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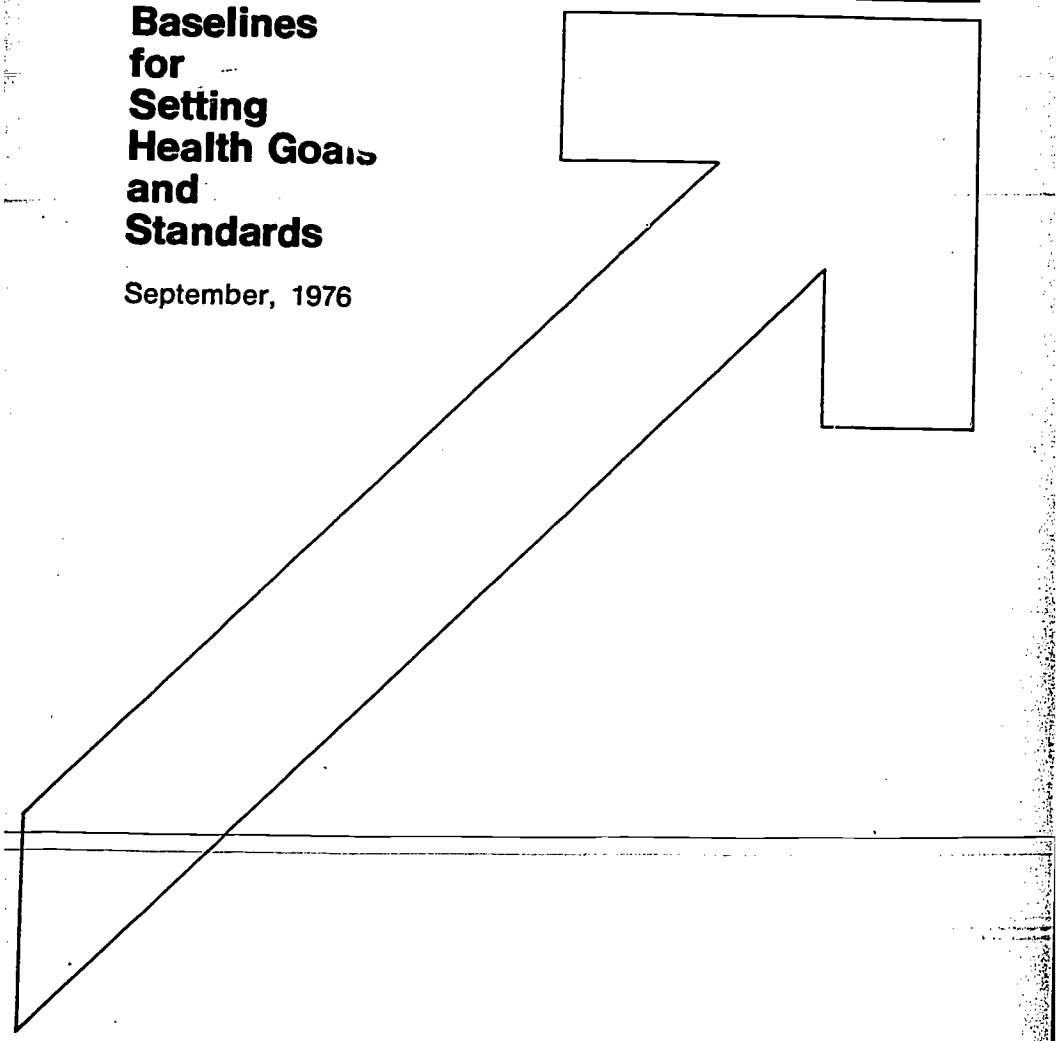
ABSTRACT

This is the first of several publications which bring together staff papers and resource materials relating to the National Guidelines for Health Planning called for by the National Health Planning and Resources Development Act of 1974. In preparing for the guidelines, the Public Health Service commissioned a number of analytical papers and studies--this monograph is a selection of those materials. It sets forth the historical and legislative background for goal setting and presents baseline information on health status, utilization, and expenditures in general and specific terms. The monograph is addressed to community leaders and professionals engaged in the development of health goals and standards for their own areas and states and to other providers and consumers of health services who are concerned with health issues. (MM)

PAPERS
ON THE
NATIONAL HEALTH
GUIDELINES:

Baselines for Setting Health Goals and Standards

September, 1976



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
DHEW Publication No. (HRA) 76-640

This is the first of several publications which will bring together staff papers and resource material relating to the National Guidelines for Health Planning, called for by Section 1501 of the National Health Planning and Resources Development Act of 1974 (Public Law 93–641).

Foreword

In the near future, the Secretary of Health, Education, and Welfare will place in the *Federal Register* an initial statement of national health guidelines, as required by Section 1501 of the National Health Planning and Resources Development Act.

This will be the first statement of health goals which Congress has required. Some other countries have issued such statements and so have some State and local planning agencies and a variety of public and semi-public commissions. The health goals of the United States, however, have been created incrementally over a period of many years in numerous, not always coordinated, Federal laws and regulations.

The new guidelines, if done well, can be broadly helpful. They can assist and enrich health planning and decision-making among local, State and National agencies and groups; they can help clarify and create the future.

In preparing for the guidelines, the Public Health Service has commissioned a number of analytical papers and studies. This monograph is the first of several to make selections of this material more widely available. It sets forth the historical and legislative background for goal-setting and presents baseline information on health status, resources, utilization and expenditures, in many cases in terms of individual Health Service Areas.

The monograph is addressed to those community leaders and professionals who are at the present time developing health goals and standards for their own areas and States and also to other providers and consumers who are concerned with health issues.

Public participation is an essential element in goal-setting; it is my hope that this publication will encourage readers to help us develop the guidelines in the coming months and revise them as appropriate in the future. We need this help if we are to learn how best to meet this challenge.

Theodore Cooper, M.D.
Assistant Secretary for Health

Public Law 93-641
93rd Congress, S. 2994
January 4, 1975

An Act

To amend the Public Health Service Act to assure the development of a national health policy and of effective State and area health planning and resources development programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE; TABLE OF CONTENTS

SECTION 1. This Act may be cited as the "National Health Planning and Resources Development Act of 1974". National Health Planning and Resources Development Act of 1974. 42 USC 300k

REVISION OF HEALTH PLANNING PROGRAMS UNDER THE PUBLIC HEALTH SERVICE ACT

SEC. 3. The Public Health Service Act is amended by adding at the end the following new title: 42 USC 201 note.

"TITLE XV—NATIONAL HEALTH PLANNING AND DEVELOPMENT

"PART A—NATIONAL GUIDELINES FOR HEALTH PLANNING

"NATIONAL GUIDELINES FOR HEALTH PLANNING

"SEC. 1501. (a) The Secretary shall, within eighteen months after the date of the enactment of this title, by regulation issue guidelines concerning national health planning policy and shall, as he deems appropriate, by regulation revise such guidelines. Regulations under this subsection shall be promulgated in accordance with section 553 of title 5, United States Code. 42 USC 300k-1.

"(b) The Secretary shall include in the guidelines issued under subsection (a) the following:

"(1) Standards respecting the appropriate supply, distribution, and organization of health resources.

"(2) A statement of national health planning goals developed after consideration of the priorities, set forth in section 1502, which goals, to the maximum extent practicable, shall be expressed in quantitative terms.

"(c) In issuing guidelines under subsection (a) the Secretary shall consult with and solicit recommendations and comments from the health systems agencies designated under part B, the State health planning and development agencies designated under part C, the Statewide Health Coordinating Councils established under part C, associations and specialty societies representing medical and other health care providers, and the National Council on Health Planning and Development established by section 1503. Post, p. 2229. Post, p. 2242.

"NATIONAL HEALTH PRIORITIES

"SEC. 1502. The Congress finds that the following deserve priority consideration in the formulation of national health planning goals and in the development and operation of Federal, State, and area health planning and resources development programs: 42 USC 300k-2.

"(1) The provision of primary care services for medically underserved populations, especially those which are located in rural or economically depressed areas.

"(2) The development of multi-institutional systems for coordination or consolidation of institutional health services (including obstetric, pediatric, emergency medical, intensive and coronary care, and radiation therapy services).

"(3) The development of medical group practices (especially those whose services are appropriately coordinated or integrated with institutional health services), health maintenance organizations, and other organized systems for the provision of health care.

"(4) The training and increased utilization of physician assistants, especially nurse clinicians.

"(5) The development of multi-institutional arrangements for the sharing of support services necessary to all health service institutions.

"(6) The promotion of activities to achieve needed improvements in the quality of health services, including needs identified by the review activities of Professional Standards Review Organizations under part B of title XI of the Social Security Act. 42 USC 1320c.

"(7) The development by health service institutions of the capacity to provide various levels of care (including intensive care, acute general care, and extended care) on a geographically integrated basis.

"(8) The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health care services.

"(9) The adoption of uniform cost accounting, simplified reimbursement, and utilization reporting systems and improved management procedures for health service institutions.

"(10) The development of effective methods of educating the general public concerning proper personal (including preventive) health care and methods for effective use of available health services.

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Chapter I

Developing the National Guidelines

The National Health Planning and Resources Act of 1974 (Public Law 93–641) sets "equal access to quality health care at a reasonable cost" as a national priority. The first provision of this law calls for the issuance of national guidelines for health planning which will set forth national health planning goals and standards respecting the appropriate supply, distribution, and organization of health resources.

In August, 1975, the Assistant Secretary for Health created a task force to begin developing these guidelines, made up of representatives of the six Public Health Service agencies, with liaison with other Department offices. Staff was placed in the Office of Planning, Evaluation, and Legislation of the Health Resources Administration.

This paper describes how the task force has gone about its work and outlines some of the questions and issues which have been dealt with. Other chapters in this volume describe the legislative background of the guidelines, previous attempts at goal-setting, and the informational framework on which the guidelines must be based. Future volumes will consider the ten priorities listed in Section 1502 of the Act and some of the major policy and planning issues of health care and health resources. These papers, it is hoped, will contribute to broader understanding of these matters and the progressive development of national health guidance.

The Guidelines and the Act

The focus of the National Health Planning and Resources Development Act is on local communities and the States. These are to undertake major new programs of health planning involving everyone in the health system —providers and consumers, public and private agencies, and representatives of every economic, geographic, ethnic and racial group. Together they are to develop plans to target what local needs and priorities should receive the most attention, what services and facilities should be created, expanded, or phased out and where Federal health program funds should go.

The Act creates a network of agencies to do this. Local Health Systems Agencies are established to develop Health Systems Plans and related Annual Implementation Plans, and State Health Planning and Development

* Adapted from "Development of National Health Guidelines—Provisions, Problems, Potential, Procedures and Prospects," by Daniel I. Zwick, Associate Administrator, Health Resources Administration. 1975.

Agencies and State Health Coordinating Councils to develop State Health Plans and related Medical Facilities Plans. The Federal Government is to provide technical assistance and developmental funds and issue national guidelines to help tie the whole effort together.

The guidelines come under Section 1501 of the Act. They are to include statements of planning goals and resource standards; goals are to be expressed in quantitative terms, to the maximum extent practicable. They are to encompass the ten national health priorities identified in Section 1502. They are to be issued by the Secretary of Health, Education, and Welfare after he has consulted with State and local health planning agencies, medical and other health care groups and a new National Council on Health Planning and Development.

The development of goals and standards is to be a long-term process, The initial issuances will be modified and extended after experience and feedback. The law calls for the Secretary to revise them periodically "as he deems appropriate." Thus, the selection of goals is to be gradual, with an experimental approach.

The Act and its legislative history make it clear what the guidelines are intended to do. Local health systems agencies are to give them "appropriate consideration" in developing their plans and the Secretary is to refer to them in developing technical assistance. The Federal establishment is to use them to coordinate its health programs and to bring them closer to the States and to local systems. They are to be used in program development as well as in planning.

Of course, not all will agree with and support the achievement of any statement of goals and standards. This is inevitable and desirable, in a pluralistic society. Rather, such guidelines will be valuable if they focus attention and interest on certain critical issues and influence individuals and institutions throughout the country as well as in the National government to consider how best to deal with them in light of their own circumstances and views. Thereby, the guidelines can help enrich health deliberations, decisions, and developments in many ways.

Approaches and Assumptions

In undertaking its work, the task force has developed or accepted a number of operating approaches and assumptions. It may be useful to state these briefly.

Definitions. 1. "Guidelines" are statements which, under Section 1501, include and relate goals and standards. They may include other features, such as sub-goals. They are to serve as an articulation of health policy direction. (This definition of "guidelines" is not the usual one. The special usage in this instance arises from the particular language of Section 1501.)

2. "Goal" is a statement of a desired future state or result toward which effort is directed. It indicates a level of aspiration. It is to be quantified whenever feasible. The House Committee Report on the Act emphasized "desired systems achievements"; others have spoken of "health status improvements" and "consumer perspectives." A goal may be expressed at a

minimum acceptable level ("floor goal") or as a range expressing minimum, intermediate and maximum levels. Such ranges may help accommodate differing conditions in various parts of the country.

