women tend to be directed into less desirable teaching and practising positions. The author suspects that the previous "golden age" of female physicians during the 1900 period and their eventual demise in number could very well be repeated, and offers explanations as to why women have not been given an equal opportunity in medicine in the United States.

Journal Articles Abstracted

Becker, Brian, "Hospital Unionism and Employment Stability," *Industrial Relations*, Vol. 17, No. 1, February 1978, pp. 96-101.

It has been argued that unions not only improve the economic position of workers in the low wage labor market, but also cause modifications in the internal labor market, which tend to reduce both voluntary and involuntary turnover. Unions tend to emphasize training, job posting and seniority; also, they are concerned with equity issues and try to strengthen grievance and dispute settlement procedures. Their impact on the level and distribution of organizational rewards increases employee satisfaction and leads to greater stability.

Empirical estimates of the magnitude of the union effect on turnover have been few, however, and this study investigates the relationship between unions and employee stability in hospitals, a low wage industry in which unions have recently gained a significant foothold.

The primary data source was a questionnaire mailed to short term general hospitals in Illinois, Wisconsin and Minnesota. Information on five service occupations was collected. The results showed that unionized service occupations experienced a turnover rate more than 12 percentage points lower than non-union service occupations.

Chambers, Larry W., Patricia Bruce-Lockhart, Douglas P. Black, Elizabeth Sampson and Margaret Burke, "A Controlled Trial of the Impact of the Family Practice Nurse on Volume, Quality and Cost of Rural Health Services," *Medical Care*, Vol. XV, No. 12, December 1977, pp. 971-981.

The article reports on the development and evaluation of a program for expanded role nurses (family practice nurses) in rural Newfoundland communities that are serviced by a 40-bed hospital. The volume, cost and quality of health care are analyzed and compared between the experimental communities and a control group where the family practice nurse was not employed.

Results show a 35 percent decrease in outpatient hospital visits by the experimental group and a 186 percent increase in primary care visits. There was a 12 percent decline in hospital admissions, compared to an 8 percent drop in the control group. Total hospital days decreased 5 percent compared to a 39 percent increase in the control group, while hospital outpatient lab tests increased 105 percent versus 57 percent. In terms of annual health care costs per thousand, the experimental group increased slightly more than the control group (26 versus 21 percent). An audit of indicator conditions and drugs showed that the family practice nurse maintained adequate quality-of-care levels.

In summary, the introduction of the family practice nurse in Newfoundland resulted in more primary care services, a shift in visits from the hospital to the community, and a greater emphasis on preventive care. Costs increased slightly in the short run, while the quality of care was unaffected.

Fox, Peter D., "Options for National Health Insurance: An Overview," *Policy Analysis*, Vol. 3, No. 1, Winter 1977, pp. 1-24.

As an HEW staff member who has participated in the formulation of NHI policy for the administration, the author discusses the justifications, options and alternative financing schemes for national health insurance.

In the first section three major justifications for NHI are examined, 1) It would provide coverage to the marginally poor, 2) eliminate inadequacies in current coverage, and 3) function as a vehicle for cost containment and health delivery reforms. A major portion of the article is devoted to a detailed discussion of four options: 1) do nothing or limit intervention to changes in the Medicaid program; 2) catastrophic coverage; 3) comprehensive coverage with cost sharing, and 4) without cost sharing.

The final section considers alternative mechanisms of financing which are currently employed by the

federal government. These include third-party payment programs which are supported through payroll taxes, general revenues and premiums; direct delivery programs such as those operated by the Veterans Administration and the Department of Defense; tax deductions; and HEW grants to providers of health care.

Hammond, Robert S., "Unified Approach Needed to Combat Persisting Manpower Problems" *Hospitals*, Vol. 51, No. 7, April 1, 1977, pp. 85-92.

The author examines several major areas covered in the 1976 literature on health manpower: physicians, physician's assistants and nurse practitioners, minority participation, licensure, and coordinated efforts aimed at improving the health manpower situation.

The article notes that the major topic in the literature has been on the need for more physicians and a more equitable distribution of the existing supply. Major areas of inquiry focused on whether the need for physicians will increase or level off; the effects of group practice on physician productivity; early retirement due to malpractice suits; and methods of solving the maldistribution problem.

Physician's assistants and nurse practitioners are discussed in terms of tasks and functions they

can perform, and the improvement in quality of care to patients. But the utilization of these new professionals in situations independent of physician supervision has become a major legal controversey. "...the question whether it is medically appropriate to delegate a particular function to the new health professionals has been transformed into the question of whether it is legal for them to perform that function."

Minority recruitment into the health field has concentrated on the increasing number of men entering the nursing profession, and the utilization of minorities in neighborhoods consisting of their groups. Pros and cons concerning licensure are discussed briefly, and the seven point recommendation of a U.S. Public Health Service report on credentialing is reviewed.

Finally, the author reviews two systems for health manpower planning which take a more unified approach to the prevailing need for health manpower: the Area Health Education Centers, which are being used in rural areas, and the local Health Systems Agencies which act as a clearinghouse for health services and health manpower data.

Joehnk, Michael D. and George R. McGrail, "Benefit-Cost Ratios For Family Practice Residency Centers," *Management Accounting*, Vol. 58, No. 8, February 1977, pp. 41-46.

The growing need for well-trained family physicians in the United States has led to proposals for establishing family practice residency (FPR) centers in local community hospitals. The objectives of these centers would be to help the residents acquire the proper knowledge and techniques which are unique to a family practice. The aim of this article is to develop a benefit-cost model which will provide hospital administrators with a straight forward method of evaluating the economic feasibility of establishing an FPR center.

A discussion of the theoretical benefit-cost framework is followed by rigorous definitions of both incurred costs and benefit yields from the implementation of an FPR center. The cost structure can be separated into start-up costs and recurring operating costs. Start-up costs include costs of the physicial facilities, equipment, and development expenditures. Recurring costs include personnel salaries, benefits, miscellaneous supplies and upkeep.

The most readily quantifiable benefit variables are government grants, state and local aid, philanthropic contributions, patient fees, and the

positive spillover effects the center will have on the supporting hospital. In addition, the authors discuss the estimation of certain indirect and intangible benefits which accrue to the community as a whole such as improvement in the quality of health and an increase in economic productivity.

Finally, the authors examine the need for hospital support funds which would underwrite any deficit which the center would incur. The program evaluator must be able to justify the necessary level of support funds by comparing them to approximate measures of indirect community benefits.

Marmor, Theodore R., "The Politics of National Health Insurance: Analysis and Prescription," *Policy Analysis*, Vol. 3, No. 1, Winter 1977, pp. 25-48.

The article is divided into two major sections. In the first section the author analyzes the controversy surrounding the many proposed remedies for the health care "crisis" in the United States. Using the major competing national health insurance proposals as examples, he argues that the three major objectives of any NHI program - cost control, improved accessability and quality controls - generally conflict with each other and lead to politically unfeasible programs. In

addition, he contends that adequate financing will not in itself, lead to better accessability or higher quality. These deficiencies are inherent in the system and will essentially be unaffected by the insurance scheme. On the other hand, most politically viable alternatives are also inflationary.

In the second section the author proposes his own plan, which would finance the medical care expenditures of preschoolers and mothers while insuring against financial ruin to the rest of the population. The "kiddie insurance" would be financed through general revenues with provider reimbursement done on a capitation basis. The catastrophic plan would be financed through a progressive tax credit plan, with deductibles and coinsurance imposed up to a maximum family expenditure ceiling. The author contends that this plan is politically feasible, placing no strain on the government budget, while encouraging preventive care and efficient practice, and protecting against financial disaster.

Mennenger, Stephen F., "Really Great Returns to Medical Education?", *Journal of Human Resources*, Vol. XIII, No. 1, Winter 1978, pp. 75-90.

Using published 1970 Census reports and user tapes profiling earnings by age group and occupation, both standard and work-period-adjusted net present

values (NPV) of earnings are computed for physicians and other professionals, including dentists, pharmacists, veterinarians, lawyers and Ph.D.'s. Using the standard NPV method at a 10 percent and 4 percent discount rate, medicine enjoys a substantial advantage over other professions. However, when adjustments are made for hours worked, medicine becomes an inferior investment to dentistry and only slightly superior to law, while remaining substantially superior to the other professions.

An analysis is made between the internal rate of return of cross-sectional and time series data, comparing medical versus dental education. It is found that cross-sectional data significantly understates the increase in physicians' earnings. Based on his computations, the author concludes that "barriers to the entry into the medical profession exist to the extent that superior earnings in 1969 were a fruit of restricted entry."

Perry, Henry B., "Physician Assistants: An Overview of an Emerging Health Profession," *Medical Care*, Vol. 15, No. 12, December 1977, pp. 982-990.