3. "Standard" is a measure of the resources needed to achieve a goal. The resource may be personnel, facilities, services, or programs. It may be set (1) at a minimum level necessary for progress toward the goal, (2) at an average level reflecting customary practice, or (3) at a desired level associated with excellence or expeditious movement toward the goal.

Criteria for Goal Selection. Six are being utilized in the initial work. (1) A goal statement must be relevant to the statutory mission, i.e., it must lead in some way to improved access, better quality care or cost containment. (2) It should address an important health issue. (3) It should be consistent with other health policy statements in Federal law or regulation. (4) It should be susceptible to achievement through program action. (5) It should be potentially useful to Health Systems Agencies and others. (6) It should exhibit a readiness for adoption as a national statement. The emphasis of goal statements is on "what" is to be achieved, not "how" it is to be done.

Section 1502 Priorities. The priorities listed in Section 1502 must be considered in developing the guidelines. They are mixtures of potential goals (or sub-goals), possible standards and desirable actions. They do not limit the scope or organization of the guidelines, but are to be taken into account.

Goal Dimensions. Six of these have been chosen as a beginning step in developing the guidelines, inasmuch as they appear to cover the full range of health and health care issues to be found in the law and its legislative history. They may, of course, be modified as the effort progresses.

1. *Health status,* covering such questions as infant mortality, life expectancy, mortality, morbidity and restricted activity.

2. *Health promotion and protection,* which are concerned with health maintenance, prevention, and environmental and related issues.

3. *Health care services,* covering ambulatory, specialty, and long-term care as well as quality assurance and systems development. They include, as appropriate, dental health services, mental health, alcoholism, drug abuse, etc.

4. *Health data systems,* covering data collection systems, data analysis, and data utilization.

5. *Health innovation,* dealing with research and development and new procedures and products entering the health care system.

6. *Health financing,* encompassing health care costs and patterns of expenditures.

Background Studies and Consultation

From the outset, as the law requires, the Department has sought the public's help in developing the guidelines. On June 12, 1975, it published a formal request for comment in the *Federal Register* and later, Assistant Secretary Cooper wrote some 80 professional and public interest organizations

for additional views. Altogether, about 100 statements have been received and analyzed; selected excerpts will be published in one of the later volumes in this series.

The Task Force has commissioned and reviewed a number of special studies from public and private agencies and individuals. A number of these are now being prepared for publication. Those ready as of June 30, 1976, are listed in the Appendix to this paper.

Meetings and discussions have been held with numerous groups and associations as well as individuals concerning the nature and purpose of the national health guidelines. These exchanges have identified much interest, uncertainty and suspicion and many pertinent ideas. Such consultation will continue.

Issues in Setting Goals

Those who become engaged in developing statements of health goals and standards will soon become conscious of the difficulties and dangers in attempting to set national guidelines for health. The health care system may be too big, too diffuse, too complex to lend itself to any one set of goals and standards.

The system is certainly big, already utilizing over eight percent of the gross national product. It is diffuse, with its myriad private and public institutions changing constantly in response to economic pressures, new scientific knowledge, government intervention and changing fashion. And it is complex, an industry which accommodates diverse arrangements ranging from small, one-man practices to the largest academic and research centers.

There is no common agreement as to the purposes and role of health care. A highly structured system is rooted in the personal relationship which exists between the consumer who seeks care and the practitioner who supplies it. The consumer is motivated by his own goals and perceived needs, the practitioner by his formidable framework of knowledge and the accumulated experience and traditions of his calling.

It may be futile to attempt any ordering of priorities in such a system; some would argue it is unwise even to try, mischievous at best and dangerous at worst. Pluralism and apparent disorder foster creativity and vitality; if these are suppressed, we may lose more than we gain. "If health policies are fragmentary, tentative and halting," one advisor has written, "so are economic policies, labor policies and welfare policies. Those who would function in a democratic society must learn to live with inconsistency and compromise *(1)*."

There are other perils.

—Goals and standards can entrench a particular arrangement of services and resources and make further change difficult. Institutions and their leaders commonly argue for existing approaches and arrangements; once these are enshrined in published goals and standards, they can become more rigid.

—There are often inadequate data for setting standards. Some profes-

sional groups will argue, in the name of quality, that uncertainty should be resolved in favor of "more" rather than "less"; some consumers will agree in the name of accessibility.

—Goals and standards can be too simplistic. There are tremendous variations in interests and practices throughout the country. Planners must recognize and provide for such differences.

—Goals can focus on the wrong issues. One temptation is to treat issues where data are available and avoid those which may be more important but where the data are missing.

—Goals can be too broad. The tendency is to strive for a balanced consensus, but the most easily attainable consensus is usually achieved at the least controversial and most ambiguously stated points of agreement.

—Or, goals can be too narrow. They may focus on programmatic, short-range ends. These will have a higher probability of success and a lower probability of requiring major changes or shifts in resource allocations.

—Goal setting can become a diversion from needed action. One consumer group reported, "Thinking about goals is a luxury. Many people don't have minimum care, so all our energies go to meeting emergency needs every day."

Unquestionably, goals have the power to create tension and conflict. "The difficulty with national goals," it was noted some time ago, "is that they too quickly become standards by which to judge not the future but the present. They institutionalize the creation of discontent. The setting of future goals, no matter how distant, drains legitimacy from present conditions. Once it is established and agreed upon that the future will be very different from the present, it is absurd to be content with the present." *(2)*

Admittedly, there are problems. There are also offsetting benefits.

—Goals and standards make it possible to measure progress and achieve accountability. Congress clearly intends this to be one of the principal functions of the Public Law 93–641 guidelines. It is difficult, if not impossible, to determine performance if ends are undefined or unstated.

—Congress also expects the guidelines to bring about better relationships and coordination among Federal health programs and State and local efforts. The House Committee Report accompanying the Act emphasized this in noting that local agencies have complained that in the past there has been no coherently stated Federal policy.

—Seeking to find the most appropriate use and distribution of resources may stimulate a more careful examination of old and new practices. Resource standards can contribute to quality as well as cost-efficiency.

—The process of goal-setting is a useful exercise in itself. It exposes the need for sometimes painful choices and trade-offs in the allocation of resources, uncovers gaps in the existing system, and pinpoints areas which have received too little attention.

—Goal statements can be a form of advocacy calling attention to unmet needs. The recent working document of the Canadian Minister of Health and Welfare, "A New Perspective on the Health of Canadians" is an outstanding example of this. *(3)*

There is broad feeling that national health planning policy must encompass more than an extension of the present priorities of the health delivery system. "If health planning is actually to improve people's health," the House Committee report said, "it must not be limited just to planning for medical care. In recent years, it has become increasingly clear that our health, both individually and collectively, is determined by the environment we live in (physical, work and home), our culture and our individual life styles as much as by the availability of medical care."

In the same vein, a health leader has written, "national health guidelines should articulate a perspective toward health status improvement fundamentally broader in scope than can be inferred from existing health systems program priorities. Health goals do not stand alone. In view of the intimate relationship between health and living conditions, we must recognize the importance and impact of national goals with respect to employment, income, housing and development." (4)

With or without goals and standards, our system of health care delivery is certain to change in the future; the pressures and needs for change are too great to be contained. If the guidelines help channel this movement towards the statutory ends of equity, quality and cost containment, they will be worthwhile.

An authority on health planning has given this prescription for successful goal-setting: "National goals," he has said, "should be stated in sufficient detail to provide meaningful guidance but brief enough so that they become widely known and understood. They should be sufficiently specific to be useful, but not so specific as to serve to impede progress, initiation, initiative and innovation." (5)

The process does not have to be perfect to be useful. It will be a long-term process, progressively adapting and growing. Changes in large social systems usually occur on a slow, erratic basis; this has sometimes been called "disjointed incrementalism." Setting goals and standards may help us achieve a "purposive incrementalism." This would be progress.

References

1. Somers, H. Health and Health Policy. Inquiry, Vol. XII. June, 1975. p. 3.
2. Moynihan, D. Toward Balanced Growth: Quantity with Quality. Report of the National Goals Research Staff. U.S. Government Printing Office. Washington, D.C. 1970. p. 11.
3. LaLonde, M. A New Perspective on the Health of Canadians: A Working Document. Ottawa. 1974.
4. McNerney, Walter. Communication to the Assistant Secretary for Health. 1975.
5. Sigmund, R. Health Planning. Milbank Memorial Quarterly Supplement. New York. January, 1968. pp. 125–126.

Appendix

Papers Reviewed for Guidelines Development (Through June 30, 1976)

A. PHS Agency and Staff Papers

Burke, A., Editor. Goals and Guidelines. Alcohol, Drug Abuse and Mental Health Administration.

Copeland, W., Editor. Health Innovation and the Research Service Interface: Comments for Health Planners. National Institutes of Health.

Crane, A. B. Prospects for the Future. Health Resources Administration.

Feldman, J. and Kovar, M. G., Editors. The Conditions of Health and Health Care: Context for Goals and Standards. National Center for Health Statistics, Health Resources Administration.

Fishman, S., Editor. Access to Primary Care and Quality Health Care. Health Services Administration.

Hoover, D., Editor. Health Manpower Planning: Considerations for Health Systems Agencies. Bureau of Health Manpower, Health Resources Administration.

Kindig, D. Considerations for Health Planners in the Utilization of New Health Practitioners. Bureau of Health Manpower, Health Resources Administration.

Shultz, C., Editor. National Guidelines for Health Planning—Family Planning Goals and Standards. Office of the Assistant Secretary for Health.

Stambler, H., Editor. Analytical and Data Needs for Health Manpower Planning—a Pragmatic Overview. Bureau of Health Manpower, Health Resources Administration.

Stambler, H., Editor. National Guidelines for Health Manpower: Population Requirements and Standards. Bureau of Health Manpower, Health Resources Administration.

Tolsma, D., Editor. National Health Planning Guidelines: Goals and Standards for Environmental Health. Center for Disease Control.

Tolsma, D., Editor. National Health Planning Guidelines: Goals and Standards for Health Education and Promotion. Center for Disease Control.

Tolsma, D., Editor. National Health Planning Guidelines: Goals and Standards for Laboratory Quality Assurance. Center for Disease Control.

Zwick, Daniel I., Development of National Health Guidelines—Provisions, Problems, Potential, Procedures, and Prospects. Health Resources Administration.

B. Papers by Other Authors

Bailey, Richard M. Medical Service Production: The Case of Laboratory Testing.

Bates, Ralph R. and Peter G. Bourne. The Review and Analysis of International Health Policy Statements.

Biller, Robert P. Disaggregating Health Promotion and Health Care; Policy Initiatives that Depend Less on Homogeneity Assumptions and More on Human Uniqueness.

Bloom, Joan. Models for Health Care Delivery.

Blum, Henrik. A National Health Policy.

Breslow, Lester. Proposed Guidelines for Prevention in National Health Policy Guidelines.

Cleverly, William and Stanley Curtis. Reimbursement and Accounting for Health Care Institutions.

Confrey, Eugene A. The Process of Articulating Goals and Standards: Inferences from the Experience of Selected National Health Commissions.

Danaceau, Paul. Consumer Perspectives on National Health Planning Goals.

Fleming, Gretchen and Ronald Andersen. Health Beliefs of the U.S. Population—Implications for Self-Care.

Greenlick, Merwyn R. A Framework for Assessing the Impact of Health Policy Alternatives on Medical Care Efficiency and Effectiveness.

Hayes-Bautista, David E. Deviant Delivery Systems.

Heimarck, Theodore. Toward Achieving the Goal of Expanded Multi-Institutional Sharing of Support Services.

Hepner, James O. National Guidelines for Health Planning for Multi-Institutional Shared Services.

Holloway, Don C. Levels-of-Care Decisions.

Holtzman, Neil A. Prospects for the Prevention of Early Death.

Kralewski, John and Roice Luke. The Group Practice of Medicine—Some Implications for Health Planning.

Mazelis, Sara. Health Education.

Nathan, Richard. Patient Perceptions and Preferences for Alternative Forms of Ambulatory Care.

Wennberg, John. National Health Planning Goals.

Winkelstein, Warren E. Is There an Alternative to the Holistic Approach to Health Care?

These papers will become available in Fall, 1976 from National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161.

Chapter II

The Legislative Background

The legislative history of Sections 1501 and 1502 of the National Health Planning and Resources Development Act of 1974 begins on December 20, 1973. On that day, H.R. 12052 and H.R. 12053 were introduced in the House of Representatives by former Congressman James F. Hastings and Congressman Paul G. Rogers, Chairman of the House Subcommittee on Health and the Environment. Both bills called upon the Executive Branch to develop national health policy planning guidelines and both set down a list of health priorities which those guidelines were to emphasize. In February, S.2994 was introduced in the Senate by Senator Edward M. Kennedy, which also called for guidelines and priorities.

What emerged finally as Public Law 93–641 underwent many changes in the legislative process, but the idea of guidelines and priorities survived virtually unchanged and unchallenged. The Senate Committee Report summed it up at the end: "In view of the increasing Federal involvement in and responsibility for . . . health care services . . . the Committee believes that the time for the promulgation of guidelines has arrived."

This and other evidence makes it clear what Congress wants the guidelines and priorities to try and do. They are to help bring greater order and coherence to the health programs of the Federal Government and link them closer to health planning and programs in the States and local communities.

It is also clear why the proponents of Sections 1501 and 1502 felt this was necessary.

Since 1935, Congress has been passing laws having to do with health, health resources, environmental protection and biomedical research at an accelerating rate. A total of 129 separate Acts have been identified and are listed and referenced in the Appendix to this paper. As will be seen in Table 1, more than half were passed in the past 12 years.

The effect of this legislation has been a vastly increased Federal presence in health and medical affairs. The Federal Government now finances more than 60 percent of all biomedical research and development, provides over 40 percent of the revenue of medical schools and pays about 30 percent of all medical and hospital charges. It also supports a large number of health programs and services directly and in conjunction with the States and local governments.

Table 1. Health Legislation Passed, 1935–1975 (Selected Laws, by 4-Year Intervals)

Congresses	Year	Number of Laws
74–75	1935–1938	5
76–77	1939–1942	3
78–79	1943–1946	6
80–81	1947–1950	9
82–83	1951–1954	3
84–85	1955–1958	13
86–87	1959–1962	9
88–89	1963–1966	21
90–91	1967–1970	26
92–93–94 [1]	1971–1975	32
	Total	129

[1] First Session

Table 2 shows Federal expenditures for health from 1935 to the present, expenditures which have increased from $100 million a year to nearly $34 billion. The Table divides these outlays into three categories: health care and services, research, and construction. The enormous increase in expenditures after 1965, of course, is due to Medicaid and Medicare.

Table 2. Federal Expenditures for Health and Medical Care
(In millions of dollars)

Fiscal Year	Total	Health care and services	Research	Construction
1935	103.4	98.6	.3	6.3
1940	177.7	158.1	2.6	17.1
1945	190.9	185.1	2.5	55.2
1950	1,361.8	1,059.6	72.9	229.8
1955	1,947.6	1,657.3	138.9	151.4
1960	2,917.6	2,174.6	448.2	294.7
1965	4,824.7	3,074.6	1,173.6	376.3
1970	16,600.2	14,494.9	1,576.6	529.0
1975 [1]	33,827.9	30,776.2	2,416.0	633.7

[1] Preliminary estimates
Source: Social Security Administraton

The Table does not take into account many health-related expenditures. It does not list spending for health manpower, which was about $400 million in 1975. It does not include money for air, land and water pollution control, or for occupational, highway, and air safety, or for food stamps, school lunches and food for the elderly. Nor does it include expenditures for economic and social programs which contribute importantly to health conditions and status, such as urban and area redevelopment and aid to dependent children.

Increasingly, the question is being asked as to what these Federal expenditures and programs are accomplishing.

According to the preamble to Public Law 93–641, "equal access to quality medical care at reasonable cost" is a priority of the Federal Government. It has yet to be achieved. The life expectancy of the American people has increased only slightly in the past generation. Access to medical care is certainly improved, but still poses great problems for many people. Quality medical care is not everywhere available. And in the view of many, the costs of medical care are out of control.

"Financing the production of health resources," Congressman Hastings told the House of Representatives on December 11, 1975, "coupled with our open-ended system of paying for medical care and certain other health policies make current Federal health policy inflationary. Although we should be proud of our accomplishments as a country in increasing resources, we must also be aware that increases are having minimum impact on our health, while consuming a greater and greater share of our gross national product and of our brightest people. We should also be aware that our efforts to increase resources have had little impact on the problems of overspecialization and geographical maldistribution. . . . It is clear we cannot continue to support the current growth rate of the health industry without sacrificing other more effective efforts to improve the quality of our lives. It is also clear that the health resources we now have must be put to better use."

In developing the national guidelines, it is important that the whole body of Federal health legislation be considered. The Congress has indicated its purposes and preferences through statutory actions of many types.

Table 3 divides the 129 laws listed in the Appendix into four categories: health protection, health care, health resources and biomedical research. The absolute number of laws, of course, is not an index of their relative importance but it nevertheless provides a valuable key to the range of Congressional interest.

Table 3. Purposes of 129 Federal Health Laws, 1935–1975

Purposes of Legislation	Number of Laws Passed
Health Protection	
Disease Prevention and Control	8
Food, Drug and Consumer Safety	19
Occupational and Public Safety	4
Environmental Protection	17
Health Care and Financing	34
Health Resources	
Manpower	13
Facilities, Planning and Information	12
Biomedical Research	22
Total	129

The discussion below attempts to identify the major goals which run through these laws. In some cases, the statute has set forth explicit goal statements; in others, they are inferred. As will be seen, the laws cover many areas of concern, but in only a few cases do they consider the interrelationships between them.

Health Protection: Disease Prevention and Control and Occupational Safety

In 1944, Congress undertook to consolidate the laws and authorizations which previous Congresses had passed relating to the Federal Public Health Strvice and its disease prevention and control programs. There were a very large number of such laws going back to the 18th Century; the Section of the Act which lists and repeals them is 14 pages long.

Public health programs of the national government usually have one of two purposes, either to support some State, local and community effort or to undertake a national or international task which local governments have not done or cannot do. There are many such programs, encompassing all the classic public health disciplines and functions—epidemiology, engineering and sanitation, public health nursing, dentistry and medical care, emergency medical services, biostatistics, laboratory standards and methods, health education, etc. In addition, Federal aid has supported the development of State and local health departments and the training of public health workers.

Certain communicable and vector-borne diseases and prevention programs have received special emphasis in Federal legislation, including cholera, typhoid fever, venereal disease, tuberculosis, rat and insect control, and national programs of vaccination. World War II brought a worldwide effort to control malaria (and later typhus). The Public Health Service's Center for Disease Control in Atlanta, Georgia, began as headquarters for this project; its activities have expanded under Congressional direction to encompass a wide variety of communicable and other disease control programs.

In 1970, Congress passed the Occupational Safety and Health Act "to assure as far as possible every working man and woman in the Nation safe and healthful working conditions." The Act was a continuation of Federal laws and authorizations going back to the Walsh-Healey Act of 1936.

Health Protection: Food, Drugs, Medical, and Consumer Products

A Food and Drug Act was passed in 1906 to prohibit adulterated or misbranded food and drugs. After a drug poisoning disaster in 1938 which took more than 100 lives, Congress acted to make new drugs subject to testing for safety before they are marketed and to assure the truthfulness and accuracy of cosmetic and medical device labeling. There were further amendments in the ensuing 22 years. Controls were extended to antibiotics, insulin, pesticides and color additives. The Durham-Humphrey Amend-

ment of 1951 required that drugs which cannot be safely used without medical supervision be dispensed only upon prescription by a physician and bear the Rx legend. The Delaney clause in the 1958 amendments declared that no food additive is to be deemed safe if it is found to cause cancer in man or animals.

It was another disaster, this one in Europe from thalidomide, which helped bring about passage of the Drug Amendments of 1962. These provided new controls over the use of investigational drugs and required patient consent. They also required the reporting of acquired drug experience and "substantial evidence" of drug effectiveness before marketing.

The Radiation Control for Health and Safety Act of 1969 was intended to protect the U.S. population from unnecessary radiation exposure emitted by x-ray equipment, microwave ovens, color televisions, and other electronic products.

In 1972, Congress passed the Consumer Product Safety Act to protect the public against unreasonable risks of injury or disability from poorly designed or improperly manufactured consumer products. The law exempted automobiles and tobacco products, which are covered in separate legislation. (Congress has passed two laws relating to cigarette smoking, one in 1965 requiring a health warning on labels and the other in 1970 banning radio and television advertising.)

In 1974, the Safe Drinking Water Act was passed. Previously Congress had limited its jurisdiction over public drinking water supplies to interstate carriers, holding strictly to its authority under the commerce clause of the Constitution. The 1974 legislation establishes standards for public drinking water supplies everywhere.

The Medical Devices Amendments of 1976 provided new and extensive authority in the regulation of these products. The law was designed to improve the American health care system by preventing illnesses and accidents from unproven and poor quality medical devices. Among the provisions of this legislation are the pre-market approval of life-sustaining devices and the registration of device manufacturers.

Health Protection: Environmental Controls

The Federal government has become seriously concerned with environmental protection in the last 30 years. The first water pollution control law was in 1948 and the first Clean Water Act in 1955. Today, of course, air, water, pesticides, solid waste disposal, lead-based paint and even noise pollution controls are important Federal activities.

Two goals are consistently present in environmental legislation—to protect man against the hazards of his environment, and to protect the environment against the depredations of man. The balance between the two goals varies. The Clean Water Act of 1972 hardly mentions human health directly at all; its purpose is to restore and maintain the chemical, physical and biological integrity of the nation's waters. The purposes of the Clean Air Act of 1971, on the other hand, are "to speed up, expand and intensify

the war against air pollution so that the air we breathe is wholesome once again."

The National Environmental Policy Act of 1970 treats both goals equally. The purpose of this law is to "promote productive and enjoyable harmony between man and his environment . . . to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man."

Health Care and Financing

In its early history, the Federal government provided medical and health services only to its own constituencies—members of the armed services, merchant seamen, native Americans, veterans, inmates of Federal prisons, etc. It came relatively late to employee health insurance, but this was authorized in 1958 and the Federal plans are now the largest in the country, with more than 3 million enrollees and annual premiums of $1.4 billion. A separate health insurance plan has been set up to protect the families of active and retired members of the military. Merchant seamen had a very early form of health insurance but this did not last.

In the present century the Government has become increasingly concerned with what Section 1502(1) of Public Law 93–641 calls "medically underserved populations." Its first interest among the general population was mothers and children, but one by one other populations have been identified and help has been extended to them. In some cases the Federal Government has supported existing State and local efforts and in other cases has created new programs.

The most important of all such legislation in terms of numbers of dollars and participants are the Social Security Act Amendments of 1965 which created Medicare and Medicaid. But this legislation does not stand alone.

—Maternal and child health is a long-time Federal priority going back to the Children's Bureau created in 1912. The Social Security Act of 1935 provided grants-in-aid to the States for maternal and child care and aid to crippled children and has been extended many times. The School Lunch Act of 1946 made food staples available, primarily for poor children with diet and nutritional deficiencies. A National Center for Child Health and Human Development was created in 1962; maternal and child health and mental retardation programs were strengthened in 1963. The Child Nutrition Act of 1966 set up a program of research and support for children's food and nutrition programs and this was amended in 1972 to provide for school breakfasts and other disease prevention and health maintenance programs. A Family Planning Services and Population Research Act was passed in 1970, a Child Abuse Prevention and Treatment Act in 1974, and a Developmentally Disabled Assistance Act in 1975.

—Care of the aged poor was almost exclusively a State and local responsibility until the Social Security Act of 1935, which provided grants-in-aid to States for the aged. The Community Health Service and Facilities Act was passed in 1961 to improve community facilities and services for

aged and "others." The Older Americans Act of 1965 established an Administration on Aging and authorized grants for community planning, services and training. Medicare, of course, has substantially increased access to health care for the aged.

—One of the Federal government's first grants-in-aid programs for services to individuals was created by the Smith-Fess Act of 1920, to provide counseling, job training, prosthetic appliances and job placements for handicapped persons. In 1943 Congress extended these services to include medical, surgical and other physical care and to bring the blind into the rehabilitation programs. Legislation in 1963 and the Social Security Amendments of 1972 increased the Federal effort.

—The Veterans Administration operates the largest health care system in the United States, with 167 hospitals, 200 clinics, and 72 nursing homes, representing a total in excess of 125,000 beds and a potential patient population of 29 million persons. The system as it exists today was created by the Medical and Surgical Act of 1946. At first, health care was limited to veterans with a service-connected illness or disability; Congress has broadened this eligibility over the years to include other veterans qualifying on the basis of financial need or age. The families of those killed while on active service or of veterans with total service-connected disabilities are also eligible.

—In 1946, Congress set up a program of grants-in-aid to the States for the care of the mentally ill, at the same time continuing and expanding the Government's research and training efforts. In 1963 the Community Mental Health Centers Act was passed, whose object was to bring comprehensive mental health services to the patient in his own community. The law has been amended many times, in 1968 to include drug and alcoholic treatment services,in 1970 to establish mental health facilities and services for children, and in 1975 to redefine the scope of services and to strengthen support. Two comprehensive acts were passed in 1970 to expand the Government's drug and alcohol programs and to provide help to States and localities for treatment and rehabilitation. The drug legislation strengthened an earlier law passed in 1966.

—In 1954, Congress placed the responsibility for Indian health services in the Public Health Service. In 1962, it authorized Federal funds for clinics for migratory agricultural workers. In 1966, it acted to create health centers in low-income communities, first in inner-cities and later in rural areas. In 1970, it set up the National Health Service Corps of physicians and other health professionals to serve in areas where personnel and services are inadequate.