This study reports the results of a questionnaire survey of all graduates of physician assistant (PA)

programs. The survey was conducted by mail in 1974-75 and received a 73 percent response rate. Data were obtained on background characteristics, work environments and job characteristics.

The average number of years of post-high school education at the time of admission to a physician assistant training program increased from 2.2 among those who graduated in 1972 or before to 2.8 among 1974 graduates. Most PAs have previously worked in another occupation, though the proportion who had been military medical corpsmen has declined. General primary care fields employed 43.6 percent of the respondents and specialty primary care (internal medicine, pediatrics, OB-GYN, emergency medicine) employed 29.3 percent. Half of the PAs were employed in private practice and half in health care institutions. Respondents estimated that 80 percent of their time was spent providing patient care, most often with the supervising physician not present. Most reported a "very great" or "considerable" amount of patient care responsibility, although a majority said they would prefer even more responsibility.

The average annual income of respondents was $14,285, considerably in excess of the income of nurse practitioners and hospital staff registered nurses. The job market for PAs appears favorable; most respondents said they could easily locate another

job if they wished. On the other hand, career opportunities were considered to be rather limited and one-third of the respondents said they had thought about entering another field. Only 16 percent of the individuals responding to the survey were women, but data reported from other studies indicated that 30 percent of the 1975 and 1976 graduates of PA programs were women.

Roemer, Milton I., "Primary Care and Physician Extenders in Affluent Countries," *International Journal of Health Services*, Vol. 7, No. 4, 1977, pp. 545-555.

Roemer argues that the United States falls short of its democratic ideals in assigning physician assistants and nurse practitioners to care for the poor. Though it is hard to find precise figures, he presents data which suggest that most physician extenders providing primary care do so in settings which serve "the poor, such as black residents or urban ghettos, Indians on rural reservations, or low-income chronic patients in public hospital clinics." Studies showing high patient satisfaction with physician extenders should be read with the socioeconomic setting in mind: when the alternative is "the rushed attention of young residents" in "public charity clinics," it is not

surprising that patients prefer the sympathetic attention of nurse practitioners. Roemer thinks it is inappropriate for allied medical personnel to be given primary care diagnostic responsibility. This should always be the duty of the physician as in other industrialized countries.

Studies of the health manpower policies of Australia, Canada, Belgium and Norway show a much higher percentage of physicians engaged in general practice. Definite steps have been taken to increase the supply of general practitioners and, although allied health personnel are also being trained, their training focuses on specialized tasks such as midwifery or anesthesiology. They are not permitted to exercise the discretionary judgment involved in primary care, as their American counterparts are. Roemer feels that in the United States, where greater per capita expenditures are made for medical care than in any other nation, the use of lesser trained personnel for primary care reflects an abdication of social responsibility by physicians. Society's unwillingness to impose social obligations on the physician is an unfortunate acknowledgment of its failure to achieve equity in the health services.

Rushing, William A. and David L. Miles, "Physicians, Physicians' Assistants, and the Social Characteristics of Patients in Southern Appalachia," *Medical Care*, Vol. 15, No. 12, Winter 1977, pp. 1004-103.

Programs for training were developed with the idea that physicians' assistants would help alleviate inequities in access to care. It was thought that the new practitioners would locate predominantly in areas with low physician populations. So far, research on location patterns suggest that the distribution of physicians' assistants (PAs) follows the distribution of physicians, thus doing little to correct shortages. In view of the limited training of PAs, a more salient issue is whether the care they provide is extensive enough to redress inequities, even if they do work in underserved areas. It is also possible in rural communities PAs will be used to provide care for the poor, while physicians will attend to the relatively advantaged patients, thus perpetuating a kind of inequity.

This possibility was investigated in this study. The findings show that the higher the patient's socioeconomic status, the more likely he was to be treated by a physician, rather than by a PA. The study focused on the practices of five physicians, each with a PA, located in a poor county in Appalachia. Patient encounter data were collected over three two-week

periods. The positive relationship between socioeconomic status and the likelihood of seeing a doctor was present even when controlling for such variables as age, type of treatment, newness of program and type of payment. The actual decision-making process through which patients were sent to one practitioner or the other was not investigated. The authors therefore refrain from drawing any general conclusions about why this pattern of delivery exists.

Schneider, Donald P. and William J. Foley, "A Systems Analysis of the Impact of Physician Extenders on Medical Cost and Manpower Requirements," *Medical Care*, Vol. XV, No. 4, April 1977, pp. 277-297.