—In efforts to improve the quality of health care and the efficiency of its delivery, Congress passed legislation in 1972 to establish Professional Standards Review Organizations and in 1973 to encourage health maintenance organizations. Both are singled out for emphasis in Section 1502 of

Public Law 93–641. Another Congressional interest has been emergency medical care, which resulted in 1972 in the passage of the Emergency Medical Services System Act.

—Congress enunciated a far-reaching Federal goal affecting health care in the Civil Rights Act of 1964. Title VI provides that no person in the United States shall, on the ground of race, color or national origin, be excluded from participating in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

Health Resources: Manpower

From the beginning, the Army and Navy Medical Corps, the Public Health Service and the Veterans Administration have given advanced training to their own physicians, dentists, nurses and other health personnel and have set up affiliations and other cooperative arrangements with medical and other schools to provide clinical experience and related training to others. About half the physicians now practicing have had undergraduate or graduate training in a Veterans Administration facility through such arrangements.

Congress has for many years recognized a Federal responsibility to support institutions which train public health workers. More recently, it has extended its interest to health manpower shortages in the private sector and to the need to aid medical, nursing and other teaching institutions. The Federal programs have done this by helping students with scholarships and student loans and by providing grants-in-aid to the educational institutions. The Health Professionals Assistance Act of 1963 was the beginning of these efforts.

The Comprehensive Health Manpower and the Nursing Training Acts of 1971 brought together some 44 manpower training programs in the fields of medicine, dentistry, nursing, osteopathy, optometry, pharmacy, public health, allied health, and veterinary medicine. The two laws sought to increase enrollment in the health professions and nursing schools, to improve curricula, to encourage the creation of new schools of medicine, osteopathy, and dentistry, to convert two-year medical schools to degree-granting programs, to attract students from minority groups, and to encourage the training of family medicine practitioners.

Health Resources: Facilities, Planning, and Information

The Senate Report accompanying the National Health Planning and Resources Development Act of 1974 describes it as combining the best features of four previous health planning and resources programs—Hill-Burton (begun in 1946), Comprehensive Health Planning (1966), Regional Medical Program (1965) and Experimental Health Services Delivery Systems (1971). The House and Senate Committee Reports on Public Law 93–641 provide detailed descriptions of the progress and problems of these four programs.

The oldest of these, the Hill-Burton program, was aimed at increasing

hospital capacity, particularly in poverty and rural areas. The 1946 Act was amended many times and has been responsible for helping build nearly half a million inpatient care beds and 3,500 outpatient and other health care facilities. The Comprehensive Health Planning and Public Health Service Amendments of 1966 were passed to help develop a formal system of areawide planning for the allocation of health facilities and health services. The Regional Medical Programs were created by the Heart Disease, Cancer and Stroke Amendments of 1965 to establish regional cooperative arrangements to take advantage of the advances which have been achieved in the diagnosis and treatment of these diseases. Amendments were passed in 1970, adding kidney diseases and making a number of program changes, including a new emphasis on primary care and better use of health manpower.

Information is a resource, and the need to collect, evaluate and distribute it is recognized in almost all health legislation. Three major programs are currently authorized by the Health Services Research, Health Statistics and Medical Libraries Act of 1974. This act supported the National Library of Medicine and the National Center for Health Statistics and established a National Center for Health Services Research.

Biomedical Research

Three goals are present in the Federal Government's biomedical research programs.

The first goal is research itself—research into "the causes, prevention, diagnosis and treatment of the diseases and disabilities of man." This is accomplished through Federal support of research in universities and other private and public institutions and by the government's own agencies, primarily the National Institutes of Health.

Over the years Congress has singled out many individual conditions, diseases and disabilities for special attention. One compendium (not complete) lists cholera (1878), other infectious diseases (1887), leprosy (1899), influenza (1918), venereal diseases (1918), environmental health (1924), narcotics addition (1929), mental and nervous conditions (later psychiatric disorders and mental retardation) (1930), cancer (1937), heart disease (1948), dental diseases and conditions (1948), arthritis and rheumatic diseases (1950), neurological diseases (1950), cerebral palsy (1950), epilepsy (1950), polio (1950), allergy and infectious diseases (1955), child health and development (1962), mental retardation (1963), virus leukemia (1965), chronic uremia (1965), stroke (1965), blinding diseases and blindness (1968), alcoholism and alcohol abuse (1970), digestive diseases (1972), multiple sclerosis (1972), sickle cell anemia (1972), Cooley's anemia (1972), child abuse (1974), sudden infant death syndrome (1974), aging (1974), and diabetes mellitus (1974).

A second goal is to increase the Nation's science resources of manpower, facilities and research materials.

In 1956, Congress passed the Health Facilities Act to help build and modernize research facilities outside the government. It has also authorized individual biomedical research programs to do this. Both the National Cancer Act of 1971 and the National Heart, Blood Vessel, Lung and Blood Act of 1972, for example, call for the construction of new centers for basic and clinical research and for training, demonstrations and prevention programs.

The National Cancer Act states its manpower goals as follows: to provide "an expanded and continuing manpower base from which to select investigators, physicians and allied health professions personnel for participation in clinical and basic research and treatment programs." The Act authorizes scholarships and fellowships, graduate and post-graduate training, and grants-in-aid to research institutions.

Congress is giving increasing emphasis to the third national biomedical research goal, which is to evaluate the results of research and make them more broadly available for clinical application. Many of the biomedical research programs now contain authorizations for demonstrations and public and professional education to help accomplish this.

National Health Goals

An overall health goal or set of goals is nowhere stated in any of our laws. Perhaps the closest Congress has come to attempting this is in the preamble to the Comprehensive Health Planning and Public Health Service Amendments of 1966. Even here, Congress did not attempt to be all-inclusive.

The statement is nevertheless an important one.

"The Congress declares that fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living; that attainment of this goal depends on an effective partnership, involving close intergovernmental collaboration, official and voluntary efforts, and participation of individuals and organizations; that Federal financial assistance must be directed to support the marshalling of all health resources—national, State, and local—to assure comprehensive health services of high equality for every person, but without interference with existing patterns of private professional practices of medicine, dentistry, and related healing arts."

This statement indicates both the high aspirations and realistic constraints of health planning policy. The multiplicity of national health legislation in recent years, summarized in Table 1, may be viewed as efforts to move toward these conditions. However, the path has not always appeared clear or consistent.

Appendix

Selected Federal Health Acts, 1935–1975*

1935	74–241	*Social Security Act*	Provided for the first time grants-in-aid to States for such public health activities as maternal and child care, aid to crippled children, blind persons, the aged, and other health-impaired persons.
1936	74–846	*Walsh-Healy Act*	Authorized Federal regulation of industrial safety in companies doing business with the government.
1937	75–244	*National Cancer Institute Act*	Established National Cancer Institute to coordinate research related to cancer.
1938	75–540	*LaFollette-Bulwinkle (VD Control) Act*	Provided grants-in-aid to States and other authorities to investigate and control venereal disease.
1938	75–717	*Federal Food, Drug and Cosmetic Act*	Extended Federal authority to act against adulterated and misbranded food, drug, and cosmetic products.
1939	76–19	*Reorganization Act of 1939*	Transferred the PHS from Treasury to a new Federal Security Agency.
1941	77–146	*The Nurse Training Act*	Supported schools of nursing to increase their enrollments and help strengthen their facilities.
1941	77–366	*Insulin Certification Amendment to FDC Act*	Required pre-marketing batch certification of insulin drugs.
1943	78–38	*Act to Provide for the Appointment of Female Physicians and Surgeons in the Army*	Gave women and men equal rank, pay, allowances, and privileges in the Army Medical Corps.
1943	78–74	*Nurse Training Act*	Provided initial funding for the Nurse Cadet Corps in the Public Health Service.
1944	78–410	*Public Health Service Act*	Consolidated all PHS authorities into a single statute (42 USC).
1945	79–139	*Antibiotic Certification Amendment*	Required pre-marketing batch certification of penicillin (other antibiotics added in later amendments).
1946	79–293	*Medical and Surgical Act*	Established a Dept. of Medicine and Surgery in VA; removed it from Civil Service control; authorized medical student residencies in VA hospitals.
1946	79–396	*National School Lunch Act*	Authorized a national school lunch program.

* This is excerpted from "Health in America: 1776–1976." Health Resources Administration. U.S. Department of Health, Education, and Welfare. DHEW Pub. (HRA) 76–616. Washington, D.C. In Press.

1946	79–487	*National Mental Health Act*	Authorized major Federal support for mental health research, diagnosis, prevention, and treatment; changed PHS Division of Mental Health to National Institute of Mental Health; established State grants-in-aid for mental health.
1946	79–725	*Hospital Survey and Construction Act*	The Hill-Burton Act to support surveys, plans, and new facilities.
1947	80–36	*Women's Medical Specialist Corps*	Established a permanent Nursing Corps in the Army and Navy; permitted dietitians and physical therapists to join a Specialist Corps.
1947	80–104	*Federal Insectide, Fungicide, and Rodenticide Act*	Required all pesticides to be registered prior to sale and be properly labeled for use.
1948	80–655	*National Heart Act*	Authorized aid for research, training, and other programs related to heart disease; established the National Heart Institute; acknowledged a plural NIH.
1948	80–755	*National Dental Research Act*	Authorized aid for research on dental diseases and conditions; established a National Institute of Dental Research at NIH.
1948	80–845	*Water Pollution Control Act*	Authorized PHS to help States develop water pollution control programs and to aid in the planning a sewage treatment plants.
1949	81–380	*Hospital Survey and Construction Amendments*	Increased Federal financial assistance to promote effective development and utilization of hospital services and facilites.
1949	81–439	*Agricultural Act of 1949*	Authorized donations of commodities acquired under price support programs for school lunch and for feeding the needy.
1950	81–507	*Act to Establish a National Science Foundation*	Set up an autonomous NSF and strengthed the concept of Federal support for university-based research in physical, medical, and social sciences.
1950	81–692	*National Research Institutes Act*	Expanded the National Institutes of Health to include research and training relating to arthritis, rheumatism, multiple sclerosis, cerebral palsy, epilepsy, polio, blindness, leprosy, and other diseases.
1951	82–215	*Durham-Humphrey Amendments*	Established category of prescription drugs, requiring labeling and medical supervision, as separate from nonprescription drugs.
1954	83–482	*Medical Facilities Survey and Construction Act*	Extended aid to chronic hospitals, rehabilitation facilities, and nursing homes.

1954	83–568	*Act to Transfer Indian Health Responsibility to the Public Health Service*	Placed responsibility for maintenance and operation of Indian health facilities in PHS rather than Bureau of Indian Affairs.
1955	84–159	*Air Pollution Control Act*	Provided aid to States, regions, and localities for research and control programs to protect air quality.
1955	84–182	*Mental Health Study Act*	Authorized grants to nongovernmental organizations for partial support of a national study and reevaluation of the human and economic problems of mental illness.
1955	84–377	*Polio Vaccination Assistance Act*	Provided assistance to State vaccination programs.
1956	84–569	*Dependents Medical Care Act*	Set up program of primarily inpatient medical care for dependents of military personnel (CHAMPUS).
1956	84–652	*National Health Survey Act*	Provided for a continuing survey and special studies of sickness and disability in the U.S.
1956	84–660	*Water Pollution Control Act*	Established water pollution control programs on interstate waterways; expanded research and aid to States for sewage treatment.
1956	84–835	*Health Research Facilities Act*	Aided construction of research facilities.
1956	84–911	*Health Amendments*	Increased mental health staff and skills.
1956	84–941	*National Library of Medicine Act*	Transferred responsibility for the library to the Public Health Service.
1957	85–151	*Indian Health Assistance Act*	Provided for construction of health facilities for Indians and others.
1957	85–172	*Poultry Products Inspection Act*	First Federal effort at mandatory inspection of poultry products (similar to efforts in meat inspection).
1958	85–340	*Social Security Amendments*	Provided States with minimum maternal and child health grants and extended authority to Guam.
1958	85–929	*Food Additive Amendments to the FD&C Act*	Required pre-marketing clearance for new food additives; established a GRAS (generally recognized as safe) category; prohibited the approval of any additive "found to induce cancer in man or animal" (the so-called "Delaney clause").
1959	86–382	*Federal Employees Health Benefits Act*	Authorized program of prepaid health insurance for employees of Federal Executive and Legislative Branches.
1960	86–610	*International Health Research Act*	Provided for international cooperation in research, research training, and planning.

1960	86–613	*Federal Hazardous Substances Labeling Act*	Required prominent label warning on hazardous household or workplace chemical products.
1960	86–778	*Social Security Amendments*	Authorized grants to States for medical assistance for the aged.
1961	87–395	*Community Health Services and Facilities Act*	To improve community facilities and services for aged and others.
1962	87–692	*Assistance to Migratory Workers Act*	Authorized Federal aid for clinics serving migratory agricultural workers and families.
1962	87–781	*Kefauver-Harris Drug Amendments*	Required improved manufacturing practices, better reporting, the assurance of efficacy as well as safety, and strengthened regulation in the drug industry.
1962	87–838	*National Institutes of Child Health and Human Development and General Medical Sciences Act*	Established an institute to coordinate and expand research into childhood diseases and human growth and a second institute of General Medical Sciences to coordinate inter-Institute research and handle "all other" diseases.
1962	87–868	*Vaccination Assistance Act*	Aided programs that attacked whooping cough, polio, diptheria, and tetanus.
1963	88–129	*Health Professions Educational Assistance Act*	Aided training of physicians, dentists, public health personnel, and others.
1963	88–156	*Maternal and Child Health and Mental Retardation Planning Amendments*	Initiated program of comprehensive maternity and infant care and mental retardation prevention.
1963	88–164	*Mental Retardation Facilities and Community Mental Health Centers Construction Act*	Provided aid for the construction of these facilities and centers; became the basic law for mental health centers' staffing, programming, etc.
1963	88–206	*Clean Air Act*	Authorized direct grants to State and local governments for air pollution control; established Federal enforcement in interstate air pollution; directed major research efforts into motor vehicle exhaust, removal of sulfur from fuel, and the development of air quality criteria.
1964	88–352	*Civil Rights Act*	Title VI provided that "no person in the United States shall, on the ground of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

1964	88–525	*Food Stamp Act*	Authorized food stamp program for low-income persons to buy nutritious food for balanced diet.
1964	88–581	*Nurse Training Act*	Provided special Federal effort for training professional nursing personnel.
1965	89–74	*Drug Abuse Control Amendments*	Established enforcement procedures to control depressants, stimulants, and hallucinogens.
1985	89–92	*Federal Cigarette Labeling and Advertising Act*	Informed the public of health hazards of cigarette smoking.
1965	89–97	*Social Security Amendments*	Established health insurance for aged and grants to States for medical assistance programs (Medicare and Medicaid).
1985	89–239	*Heart Disease, Cancer, and Stroke Amendments*	Established Regional Medical Programs for research training and sharing of new knowledge in heart disease, cancer, and stroke.
1965	89–272	*Clean Air Act Amendments*	Directed Federal regulation of motor vehicle exhaust (Title I); established program of Federal research and grants-in-aid in solid waste disposal (Title II).
1965	89–290	*Health Professions Educational Assistance Amendments*	Aided schools of medicine, osteopathy, and dentistry; provided scholarships and loans; and aided construction.
1968	89–563	*National Traffic and Motor Vehicle Safety Act*	Provided for a coordinated national safety program and established safety standards for motor vehicles in interstate commerce.
1966	89–614	*Amendments to CHAMPUS (Military Dependents Act)*	Broadened eligibility to CHAMPUS and extended benefits beyond inpatient care.
1988	89–642	*Child Nutrition Act*	Established Federal program of research and support for child nutrition; authorized school breakfast program.
1966	89–749	*Comprehensive Health Planning and Public Health Services Amendments*	Promoted health planning and improved public health services; authorized broad research, demonstration, and training programs in Federal-State-local partnership.
1988	89–751	*Allied Health Professions Personnel Act*	Initial effort to support the training of allied health workers; also provided student loans for health professionals.
1966	89–753	*Clean Water Restoration Act*	Expanded, strengthened, and centralized water pollution programs in the Department of the Interior; new efforts in sewage treatment, purification, ecology, etc.
1966	89–785	*VA Assistance Act*	Permitted the VA to share, rather than replicate, specialized medical resources of other Federal, State, and local agencies.

1966	89–793	*Narcotic Addict Rehabilitation Act*	Authorized programs to deal more effectively with narcotic addiction as a public health issue.
1967	90–148	*Air Quality Act*	Established program of criteria and standards development and enforcement to control air pollution; set up air quality regions; overall strengthening of the Federal role.
1967	90–174	*Partnership for Health Amendments*	Expanded health planning and services; broadened health services research and demonstrations; and improved clinical laboratories.
1967	90–201	*Wholesome Meat Act*	Amended, updated, and expanded Meat Inspection Act of 1907; brought all meat plants in intra- as well as interstate commerce under control.
1967	90–222	*Economic Opportunity Amendments*	Authorized grants for Comprehensive Health Services and other health programs.
1967	90–248	*Social Security Amendments*	Consolidated maternal and child health authorities, extended grants for family planning and dental health.
1968	90–407	*Amendments to NSF Act of 1950*	Expanded the authorities of the National Science Foundation to include major support of applied research in the sciences.
1968	90–411	*Aircraft Noise Abatement Act*	Amended Federal Aviation Act; first government effort to deal with health hazards of noise.
1968	90–456	*Lister Hill National Center for Biomedical Communications Designation*	Designated the title for a national center for biomedical communications within the National Library of Medicine, NIH.
1968	90–490	*Health Manpower Act*	Authorized formula institutional grants for training all health professionals; added pharmacy and veterinary medicine.
1968	90–492	*Wholesome Poultry Products Act*	Amended, updated, and expanded the 1957 Poultry Act to make poultry inspection similar to updated meat inspection program.
1968	90–574	*Health Services Amendment*	Extended grants for RMP's and migrant health services; provided treatment facilities for alcoholics and narcotic addicts.
1968	90–602	*Radiation Control for Health and Safety Act*	Authorized setting of safe performance standards for electronic products such as x-ray machines, television sets, microwave ovens, etc.; established procedures for enforcement.
1969	91–173	*Federal Coal Mine Health and Safety Act*	Protected the health and safety of coal miners.

1969	91–190	*National Environmental Policy Act*	Stated the concern of Congress for preserving the environment and to "stimulate the health and welfare of man"; created the Council on Environmental Quality to advise the President; required environmental impact statements before major Federal actions.
1970	91–211	*Community Mental Health Centers Amendments*	Extended grants for community mental health centers and facilities for alcoholics and narcotic addicts and established programs for children's mental health.
1970	91–222	*Public Health Cigarette Smoking Act*	Banned cigarette advertising from radio and television.
1970	91–512	*Resource Recovery Act*	Shifted emphasis from solid waste disposal to overall problems of control, recovery, and recycling of wastes.
1970	91–513	*Comprehensive Drug Abuse Prevention and Control Act*	Increased aid for research; strengthened prevention, treatment, rehabilitation programs.
1970	91–517	*Developmental Disabilities Services and Facilities Construction Amendments*	Assisted States to develop and implement plans for provision of comprehensive services to persons affected by mental retardation and other developmental disabilities.
1970	91–519	*Health Training Improvement Act*	Provided expanded to all allied health professions.
1970	91–572	*Family Planning Services and Population Research Act*	Expanded and coordinated services and research activities.
1970	91–596	*Occupational Safety and Health Act*	Provided Federal program of standard-setting and enforcement to assure safe and healthful conditions in the workplace.
1970	91–604	*Clean Air Act Amendments*	Strengthened and expanded air pollution control activities; placed broad regulatory responsibility in new Environmental Protection Agency, in operation as of December 2, 1970.
1970	91–616	*Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act*	Established National Institute of Alcohol Abuse and Alcoholism; provided a comprehensive aid program to States and localities.
1970	91–623	*Emergency Health Personnel Act*	Provided assistance to health manpower shortage areas through a new National Health Service Corps.

1971	91–695	*Lead-Based Paint Poisoning Prevention Act*	Authorized Federal help to communities wishing to eliminate the causes of lead-based paint poisoning.
1971	92–157	*Comprehensive Health Manpower Training Act*	Expanded and strengthened Federal programs for the development of health manpower.
1971	92–158	*Nurse Training Act*	Expanded and strengthened Federal efforts specifically directed toward nurse training.
1971	92–218	*National Cancer Act*	Expanded national effort against cancer.
1972	92–294	*National Sickle Cell Anemia Control Act*	Provided for control of and research into sickle cell anemia.
1972	92–303	*Amendments to Federal Coal Mine H&S Act*	Provided benefits and other assistance for coal miners suffering from black lung diseases.
1972	92–414	*National Cooley's Anemia Control Act*	Provided assistance for programs of diagnosis, prevention, and treatment.
1972	92–423	*National Heart, Blood Vessel, Lung, and Blood Act*	Enlarged the National Heart and Lung Institute and authorized broad studies in blood management.
1972	92–426	*Uniformed Services Health Professions Revitalization Act*	Established a Uniformed Services University of the Health Sciences and an Armed Forces Health Professions Scholarship Program.
1972	92–433	*National School Lunch and Child Nutrition Amendments*	Added funds to support nutritious diets for pregnant and lactating women and for infants and children (the "WIC" program).
1972	92–500	*Federal Water Pollution Control Amendments*	Totally revised Federal water program; shifted efforts from the preservation of available water quality to the improvement of quality through technology; set as a goal the elimination of pollutant discharges from all navigable waters.
1972	92–513	*Motor Vehicle Information and Cost Savings Act*	Established diagnostic and demonstration projects to reduce auto-related safety and health hazards.
1972	92–516	*Federal Environmental Pesticide Control Act*	Expanded and strengthened provisions on product registration, labeling, environmental protection, registration of manufacturers, and national monitoring of pesticide residues in water and food.
1972	92–541	*VA Medical School Assistance and Health Manpower Training Act*	Authorized VA to help establish 8 State medical schools and provide grant support to existing medical schools.

1972	92–573	*Consumer Product Safety Act*	Created the Consumer Product Safety Commission; transferred enforcement of Hazardous Substances, Flammable Fabrics, Poison Prevention Packaging Acts to CPSC; expanded and strengthened Federal effort in safety and prevention.
1972	92–574	*Noise Control Act*	Authorized broad Federal program to coordinate noise research and control activities, establish standards, and improve public information.
1972	92–603	*Social Security Amendments*	Extended health insurance benefits to the disabled and to end-stage renal disease patients; established Professional Standard Review Organization program; and expanded research and demonstrations of financing mechanisms.
1972	93–154	*Emergency Medical Services Systems Act*	Provided aid to States and localities to establish coordinated, cost-effective, areawide EMS systems.
1973	93–222	*Health Maintenance Organization Act*	Assisted in the establishment and expansion of HMOs.
1974	93–247	*Child Abuse Prevention and Treatment Act*	Created a National Center on Child Abuse and Neglect; authorized research and demonstration grants to States and other public and private agencies.
1974	93–270	*Sudden Infant Death Syndrome Act*	Provided assistance for research, training, and extensive public education concerning SIDS.
1974	93–281	*Narcotic Addict Treatment Act*	Provided for registration of practitioners.
1974	93–286	*Research on Aging Act*	Established National Institute on Aging within the NIH.
1974	93–319	*Energy Supply and Coordination Act*	Directed the National Institute of Environmental Health Sciences to study the effects of chronic exposure to sulfur oxides.
1974	93–348	*National Research Act*	Established research training awards and the National Commission for the Protection of Human Subjects.
1974	93–352	*National Cancer Amendments*	Improved the national cancer program and established a Biomedical Research Panel.
1974	93–353	*Health Services Research, Health Statistics, and Medical Libraries Act*	Revised and expanded health statistics and services research programs; established a National Center for each one; expanded aid to non-Federal medical libraries.

1974	93–354	*National Diabetes Mellitus Research and Education Act*	Expanded diabetes research and public education programs.
1974	93–523	*Safe Drinking Water Act*	Requires EPA to set national drinking water standards and to aid States and localities in enforcement.
1974	93–640	*National Arthritis Act*	Established National Commission on Arthritis and coordinated arthritis programs in NIH.
1975	93–641	*National Health Planning and Resources Development Act*	Authorized major Federal reorganization of health planning programs, including Hill-Burton; set up national designation of local Health Systems Areas and governing agencies.
1975	94–63	*Health Revenue Sharing and Nurse Training Act*	Established National Center for Prevention and Control of Rape; revised and extended National Health Service Corps, Community Mental Health Centers, migrant health, family planning, and other programs; strengthened the nurse training program.
1975	94–103	*Developmentally Disabled Assistance and Bill of Rights Act*	Expanded national effort and protected rights of the developmentally disabled.

Chapter III

National Commissions and Their Goals*

We have a penchant in this country to use public commissions as instruments to analyze and respond to social problems: discrimination, child abuse, pornography, environmental contamination, energy shortages, and so on. Health issues are no exception.

In recent years there have been several dozen health commissions, committees, task forces and consultant groups established by Congress, Presidents, foundations and interested citizens. These bodies have had a variety of charges, commitments, and expectations.

The experience of these commissions is important to the effort of developing guidelines under the National Health Planning and Resources Development Act. It is useful to know what they have recommended and to learn how they went about their studies and arrived at their conclusions.

With this in mind, an analysis has been made of 35 reports issued in the years 1932–1975. These are listed and referenced in chronological order. Ten of the reports are focussed on the total health care system, eleven on manpower development, six on particular disease problems, two on facilities development and six on other matters.