The impact of physician extenders (PE) in the health sector has been assessed from different angles by researchers. In this study, the authors use a mathematical manpower model to assess the impact of PE's on medical cost and manpower requirements. The PE is defined as an individual "with training and responsibilities for complementing and supplementing the functions of physicians in the delivery of health services."

The model attempts to handle delegation analysis, tradeoff between delegation and supervision, the

health care team, patient classification and cost structure of group practice. The model is based on a supply and demand equilibrium hypothesis where personnel requirements must fulfill health services demanded. The objective is to minimize costs of clinic operations and the number of physicians in the clinic, and to maximize delivery of health care with a fixed resource base.

The results show that: 1) if PEs were extensively used, costs will decline by 40 percent and use of physicians by 4 percent; 2) manpower restraints have cost implications for small clinics and for the manpower mix in a particular area; 3) cost effectiveness is not impaired when PE's salaries are less than 52 percent of physicians salaries but when this is surpassed, it is more desirable to use physicians rather than PE's.

Scoville, Charles K., "Human Resource Development: Emerging Asset for Hospital Management," *Hospitals and Health Services Administration*, Vol. 22, No. 1, Winter 1977, pp. 22-36.

Interest in the development of human resources at work is not new, but there has been a recent resurgence of interest in the field. Business has begun

to look at human resource development (HRD) activities in a new light. Formerly regarded merely as expenses, they are now being viewed as investments which have considerable impact on the economic performance of an organization. Hospitals in particular, are beginning to realize that they cannot afford to underutilize "their greatest resource - the people who work for them."

Scoville offers this explanation of the function of HRD programs: "The identification, examination, and modification of those factors in an individual's environment or experience which influence an ability or desire to interact productively with the employing organization." He suggests six activities as possible components of an HRD program within a health care institution: patient education, employee training and development, organization development, job development and human resource accounting.

Siebert, W. S., "Occupational Licensing: The Merrison Report on the Regulation of the Medical Profession," *British Journal of Industrial Relations*, Vol. XV, No. 1, 1977, pp. 29-38.

In 1975 the Merrison Committee published its report on the regulation of the medical profession in

Great Britain, making the following recommendations:

(a) improved training of junior staff and specialists

(b) limiting foreign trained physicians

(c) tighter demarcation of specialists' areas of care.

While acknowledging the public benefits gained through stricter entry standards, the author emphasizes the economic benefits which such a policy will have on the medical profession itself. He suggests two approaches to the problem: the public safety perspective versus the income maximizing theory of a monopoly supplier of labor. While both theories would support a rise in entry standards, the public safety theory diverges on several important points: a) it would require all physicians - not just new entrants - to satisfy the higher standards; b) it would not require a greater return than other professional training; c) an increase in the supply of doctors is allowed as long as they all meet the new requirements; and d) nepotism would be ruled out as a criterion for selecting physicians.

After examining each of these issues in turn, the author lists three major elements which point to a protectionist attitude in the new medical regulations: a) only new entrants need satisfy the higher entry requirements; b) the majority of foreign trained

entrants are excluded and c) there is a tendency for a large percentage of new entrants to be members' relatives.

Stevenson, Gelvin. "Profits in Medicine: A Context and An Accounting," *International Journal of Health Services*, Vol. 8, No. 1, 1978, pp. 41-54.

Stevenson presents an overview of the changing role of the profit sector in the U.S. health care industry. In 1975 about 39 cents of every health dollar went to a profit making enterprise. The profit sector is growing absolutely and relative to the health industry as a whole. Since the introduction of Medicaid and Medicare, the profit sector has significantly increased its rate of growth advantage over non-profit enterprises.

The profit sector will never completely encompass the health care system, for there will always be non-profit financing, education, research and service delivery components. However, if the profit sector continues to grow relative to the non-profit sector, its priorities "will dominate more and more the nature, form and activities of the overall health industry. This will in all likelihood increase the distortion of basic human needs in the health system." The increasing size of the profit sector will enable

it to exert greater influence over legislation at both the federal and state levels. In addition, the actions of regulatory agencies will favor large companies by allowing them to produce large quantities of products standardized by government regulation and, in doing so, enjoy economies of scale. Stevenson believes that government regulation will lead to increasing concentration and will invite rapid monopolization.

Tompkins, Richard K., Robert W. Wood, Barry W. Wolcott, and B. Timothy Walsh, "The Effectiveness and Cost of Acute Respiratory Illness Medical Care Provided by Physicians and Algorithm-assisted Physicians' Assistants," *Medical Care*, Vol. XV, NO. 12, December 1977, pp. 991-1003.