General Observations

Historically, it has been possible to predict the probable orientation of health commissions by virtue of their sponsorship and composition. A labor-appointed commission is likely to differ markedly from a group under the aegis of a medical group as to ideology, recommendations about government role, even as to the perceived scope of a health problem.

One of the rationales of commissions is that the problems they address in most cases call for technical expertise. As a result, one finds commissions on medical education made up largely of educators or practitioners, commissions on facilities made up of hospital administrators, and research commissions made up of scientists. Their reports, as a consequence, tend to reflect the views of a scientific or professional elite.

In order to minimize what might be termed institutional bias, Congressionally or Presidentially-appointed commissions in recent years have sought to include consumers and those of varying politico-economic beliefs. As evidence of this, one now finds "minority dissents", some expressed quite vigorously.

* This is an adaptation of a study by Eugene A. Confrey, Ph.D. Additional work was contributed by Sharon Gannon.

The traditional procedures of health commissions have been (1) to analyze the problem (citing statistics about morbidity-mortality or the scope and limits of resources), (2) to report findings, and (3) to make recommendations designed to alleviate the problem. The problem may be a perceived shortage of hospital beds in rural areas, an increasing incidence of drug abuse among teenagers, a manpower supply deficiency, inadequate health insurance coverage, or something else.

This process seldom yields "goals" labelled as such and only rarely does one see anything that could be considered a "standard," at least as a measurement or a quantified point of reference. Instead, one finds "facts," "findings," and "recommendations."

Without implying criticism, it seems fair to say that the transition from scientific description to conclusions to exhortation is often unclear. Underlying the hortatory statements, at least in some of the commission reports, are a range of value judgments, personal preferences, political ideology, debatable premises, social and professional perspectives, none of which constitute scientific findings or influences. The word used most often in these statements is "should." This approach seems an inevitable result of the nature and thrust of these undertakings and of the charge which has been given them; it is their strength as well as their style.

One finds some characteristics of special interest. Certain themes are repeated. Many commissions have advocated increased health resources and an expanded Federal role in certain directions. The potential advantages of group practice are outlined many times. The importance of planning and coordination of services is stressed. Virtually all commission studies have concluded that more attention should be paid to preventive medicine. As early as the 1930's the increased use of assistants and ancillary personnel was advocated. And many commissions have argued for increased opportunities for post-graduate and continuing education. The one concept that appears most often in the report is increased public activity to expand health resources.

What the Commissions Have Accomplished

It seems incontrovertible that the health commissions of the past 40 years have had substantial influence.

Commissions have directed public attention to important problems, two recent examples being malpractice litigation and the credentialing of health professionals. Medical Education (1959) expressed concern about the admission policies of schools of medicine which resulted in a preponderance of wealthy or moderate-income students. Later, the Commission on Community Health Services (1966), Manpower (1973), and Higher Education (1970), emphasized a related point, namely, the under-enrollment of women and minorities.

Similarly, Health Manpower (1967) brought forcibly to attention the trends in utilizing foreign medical graduates to staff our hospitals. Heart

Disease-Cancer-Stroke (1964) dramatized the tragic effects of these diseases in terms of premature death, disability, and economic cost to the Nation.

Uneven access, inadequate quality control measures, prohibitive prices, waste and duplication in services—these deficiencies have been highlighted in the findings of many health commissions. It was Health Manpower (1967) that helped turn attention away from a preoccupation with aggregate "shortages" of facilities to an awareness that communities are finding "unavailability of beds in one hospital, while some beds are empty in another. . . ." DHEW's White Paper (1971) questioned the propensity to characterize a total situation as a "crisis," and suggested that gross measures "mask large disparities in health status among sub-populations, e.g., the poor and racial minorities."

Moreover, not only have national commissions helped to alert the population to social problems, these groups have also set or influenced subsequent courses of action.

—Costs of Medical Care (1932) urged a team approach to the provision of health services.

—Medical Education (1959), Community Health Services (1966), Health Manpower (1967), Higher Education (1970) all recommended increased enrollment in medical schools.

—Virtually all national commissions—by supporting health planning—set the stage for P.L. 93–641.

—Peer review of physician practice was advocated by the Community Health Services (1966)—a precedent for the contemporary PSRO movement.

—Detection programs for cervical cancer received strong impetus from Heart Disease-Cancer-Stroke (1964).

—In supporting the concept of HMO's, the DHEW White Paper (1971) helped accelerate this development.

—The concept of an Area Health Education Center was first advanced by Higher Education (1970).

—Health Manpower (1967) said that societies and States should explore the possibility of periodic relicensing of health professionals—an idea that has been adopted by several States.

Of special note is the conclusion of the Report of the Committee on Federal Medical Services of the Hoover Commission (1948): "The most striking impression made upon us in our study is that this enormous Federal medical project has been entered into and is being conducted without any central plan. . . . One conclusion fundamental to all others is inescapable: There must be over-all planning. This in turn requires a clear definition of the extent of the responsibilities and an organization appropriate to carry out the commitment."

Besides drawing public attention to problems and helping set courses of action, the national health commissions have accomplished other things, among them the instigation of health services research. Costs of Medical

Care (1932) virtually started the modern era of medical economics research and analysis. The statistical analyses of Heart Disease-Cancer-Stroke (1964) are a prototype of the problem-definition process.

Health manpower and health facility analysis was given much impetus by the commissions that examined questions of resource supply, distribution, and utilization.

In terms of legislative impact, many major health laws can be traced at least in part to prior deliberation in a national commission setting: Hill-Burton, the Health Professions Educational Assistance Act, Medicare, CHP, Regional Medical Programs, the NIH programs, nurse training, and mental health legislation. As always, one can argue as to the merits of the legislation but their effects on society cannot be questioned.

This thesis about the infuence of health commissions of course can be pressed too far. There are always many other influences.

Problems and Limitations

Some commissions have had a rather too narrow focus. Intervention in the medical research field, for example, will inevitably have ramifications in other sectors of health: services, education, reimbursement for care, etc. Health activities being intertwined, it is not prudent simply to ask a commission to consider one facet in isolation, such as manpower, facilities, or medical care costs. A health policy must address the entire system, i.e., health needs, utilization, resources, financing, organization, and all health-related functions.

Not all efforts, however, have been specialized or too narrow in perspective. This was certainly not true of Costs of Medical Care (1932) nor of Health Manpower (1967), which considered consumer attitudes, hospital utilization, new technologies, organization of health services, and other issues.

Nearly all commissions seem to exhibit a compunction to include ritual statements. Apart from rhetorical effect, they communicate very little. Examples:

—"The . . . persons who furnish medical care and the . . . millions who may receive it should make concerted and carefully planned efforts to meet deficiencies and wastes."

—"All communities must act to provide personal health services of high quality. . . ."

—"After a decade of debate, the Nation is nearing the point of taking decisive action to remedy the inadequacies of its health-care system."

The "more-of-us" phenomenon is a common one. A good example: "The demand for medical care has enormously increased. To meet it we must have more doctors, nurses, and other medical personnel. There should be more hospitals, clinics, and nursing homes." We now realize there are other possibilities besides aggregate increases in numbers.

Finally, it is clear that many health commissions have been more emphatic in exhortation than precise in quantifying goals and standards. There are exceptions: Medical Education (1959) called for an enrollment in-

crease from 7,400 in 1959 to 11,000 by 1975. Heart Disease-Cancer-Stroke (1964) requested establishment of 25 biomedical research institutes. Higher Education (1970) had many numbers and dates: 5,400 dental school entrants by 1980, 126 area health education centers, etc.

Goal Dimensions

Six goal dimensions are being used in the initial development of the national guidelines—health status, health promotion and protection, health care services, health data systems, health innovation and health care financing. Below is a brief review of how health commissions during the past two generations have addressed these dimensions.

A. *Regarding Health Status*

A number of reports considered these issues, among them Ewing (1948), Magnusen (1952), Chronic Illness (1956), National Goals (1960), Heart Disease-Cancer-Stroke (1964), and the DHEW White Paper (1971).

Chronic Illness (1956) noted that 28 million Americans suffered from chronic disease or impairment. Heart-Disease-Cancer-Stroke (1964) proposed a "realistic battle plan." The Magnusen Report (1952) devoted Volume III of its report to data on health status. The DHEW White Paper (1971) updated the statistics and assessed the progress which had been made in the intervening years.

B. *Regarding Health Promotion and Protection*

The reports dealing with promotion and protection included Hospital Care (1947), Housing (1948), Hoover (1948), Magnusen (1952), Survey of Dentistry (1960), Mental Illness and Health (1961), Community Health Service (1966), Alcoholism (1967), DHEW White Paper (1971), Health Education (1973), and Preventive Medicine (1975).

Individual self-care behavior was specifically addressed by Health Education (1973): The nation should give priority to "research in human motivation as it relates to health habits and practices and special attention to the motivational factors which influence the health behavior of children during their first 10 years." It emphasized the necessity to address the cultural and intellectual mores of a society before seeking to stimulate it to develop self-motivated health maintenance. Preventive Medicine (1975) issued similar recommendations.

The issue of preventive medicine was addressed by Chronic Illness (1956) and preventive medicine in dentistry by Survey of Dentistry (1960). Preventive Medicine (1975) noted 20th century trends toward urbanization, industrialization, increased personal income and resulting higher levels of expectation for good health. The report of the subcommittee on Preventive Medicine and Public Health of the Hoover Commission (1948) contains one of the earliest discussions of the monetary value of preventive medicine.

Environmental health was a concern of Housing (1948), Magnusen (1952), Community Health Services (1956), and Preventive Medicine (1975). Social as well as environmental factors were more specifically addressed by the two last-named commissions.

Consumer health education was seen as a priority by no less than seven

of the reports reviewed—Hospital Care (1947), Magnusen (1952), Survey of Dentistry (1960), Mental Illness and Health (1961), Community Health Services (1966), Alcoholism (1967), and Preventive Medicine (1974). Consumer rights and participation are addressed by Medicaid (1970): "Any Federally-funded or operated health program must provide for consumer participants on advisory committee and councils concerned with planning, purchasing and delivering health services. Representatives should reflect the social, economic, racial and geographic characteristics of their communities." Health Facilities (1968) presented similar recommendations.

C. *Regarding Health Care Services*

Many of the commissions were concerned with health care services: Emerson (1945), Hospital Care (1947), Ewing (1948), Magnusen (1952), Chronic Illness (1956), Mental Illness and Health (1961), Heart Disease-Cancer-Stroke (1964), Community Health Services (1966), Health Facilities (1968) and Medicaid (1970).

The Emerson Report (1945) presented statistical data on health care services and facilities based on the 1940 census and from this baseline stated in very specific numbers the public health units it believed should be created and the funds which would be needed—318 single-county units, 821 multi-county units, 36 county-district units and 22 city units, costing $127 million or 97 cents per capita.

Ten of the reports dealt mainly with the education of health professionals and over half touched upon this. All but one called for expanding the health manpower pool and most called for Federal financial help. Volume 2 of Magnusen (1952) analyzed the issue of general practice.

Ewing (1948) projected future needs from current data: assuming a ratio of one physician for every 667 persons, his report said the nation will need 254,000 physicians by 1960 although only 212,000 were anticipated. It pointed out that only 2 percent of physicians at that time were black, whereas 10 percent of the population was black.

Regarding quality assurance, Hospital Care (1947) advocated the promotion of standards for hospital administration; Health Manpower (1967) recommended that the Bureau of Standards examine medical devices and that the Secretary of HEW develop methods of assessing the accuracy of tests produced by medical laboratories. The development of peer review procedures for physician practices and peer review of hospital utilization was also recommended. Dentistry in National Health (1971) urged that consumers be involved in the review process and that dentists be the chief professional reviewers. Medicaid (1970) suggested that "a standard definition of professional review should be adopted for all medical programs and review requirements should be made uniform for comparable services covered by all Federal programs." Preventive Medicine (1975) urged that quality control be built into all preventive efforts.

D. *Regarding Health Data Systems*

This issue has been given only limited attention. Community Health Services (1966) recommended that "each community develop capabilities for

analyzing data for action-planning." Health Manpower (1967) recommended that "the Federal Government consider establishing a central patient data bank." CED (1973) made two recommendations relating to the use of data systems: "Patient records should be computerized" and medical centers should participate in a computerized, telephone access information center for instant consultation on topics of diagnosis and therapy. Preventive Medicine (1975) urged support for data collection and analysis to be provided to Professional Standards Review Organizations agencies on an on-going basis.

Chronic illness and long-term care needs and services have received the attention of a number of the commissions. Among them are Magnusen (1952), Chronic Illness (1956), Heart Disease-Cancer-Stroke (1964) and Medicaid (1970).

E. *Regarding Health Innovation*

This goal dimension is concerned with biomedical research, behavioral research, technological research and organization and services delivery research. Biomedical research was considered by Bayne-Jones (1958), Medical Research (1960), and Heart Disease-Cancer-Stroke (1964), behavioral research by Mental Illness and Health (1961), Alcoholism (1967), and Preventive Medicine (1975), and research in the organization and delivery of health services by Magnuson (1952), Community Health Services (1966), Allied Health Professions (1967), Medical Care Prices (1967), Health Facilities (1968), and Medicaid (1970).