The authors describe and analyze the medical care given at two clinics to patients with acute respiratory illness. Patient care was provided by either physicians or physicians' assistants, who used clinical algorithms to assist them in the diagnosis and treatment of respiratory disorders. Ten to fourteen days after the encounter, data were collected on demographic characteristics, laboratory and x-ray results, medication prescribed, patient satisfaction and cost structure.

Eight tables are employed to compare diagnosis, treatment and cost data between physicians and physicians' assistants. Despite differences in the demographic composition of the two testing sites, the illness outcomes were remarkably similar. In all cases, diagnostic tests and medications were responsible for the largest share of total direct costs to the patient. Nonetheless, the total provider time cost was 20-32 percent higher, on the average, for physicians than for physicians' assistants.

The authors conclude that medical care provided by physicians' assistants is just as effective and less costly than physician encounters. They offer additional suggestions for cost reduction by eliminating diagnostic tests and physician consultations, and outline the necessary components of an effective clinical algorithm.

Wechsler, H., Ph.D., J.L. Dorsey and J.D. Bovey, "A Follow-up Study of Residents in Internal Medicine, Pediatrics and Obstetrics-Gynecology Training Programs in Massachusetts," *New England Journal of Medicine*, Vol. 298, No. 1, January 5, 1978, pp. 15-21.

A questionnaire survey of physicians who had been residents in internal medicine, pediatrics or obste-

trics-gynecology in Massachusetts from 1967-1972 showed that 86 percent completed training in the specialty they originally entered and the majority considered it their primary specialty. However, 55 percent of the former residents in internal medicine listed a subspecialty, as did 29 percent of the pediatrics group and 17 percent of the obstetrics-gynecology group. Only four percent of all respondents limited their practice to primary care. Physicians who devoted more than half their time to primary care accounted for 68 percent of the pediatrics group, 47 percent of the obstetrics-gynecology group and 42 percent of the internal medicine group.

Massachusetts has met the demands of the Health Professions Educational Assistance Act of 1976 (PL94-484) which stipulated that 35 percent of first-year residencies should be in the primary care specialties by July 15, 1977 and 50 percent by 1979. Massachusetts has already met the 50 percent goal; however, the results of this study show that for each respondent in a primary care residency, the number of primary care practitioners actually produced was 0.42 full time equivalents for pediatrics, 0.40 for obstetrics-gynecology and 0.26 for internal medicine.

White, William.D., "The Impact of Occupational Licensure of Clinical Laboratory Personnel," *Journal of Human Resources*, Vol. 13, No. 1, Winter 1978, pp. 91-102.

Clinical laboratory personnel are one of the main groups of licensed semi-professional employees in the health industry. More than 100,000 persons are employed in laboratories nationwide. Not all states have licensure laws for these workers, but licensure bills are currently pending in many states. These bills have been the subject of considerable public debate, for it is not certain whether the benefits of licensure, if any, will outweigh the costs. Research findings so far indicate that licensure is not effective in regulating the quality of laboratory work, but further research is needed to verify this.

White develops a model to test the economic impact of two types of licensure. Type 1 licensure, required by law in four states and in New York City, places constraints on entry into the laboratory aide, technician and technologist categories but does not require a college degree. Type 2 licensure, required in California and Hawaii, does not recognize the technician category; technologists must have a college degree and formal training and without this background cannot rise above the level of aide. The model used in this study revealed that Type 2

licensure increased the relative wages of technologists by more than 16 percent in San Francisco and Los Angeles. This type of licensure also increased the proportion of technologists in laboratories. Assuming that quality did not improve, it is estimated that licensure increased the wage bill in California laboratories by $4.8 million in 1972. The other, less stringent, type of licensure did not appear to have a significant impact on wages or employment.

List of Recent Health Articles

Anderson, O.W. "Are National Health Services Systems Converging? Predictions for the United States." *Annals of the American Academy for Political and Social Science*, November 1977, 434, pp. 24-38.

Besnard, J.L. "Eléments d'une histoire quantitative du système hospitalier public." (Elements for a Quantitative History of the Public Hospital Services. With English Summary.) *Revue Scientific Finance*, January-March 1977, 69(1), pp. 39-115.

Blackstone, E.A. "The A.M.A. and the Osteopaths: A Study of the Power of Organized Medicine." *Antitrust Bulletin*, Summer 1977, 22(2), pp. 405-40.