F. *Regarding Health Care Financing*

A majority of the reports alluded to the problems of health care financing and proposed various solutions. Those which treated this topic in depth were Costs of Medical Care (1932), Magnuson (1952), Medical Care Prices (1967), Medicaid (1970), DHEW White Paper (1971), and CED (1973).

Medicaid (1970) addressed, among other things, the need to develop a health-care financing policy; it said this should meet six objectives: (1) prevent deprivation of care, (2) prevent financial hardship, (3) be responsive to public preferences, (4) promote efficiency and economy, (5) be easily administered and (6) be generally acceptable.

Lessons and Conclusions

1. The custom of most health commissions has been to advocate increased inputs into the system: more doctors, more hospitals, more resources. Alternatively, greater emphasis might be placed on outcomes—the situation one hopes to obtain by planning and implementation, as for example a lower level of infant mortality, a reduction of drug addiction, fewer surplus sophisticated-care facilities, a better-informed consumer of health services, etc.

2. The traditional plea is that "everyone should cooperate—government, providers, voluntary health agencies, educational institutions . . ." In lieu of "everyone should cooperate", one might consider what each participant can do best.

3. National health commissions have shown the importance of viewing

health services planning in a contextual setting. Some earlier commissions did not consider competing social needs such as housing, transportation, ecological protection, etc., or possible shifts in the tax base and employment levels, or inflation, or increased demand for welfare. Obviously, not every socioeconomic development can be projected. But this uncertainty is further reason for contingency planning, for alternative options to be examined on an "if . . . then" basis.

4. Have national health commissions quantified their goals? Based on this sample of reports, one might say, not often. A goal that is open-ended ("more") may be psychologically satisfying to its proponents, but frustrating to anyone seeking to determine when it has been reached, or how much progress has been made toward its attainment.

5. Perhaps the most important thing to be learned from past efforts is that the goal-setting process is not merely a technical pursuit involving statistics and inferences therefrom. It is a policymaking process that eventually influences program, legislative, political, and fiscal questions. And it is permeated with the characteristics of human behavior: perceptions, values, judgments, preferences.

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Chapter IV

Health Goals of Other Countries*

This paper aims to review health goals set forth by other countries; by considering their approaches and aspirations, we can gain a broader perspective for the development of goal statements for the United States. The review is based on the statements and reports of ministers of health, official planning and other agencies, and national health plans from some 50 countries.

Most countries, like the United States, have not produced explicit statements of their nation's intentions in the health field. In some instances there are no clearly enunciated positions on health policy. At the other extreme are countries where there is a plethora of statements, some duplicative and some conflicting.

Another problem is the nature of many health statements. Some countries have been required to produce long-range plans outlining goals and objectives in seeking international financial or other aid; such statements often concentrate on what has already been accomplished or on what the grantor offers.

Still another problem is the seemingly unrealistic nature of some national plans. They may call for financial, manpower, technical or other resources which do not presently exist or set target dates which may be impossible to meet. They are often idealistic statements of long-term national goals and aspirations but they may not be useful as guides to the current conduct of the health care system.

There may be other reasons for the sometimes obvious disparity between what a particular health plan says and how the country's health system is actually run. There may be lack of attention to updating the health plan over the years to take into account changing needs and changing political and social situations.

Examples of National Plans

A notable example of a clearly stated position is the "working document" issued by the Canadian Minister of National Health and Welfare in 1974, "A New Perspective on the Health of Canadians." This sets forth strategies for improving the health of the Canadian people based on a health field concept. It emphasizes that health care is only one component in improving health status and in many situations is less important than human biology, environmental conditions, and life style.

*This paper is based on a survey and an analysis by Ralph R. Bates, M.A. and Peter G. Bourne, M.D

The Canadian approach involves five strategies. The first is a health promotion strategy which seeks to promote individual behavior conducive to healthier, more active and less sedentary lives. The second is a regulatory strategy to improve the environment and provide greater consumer protection. The third, a research strategy, is aimed among other things at improving management and administration of health services and building more accurate data systems. The fourth seeks a more efficient system of care delivery, measured not solely by dollars and cents but also by improved accessibility to services and quality of results. The fifth strategy is directed to goal-setting itself, to raise the level of mental and physical health and improve the efficiency of the health care system, thereby providing a stronger sense of direction and purpose.

Another approach is illustrated by the "consultative document" on "Priorities for Health and Personal Social Services in England" issued by the Department of Health and Social Security in 1976. It seeks to establish "rational and systematic priorities" for the use of limited new resources to be allocated to health care in the next few years, emphasizing primary care and preventive services and calling for special attention to the needs of the elderly, the handicapped, the mentally ill, and children. Special attention is given also to actions to achieve economies to constrain hospital outlays and to shift resources toward those regions and localities which have received less funds per capita historically and where standards of service are lower.

In 1973 National Board of Health and Welfare in Sweden issued a study of future organization of its health delivery system into the 1980's. Improved care for mental health is emphasized, integrating services with general hospitals and daytime clinics. Long-term care will be expanded in view of the increasing number of old people, in particular small nursing homes in the community. Primary medical care will be extended through health centers, staffed by two to 20 physicians who will have additional training in psychiatry and social medicine and will work closely with social services. Regionalized systems will be strengthened, extending programs for individual diseases or disease groups. An expanded planning system emphasizing three cycles is being developed for five, 15, and 30 years.

A report in West Germany in 1971 emphasized the relationship of health policy to social and economic policy, cultural attitudes and political values. Three major priorities were identified, preventive health care, health maintenance, and care of the sick and handicapped. The individual citizen's responsibility for his and his family's health is noted; health policies and public and private efforts are to provide supporting resources.

The Soviet Five-Year Plan for Public Health sets the main tasks of health agencies and institutions as further improvement of the mental and physical health of the population, a reduction in general morbidity, trauma and the death rate, especially among children, and the reduction and elimination of infectious diseases. Sanitation and epidemiological services are

addressed first. With respect to medical care, improvement is sought in its material and technical base, in the development of specialized care, in the gradual approximation of the levels of care rendered to the rural and urban population, and in improvement of the quality of care and diagnostic and therapeutic potentials of the outpatient-polyclinic link.

The Mexican Health Plan, issued in 1974, projects goals for a 10-year period. Plans for health are integrated with overall development of the Nation. The strategy focuses on increasing participation of the community and coordinating various government institutions. The plan identifies goals for health education, nutrition, sanitation, workers' health, mental health, maternal and child health, communicable and other diseases, access to services, health information and data, recreation and sports, management and the environment.

The Ten-Year Plan of the Americas, for the period 1971–1980, was approved at a special meeting of 28 Ministers of Health, convened in Santiago by the Pan American Health Organization in October 1972, for recommendation to the member governments. The Plan emphasizes that health is an end for each human being and a means for society and sets specific goals with respect to access to services, communicable disease control, maternal and child health and family welfare and nutrition. Attention is called to needs relating to chronic diseases, cancer, mental health, dental health, rehabilitation and growing problems from the use of alcohol and dependency-inducing drugs. Environmental sanitation programs are emphasized, including occupational health, food and nutrition policies, quality control of drugs and prevention of accidents. Supporting services encompass epidemiologic surveillance systems and health education. In countries where life expectancy at birth is between 65 and 69 years, the Plan recommends it be increased by two years during the decade. (Life expectancy at birth in the United States was 71.1 years in 1971 and 71.9 in 1974).

Analysis of Goal Statements

Available documents covering 48 countries were analyzed systematically to try to identify pertinent goal statements. The Fifth Report on the World Health Situation, issued by the World Health Organization, for the years 1969–1972, was a primary source.

Naturally, considerable interpretation was necessary to categorize statements. Countries refer to goals differently. One country, for example, may put forth its goal as "to provide each citizen with an adequate diet"; another, with the same thought in mind, may express the goal of "increasing the caloric and protein intake in the diets of 25 percent of the people over the next 10 years."

In many countries, especially the less developed ones, there is a concern with improving access to health care and services in the rural areas, while in the more developed countries improved access often refers to urban areas as well and to underserved areas.

The goal of safe drinking water is an example of different emphases. In the less developed countries, safe drinking water means potable water free

of pathogens while in the more developed countries it refers to water which is free not only of pathogens but of sometimes subtle chemical contamination as well.

Table 1: 20 goals most frequently found in national health plans, by goal dimensions and numbers of countries incorporating such statements, world-wide and by geographical regions.

Goal statements by Goal dimensions	Numbers of countries incorporating goal statement							
	Total (N=48)	West Europe (N=8)	East Europe (N=4)	Western Hemp. (N=12)	Medit. (N=6)	Africa (N=11)	SE Asia (N=4)	West Pac. (N=3)
Health Status								
Reduce communicable disease	23	2	1	12	1	5	2	—
Reduce infant mortality	14	1	2	8	—	2	1	—
Reduce mental illness	8	2	—	5	1	—	—	—
Reduce accidental deaths	7	1	—	5	—	—	—	1
Health Promotion								
Improve sanitation and environ. conditions	20	—	1	10	3	3	3	—
Extend health consciousness	20	5	1	6	3	3	2	—
Improve access to safe drinking water	11	—	—	6	2	1	1	1
Improve availability of adequate diet	8	1	1	4	1	—	1	—
Reduce environ. pollution	7	1	1	4	—	—	—	1
Health Services								
Increase access in rural and urban areas	25	2	4	9	2	5	2	1
Increase number of providers	24	3	1	—	1	8	3	2
Increase number of facilities	23	5	1	4	5	4	3	1
Improve maternal and child health services	20	2	1	6	4	3	3	1
Increase in-service training	13	3	—	4	3	2	1	—
Develop comprehensive services	12	3	2	2	1	2	1	1
Improve health care for mentally, physically handicapped	6	4	—	1	—	—	—	1
Improve services to elderly	5	5	—	—	—	—	—	—
Improve management	5	—	—	5	—	—	—	—
Innovation								
Increase research efforts	6	—	1	2	1	1	—	1
Data								
Improve data systems	11	1	—	7	2	1	—	—

Source: Fifth report on the world health situation. World Health Organization. Geneva, 1975

A lack of consistency among statements of goals and objectives was also found. For example, increasing the number and skills of health practitioners was often stated as primary goals even though others would consider them as objectives related to a goal of improving access to health care. However, it was evident that such statements were useful to planners in calling attention to matters of critical importance. As elsewhere, utility seemed to be a more important criterion in plan development than logical consistency.

The accompanying Tables present the 20 most commonly stated subjects of goal statements, classified according to the six goal dimensions described elsewhere in this monograph. The Table shows the number of times each subject was identified, world-wide and for countries in seven geographical regions.

While the reports reviewed do not necessarily provide a representative sample and the analysis may have involved some misinterpretations, the overall results appear to provide a general index of the interests and aspirations of other countries. Four goals were identified in approximately half the countries—reducing deaths from communicable diseases, improving access to services, increasing the number of providers, and increasing the number of facilities. Other common aspirations were improving sanitation

Table 2: Goals embraced by more than half of nations within each of seven geographical areas.

Goal statement	West Europe	East Europe	Western Hem.	Medit.	Africa	SE Asia	West Pacific
Reduce communicable disease			●			●	
Reduce infant mortality		●	●				
Improve sanitation and environ. conditions			●	●		●	
Extend health consciousness	●		●	●		●	
Improve access to safe drinking water			●				
Increase access in rural and urban areas		●	●			●	
Increase number of providers			●		●	●	●
Increase number of facilities	●			●		●	
Improve maternal and child health services			●	●		●	
Increase in-service training				●			
Develop comprehensive services		●					
Improve health care for mentally, physically handicapped	●						
Improve services to elderly	●						
Improve data systems			●				

Source: Fifth report on the world health situation. World Health Organization. Geneva, 1975

and environmental conditions, improving maternal and child care, and raising the health consciousness of people through education.

In all parts of the world there is thus a primary concern for improving access to care. Similarly, there is worldwide interest in such health protection and promotion activities as improving sanitation and environmental conditions and raising the level of health consciousness and knowledge through health education and other approaches.

As might be expected, there are also notable differences. The care of the elderly and handicapped tend to receive greater attention in Western European countries. A specific focus on communicable disease control and efforts to reduce infant mortality is more common in Latin American, African and Southeast Asian countries.

General Issues

In many countries, there is a growing recognition that the development of health services is best viewed as one part of broader efforts to improve social and economic conditions, efforts which call for the participation of workers and the community. A recent report of the World Bank emphasized that improvements in health are related to modernization and per capita income. Health is seen at the heart of a complex set of interrelationships. Health programs, it is argued, should form part of a broad program for socioeconomic improvement.

Cost increases have become a matter of increasing concern, especially in Western European countries, although it is difficult to identify specific goals of this nature. This issue is likely to receive even greater attention and articulation in the future. For example, the English "Consultative Document" referenced above includes a defined, restrictive limit on the rate of increase of national expenditures for health. A limit has also been proposed in Canada for national government expenditures.