Blair, R.D. and Vogel, R.J. "The Cost of Administering Medicare." *Quarterly Review of Economics and Business*, Summer 1977, 17(2), pp. 67-77.

Brown, M.C. "Does Canada Have Too Many Doctors? A Comment." *Canadian Public Policy*, 1977, 3(3), pp. 365-69.

Coleman, J.S.; Wu, S.C. and Feld, D.L. "Constitutional Power in Experimental Health Service and Delivery Systems." *Public Choice*, Spring 1977, 29, pp. 1-18.

Daberkow, S.G. and King, G.A. "Response Time and the Location of Emergency Medical Facilities in Rural Areas: A Case Study." *American Journal of Agricultural Economics*, August 1977, 59(3), pp. 467-77.

Dear, M. "Locational Factors in the Demand for Mental Health Care." *Economic Geography*, July 1977, , pp. 223-40

Durrant, G. "Gere l'hôpital. (Management in the Hospital. With English summary.)" *Annals Scientific Economics Applied*, 1977/78 eic, 33(3), pp. 109-31.

Evans, R.G. "Does Canada Have Too Many Doctors? A Reply." *Canadian Public Policy*, 1977, 3(3), pp. 369-72.

Faure, H., Sandier, S. and Tonnellier, F. "Projections de la production et de la consommation des soins médicaux VII plan (1975-1980). (Forecasts of the Production and the Consumption of Medical Care, VIIth Plan (1975-1980). With English summary.)" *Consommation*, January-March 1977, 14(1), pp. 5-39.

Feldstein, M.S. "Quality Change and the Demand for Hospital Care." *Econometrica*, October 1977, 45(7), pp. 1681-1702.

Feldstein, M. "Social Insurance." *Public Policy*, Winter 1977, 25(1), pp. 81-115.

Feldstein, M. and Friedman, B. "Tax Subsidies, the Rational Demand for Insurance and the Health Care Crisis." *Journal of Public Economics*, April 1977, 7(2), pp. 155-78.

Fottler, M.D. "The Union Impact on Hospital Wages." *Industrial Labor Relations Review*, April 1977, 30(3), pp. 342-55.

Fox, P.D. "Options For National Health Insurance: An Overview." *Policy Analysis*, Winter 1977, Vol. 3, No.1, pp. 1-24.

Franklin, P.A. "Impact of Disability on the Family Structure." *Social Security Bulletin*, May 1977, 40(5), pp. 3-18.

Fraundorf, K.C. "Competition and Public Policy in the Nursing Home Industry." *Journal of Economic Issues*, September 1977, 11(3), pp. 601-34.

Fujita, S. "On the Grants to National Health Insurance." (In Japanese. With English summary.) *Osaka Economics Paper*, March 1977, 26(3-4), pp. 106-17.

Gibson, R.M. and Mueller, M.S. "National Health Expenditures, Fiscal Year, 1976." *Social Security Bulletin*, April 1977, 40(4), pp. 3-22.

Gornick, M. "Medicare Patients: Geographic Differences in Hospital Discharge Rates and Multiple Stays." *Social Security Bulletin*, June 1977, 40(6), pp. 22-41.

Grossman, M. "Survey of Recent Research in Health Economics." *American Economics*, Spring 1977, 21(1), pp. 14-20.

Hall, C.P., Jr.; Henemier, S.M. and Raphaelson, A.H. "Some Issues in Limiting Hospital Cost Reimbursement: A Maryland Experience." *Journal of Risk Insurance*, June 1977, 44(2), pp. 267-87.

Huang, L. "Controlling Inflation of Medicare Physicians' Fees." *Policy Analysis*, Summer 1977, 3(3), pp. 325-39.

Jacoby, J.; Chestnut, R.W. and Silberman, W. "Consumer Use and Comprehension of Nutrition Information." *Journal of Consumer Research*, September 1977, 4(2), pp. 119-28.

Joehnk, M.D. and McGrail, G.R. "Benefit-Cost Ratios For Family Practice Residency Centers." *Management Accounting*, February 1977, Vol. 58, No.8, pp. 41-46.

Johnson, W.G. "The Effect of Disability on Labor Supply: Comment." *Industrial Labor Relations Review*, April 1977, 30(3), pp. 380-81.

Johnston, B.F. "Food, Health, and Population in Development." *Journal of Economic Literature*, September 1977, 15(3), pp. 879-907.

Johnston, B.F. and Meyer, A.J. "Nutrition, Health, and Population in Strategies for Rural Development." *Economic Development and Cultural Change*, October 1977, 26(1), pp. 1-23.

Keeler, E.B.; Morrow, D.T. and Newhouse, J.P. "The Demand for Supplementary Health Insurance, or Do Deductibles Matter?" *Journal of Political Economics*, August 1977, 85(4), pp. 789-801.

Keeler, E.B.; Newhouse, J.P. and Phelps, C.E. "Deductibles and the Demand for Medical Care Services: The Theory of a Consumer Facing a Variable Price Schedule under Uncertainty." *Econometrica*, [illegible]1 1977, 45(3), pp. 641-55.

Kushman, J.E. "The Index of Medical Underservice as a Predictor of Ability to Obtain Physicians' Services." *American Journal of Agriculture and Economics*, February 1977, Vol. 59, No. 1, pp. 192-97.

Magee, R.P. "An Evaluation of Prospective-Payment Plans for Hospitals." *Journal of Business*, October 1977, 50(4), pp. 448-61.

Marmor, T.R. "The Politics of National Health Insurance: Analysis and Prescription." *Policy Analysis*, Winter 1977, Vol. 3, No. 1, pp. 25-48.

Maynard, A. and Walker, A. "Too Many Doctors?" *Lloyds Bank Review*, July 1977, (125), pp. 24-36.

Mead L.M. "Health Policy: The Need for Governance." *Annals of the American Academy of Political and Social Science*, November 1977, 434, pp. 39-57.

Midgett, D.K. "On Rationalizing Underdevelopment: Review Article." *Social Economic Studies*, March 1977, 26(1), pp. 104-12.

Mizrahi, A. and Mizrahi, A. "Influence des facteurs socio-économiques sur l'hospitalisation." (The Single and Cumulated Effects of Socio-Economic Factors on Hospitalization. With English summary.) *Consommation*, April-June 1977, 24(2), pp. 5-58.

Mueller, M.S. "Private Health Insurance in 1975: Coverage, Enrollment, and Financial Experience." *Social Security Bulletin*, June 1977, 40(6), pp. 3-21.

Newhouse, J.P. "Medical-Care Expenditure: A Cross-National Survey." *Journal of Human Research*, Winter 1977, 12(1), pp. 115-25.

Newman, P. "Malaria and Mortality." *Journal of American Statistical Association*, June 1977, 72(358) pp. 257-63.

Novotny, A. "Private Industry Health Insurance Plans: Employment Requirements for Coverage in 1974." *Social Security Bulletin*, March 1977, 40(3), pp. 28-33.

Price, D.N. "Private Industry Health Insurance Plans: Type of Administration and Insurer in 1974." *Social Security Bulletin*, March 1977, 40(3), pp. 13-27, 42.

Register, L.C. "How Will Exempt Hospitals Remain Exempt?" *Managerial Accounting*, November 1977, 59(5), pp. 34-38.

Rice, D.P. "Le rôle des statistiques dans l'évolution de la politique de la santé." (The Role of Statistics in the Development of Health Care Policy. With English Summary.) *Consommation*, April-June 1977, 24(2), pp. 59-72.

Sapolsky, H.M. "America's Socialized Medicine: The Allocation of Resources within the Veterans' Health Care System." *Public Policy*, Summer 1977, 25(3), pp. 359-82.

Sapolsky, H.M. "A Solution to the 'Health Crisis'" *Policy Analysis*, Winter 1977, Vol. 3, No. 1, pp. 115-21.

Scheffler, R.M. and Kushman, J.E. "A Production Function for Dental Services: Estimation and Economic Implications." *Southern Economics Journal*, July 1977, 44(1), pp. 25-35.

Scheffler, R.M. and Iden, G. "The Effect of Dasability on Labor Supply: Reply." *Industrial Labor Relations Review*, April 1977, 30(3), pp. 382.

Scitovsky, A.A. and McCall, N. "Coinsurance and the Demand for Physician Services: Four Years Later." *Social Security Bulletin*, May 1977, 40(5), pp. 19-27.

Scotton, R.B. "Medibank 1976." *Australian Economic Review*, 1st Quarter 1977, pp. 23-35.

Sekita, Y. and Ohta, T. "An Analysis of Hospital Computerization in Japan (I): The Characteristics of Hospitals and the Scale of Computer Utilization." (In Japanese. With English summary.) *Osaka Economic Papers*, September 1976, 26(1-2), pp. 68-86.

Sekita, Y. and Ohta, T. "An Analysis of Hospital Computerization in Japan (II): Pattern of Computer Utilization and Some Effects on Medical Facilities." (In Japanese. With English summary.) *Osaka Economic Papers*, March 1977, 26(3-4), pp. 352-64.

Shalit, S.S. "A Doctor-Hospital Cartel Theory." *Journal of Business*, January 1977, Vol. 50, No. 1, pp. 1-20.

Sharp, N. and Milani, K. "Hospital Budgeting." *Management Accounting*, March 1977, Vol. 58, No. 9, pp. 49-52.

Siebert, W.S. "Occupational Liscensing: The Merrison Report on the Regulation of the Medical Profession." *British Journal of Industrial Relations*, March 1977, Vol. 15, No. 1, pp. 29-38.

Sieling, M. "Private Hospitals Nearing Wage Levels in State, Local Government Hospitals." *Monthly Labor Review*, May 1977, 100(5), pp. 46-47.

Sloan, F.A. and Lorant, J.H. "The Role of Waiting Time: Evidence from Physicians' Practices." *Journal of Business*, October 1977, 50(4), pp.486-507

Suver, J.D. and Newmann, B.R. "Patient Mix and Breakeven Analysis." *Management Accounting*, January 1977, Vol. 58, No. 7, pp. 38-40.

Vahovich, S.G. "Physicians' Supply Decisions by Speciality: 2SLS Model." *Industrial Relations*, Rebruary 1977, Vol. 16, No. 1, pp. 51-60.

Venkateswarlu, T.A. "A Bibliographic Survey of Health Economics Reading Materials in American and Canadian Universities." *American Economics*, Spring 1977, 21(1), pp. 76-85.

Vogel, R.J. "The Effects of Taxation on the Differential Efficiency of Nonprofit Health Insurance." *Economic Inquiry*, October 1977, 15(4), pp. 605-09.

Wasserman, U. "WHO: Pharmaceuticals and the Third World." *Journal of World Trade Law*, September-October 1977, 11(5), pp. 475-79.

Winter, J.M. "The Impact of the First World War on Civilian Health in Britain." *Economic History Review, 2nd Series*, August 1977, 30(3), pp. 487-507.

Worthington, P.N. "Prospective Reimbursement Rates for Hospitals - by Unit of Services versus Type of Case." *Quarterly Review of Economics and Business*, Autumn 1977, 17(3), pp. 65-72.

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Journals Searched for Health Manpower Literature

American Economic Review

American Economist

American Journal of Economics and Sociology

American Journal of Public Health

American Academy of Political and Social Science Annale

Annales De Sciences Economiques Applique

Atlantic Economic Journal

Applied Economics

Australian Economic Review

Bell Journal of Economics and Management Science

British Journal of Industrial Relations

Brookings Papers on Economic Activity

California Management Review

Canadian Journal of Economics

Eastern Economic Journal

Economic Geography

The Economic Journal

Economica

Econometrica

Economics of Planning

Giornale Degli Economiste e Annali Di Economia

Growth and Change

Health Care Management Review
Health Services Research
Hospital and Health Services Administration
Hospital Management Studies Abstracts
Hospitals
Industrial Relations
Industrial and Labor Relations Review
Inquiry
International Economic Review
International Labor Review
International Journal of Health Services
International Social Science Journal
Journal of the American Hospital Association
Journal of the American Medical Association
Journal of Business
The Journal of Economic Education
Journal of Economic Issues
Journal of Economic Literature
Journal of Economics and Business
Journal of Law and Economics
Journal of Human Resources
Journal of Medical Education
Journal of Political Economy
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Mississippi Valley Journal of Business and Economics

Medical Care

Medical Care Review

Medical Economics

Monthly Labor Review

New England Journal of Medicine

Occupational Outlook Quarterly

Oxford Economics Papers

Population Review

Public Choice

Public Interest

Public Policy

Quarterly Journal of Economics

Quarterly Review of Economics and Business

Radical Review of Political Economy

Review of Radical Political Economics

Revue d'Economic Politique

Rivistd Internazionale di Scienze Economiche e Commerali

Science and Society

Social Research

Social Science and Medicine

Social Security Bulletin

Social Policy, Journal of

Southern Economic Journal

Swedish Journal of Economics
Urban Studies
Weltwirtshaftliches Archiv
Western Economic Journal
Yale Law Journal