The desirability of developing more comprehensive and integrated approaches through better planning and coordination is also more generally accepted. The former chief of the Organization of Medical Care of the World Health Organization has pointed out, "During the last decade . . . many disillusions were experienced with limited approaches and it is now clear that the protection and promotion of the health of individuals and populations requires an integrated approach, comprising both preventive and curative services, providing personal health care both in institutions and in the community."

The Director-General of the World Health Organization recently suggested that the design of a national health system might be based upon responses to four questions:

"(1) Is it possible to assign health resources within a country on a problem-solving basis, using different mixes of preventive, curative, promotive, and rehabilitative actions?

"(2) What medical interventions are truly effective and specific for prevention, treatment, or rehabilitation, as measured in objective terms?

"(3) Can such medical interventions and the risk groups to which they should be applied be described objectively and in such a manner that the amount of skill and knowledge required for their application can be assessed?

"(4) Is it possible to design a health care establishment to carry out the above tasks which will result in the most meaningful interventions reaching the greatest proportion of persons at risk, as early as possible, at the least cost, and in an acceptable manner?"

Resolution of these issues presents a complex challenge to health planners and all concerned with health conditions and health care throughout the world.

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Chapter V

Goals and Standards in Comprehensive Health Plans

Some 200 State and area comprehensive health planning agencies were created under the "Partnership for Health" Amendments of 1966 and many of these have issued formal health plans. The number has increased in recent years as the agencies have gained experience in the planning process and in knowledge of the health needs of their areas.

The agencies have encountered many of the issues and problems which are now being dealt with in developing the national health guidelines required by the National Health Planning and Resources Development Act of 1974. Because it has seemed prudent to analyze their experiences, a study of their plans has been made.*

The first step in this study was to select a manageable number of State and local plans for analysis. From a much larger sample, a total of 12 State and 23 community plans were chosen. Three criteria were used in the selection: the presence in the plans of goal and standard statements, the level of their quantification or potential quantification, and their concern for cost containment.

Even among the plans selected, great differences were found in how precisely the goals and standards were stated, the range of their interests, and their usefulness.

Analyzing the Statements

About 1,600 goals and standards were found in the 35 documents. Approximately half were goals, i.e., statements of a desired future state or result, and half were standards, or measures of supply, distribution or organization of resources.

The statements were grouped under one of the six goal dimensions which are being used in the initial development of the national guidelines: health status, health promotion and protection, health care services, health data systems, health innovation, and health care financing. The statements were then classified according to a primary sub-area of interest and as many secondary sub-areas as necessary. As an example of this procedure, the statement "primary care facilities should be adequately equipped to deliver quality health care" was classified a standard regarding (1) health care services, with (2) quality assurance as a primary sub-area and (3) ambulatory care as a secondary sub-area.

* This was performed by the Orkand Corporation, Silver Spring, Md. (Contract #HRA 230-75-0081, call order No. 6).

Table 1 shows how the 1,604 statements were distributed. As might be expected, the largest number (over half) were found to fall under health care services and the next largest (about a quarter) under health promotion and protection.

Table 1. Analysis of Goal and Standard Statements

	Goals		Standards	
	No.	(%)	No.	(%)
Health Status	65	(9)	7	(1)
Health Promotion	258	(34)	159	(19)
Health Care Services	358	(46)	553	(66)
Health Data Systems	10	(1)	25	(3)
Health Innovation	25	(3)	26	(3)
Health Care Financing	53	(7)	65	(8)
Total	769	(100)	835	(100)

The largest number of health status goals and standards was directed at reducing morbidity. Examples are "to reduce the incidence of diseases related to smoking" and "to reduce the 97 percent incidence of dental cares in the medically indigent to 50 percent by 1985."

Health protection and promotion statements touched for the most part on environmental protection and health education, although there were many other concerns, including consumer rights and participation, preventive medicine, nutrition, and individual self-care behavior.

There were relatively few statements regarding health data systems or health innovation. Most of the former had to do with data collection and almost all of the latter with health systems research. Statements regarding health care financing covered patterns of expenditures, cost containment, and productivity.

Table 2 shows the primary sub-areas for the 358 goals and 533 standards regarding health care services. As will be seen, about a third were concerned with comprehensive care. This is partly because this sub-area

Table 2: Primary Sub-areas for Health Care Statements

	Goals	Standards
Comprehensive System of Care	101	129
Specialty Care	54	76
Emergency	31	81
Preventive Services	31	44
Quality Assurance	31	41
Rehabilitative Care	25	12
Home Health Care	24	36
Long-Term Care	23	22
Ambulatory Care	18	71
Manpower Education	10	35
Other	9	6
Total	358	553

encompasses continuity of care and the care of population sub-groups such as the elderly and migrant.

Assessing the Statements for Clarity

A random sample of 149 statements were examined for specificity and clarity. Five elements were analyzed—(1) time, (2) direction of change, (3) the measure of the characteristic to be changed, (4) magnitude of change, and (5) definition of measure. The statement "by 1973, to reduce infant mortality by 30 percent, from 19 to 15 deaths per 1,000 live births" fits this model perfectly.

Table 3 shows the results of this analysis. Eighty-five percent of the statements specified a direction of change and a slightly smaller percent-

Table 3. Analyzing Statements for Clarity

	Elements of Clarity				
Goals and Standards	Time	Direction	Magnitude	Measure	Definition of Measure
Health Status (N=15)					
Specified	9	13	8	12	8
Not Specified	6	2	7	3	7
Health Promotion & Protection (N=44)					
Specified	5	41	1	35	7
Not Specified	39	3	43	9	37
Health Care Services (N=41)					
Specified	13	33	12	31	10
Not Specified	33	13	34	15	36
Health Data Systems (N=15)					
Specified	6	18	0	18	1
Not Specified	12	0	18	0	17
Health Innovation (N=13)					
Specified	3	10	0	11	3
Not Specified	10	3	13	2	10
Health Care Financing (N=13)					
Specified	3	11	1	8	4
Not Specified	10	2	12	5	9
Total					
Specified	39	126	22	115	33
Not Specified	110	23	127	34	116

age a measure of change. Only about 25 percent specified a time or defined the measure used, and only 15 percent specified a magnitude of change.

Statements regarding health status were quite specific, but one might have expected a greater degree of specificity in the other areas, particularly health care services and health care financing.

Twelve statements, or eight percent, met all five criteria. Six were concerned with health status, five with health care services and one with health promotion and protection. The 12 statements are listed in this paper.

Usefulness of the Statements

A separate study was undertaken to evaluate the usefulness of the statements. Two State and four area agencies were selected for extensive telephone interviews. These focussed on how the goals and standards were developed, the roles of the various interest groups in the development process, the methods used to obtain consensus, and the cost containment implications of the statements. Agencies were asked whether they felt their planning documents had succeeded or failed and how they judged the usefulness of particular goal and standard statements.

The most important determinant of success, according to those interviewed, was the community's involvement in the development process and its feeling of commitment and "ownership." The need to involve provider, consumer and other interested groups in the planning from the very start was emphasized many times.

It was felt that goals and standards should include implementation strategies, as in the example, "to eliminate medical scarcities by promoting health care service manpower in underserved areas." When such a strategy is stated explicitly and approved by the community, it gives guidance to the planning agency and is more likely to command public support.

Planning agencies would like more and better data. They feel this is needed not only in order to develop more realistic plans but to gain greater credibility for them in the eyes of the public. They would like Federal assistance in this.

Lack of data was one of the two reasons cited for the general lack of specificity, clarity, and realism in many of the goals and standards. The other reason, stated by some of those interviewed, was a desire to avoid controversy and gain consensus. It was better, some said, to have a more general statement supported by the community than to have a more specific statement which lacked total support and in consequence might not be achievable.

Other planners felt differently. They said that emphasizing short-term acceptance can result in a reinforcement of existing arrangements. The resulting plan may become a bastion of the status quo rather than a stimulus to change.

The achievement of an appropriate balance between specificity and consensus may be one of the most difficult challenges in formulating State and local health plans in the future. Similarly, it is likely to be a key issue in developing the national health planning guidelines.

Another conclusion may be drawn from this study. If the national guidelines are to be successful, they must take into consideration the wide differences in health status, health systems and health needs which exist between different sections of the county, different populations, and different urban, suburban, and rural settings. There is no formula by which one can aggregate the health goals and standards of local agencies and arrive directly at a set of national goals and standards that have broad applicability and consensus.

The collective experience of the Comprehensive Health Planning Agencies cannot be overlooked, or the lessons which will be learned as a new cycle of planning begins under the new Act. They will show what the issues and problems are, as local groups and the State agencies perceive them, and how these matters are being engaged.

Illustrative Statements Notable for Clarity

Reduce illness and death due to stroke to the current national average by 1980.

Reduce the estimated 50 rubella syndrome cases expected during the the next rubella season to five cases.

Achieve a decline in perinatal mortality to a rate of 18 per 1,000 deliveries by 1980.

Reduce the zoonotic disease rate among the human population from the current 22.4 to 18 per 100,000 by 1975.

Reduce the airborne dust particles generated by rural roads to 50 percent of the present level within 10 years and to 10 percent within 20 years.

Expand fluoridation to include 90 percent of the population served by public water supplies by 1975.

Reduce animal bites from the current rate of 490 to 352 per 10,000 population within three years.

Ensure primary care services are available at times consistent with the living patterns of consumers by 1979, i.e. on weekends and evenings and at a minimum of 30 hours per week of primary care office services.

Train all ambulance personnel to EMT level by 1980.

Develop a network of emergency hospital facilities to provide 24-hour service according to three types of emergency facilities by 1975.

Establish five additional sheltered rehabilitation workshops by 1980.

Chapter VI

The Condition of Health and Health Care: Context for Goals and Standards*

This paper attempts to summarize what is known about the current health status and health systems within the United States as context for setting national goals and standards for health policy planning. In some cases it has been possible to provide this information for each of the Health Service Areas which have so far been designated under the National Health Planning and Resources Development Act; in other cases it has been necessary to present data by States or by other characteristics.

It is immediately evident upon looking at the Areas why this specification is necessary. The differences among them in size and population, in economic and social make-up and in health status and health resources are very great. It would be quite impossible for local health planners to rely on national data alone in carrying out their responsibilities and equally impossible for the Federal Government to develop national goals and standards without taking these differences into account.

Section 1511 of the Act describes how the Health Service Areas were to be designated. The aim was to create geographical units which are appropriate for health planning. The Areas as finally selected might be described as medical trade areas in somewhat the same sense as Standard Metropolitan Statistical Areas describe marketing areas. The Health Service Areas, however, are larger and cover all of the United States.

Of the total Health Service Areas, about 15 percent are predominantly rural, a slightly larger percentage are urban and the rest are mixed. In size they range from Alaska 3, which encompasses about 320,000 square miles, to New Jersey 3, which is Hudson County and is 46 square miles in area.

The range of population of the 213 areas is as follows:

Population	Number of Areas
Under 200,000	7
200,000–499,999	45
500,000–999,999	91
1,000,000–1,999,999	49
2,000,000–2,999,999	17
3,000,000 and over	4

* Jacob J. Feldman and Mary Grace Kovar, Editors. Division of Analysis, National Center for Health Statistics.

In a very few cases the Areas as they are described in this paper are different from those as officially designated. This is principally because much information on population and health is tabulated by counties and the boundaries of some Areas cross county lines. A series of Tables are presented as an appendix to this paper; for a fuller explanation, see the note preceding Table 5.

1. Measures of Health Status

The health of a population is difficult to measure. No one has been able to devise a workable national "index" of health, nor would it be possible to apply such a measure if it existed. There are too many ways to define health, too many questions which planners must ask, too many differences between national averages and local situations.

There are a number of individual measures, however, which can be used to set goals and standards and assess the effectiveness of health services. Some are measures of mortality and illness and of health services and resources; still others may be derived from population and other data. The basic information sources used here are the continuing and special studies of the National Center for Health Statistics, supplemented by data from the Social Security Administration, the National Institute of Mental Health and the Health Administration Center at the University of Chicago.

Population Characteristics

Age is one of the characteristics which can be used to predict health status and judge the need for health services. In general, older people are less healthy and tend to utilize health services more frequently than younger ones. Approximately 10 percent of the U.S. population is 65 years of age or older and approximately 4 percent is 75 or older. In areas where there is high in-migration of retired persons or high out-migration of young people, these proportions may be much higher. In these areas there are likely to be higher death rates, greater prevalence of chronic conditions and greater utilization of health services, especially long-term care services.

Conversely, where a population includes a high proportion of children there is likely to be a greater incidence of acute or short-term conditions, as children are particularly subject to upper respiratory conditions and contagious diseases. Where there is a high proportion of women of childbearing age, birth rates will be relatively high with an accompanying need for more pre- and post-natal care, obstetric units in hospitals, well-baby services and immunization programs.

Death rates are different for different racial groups, for men and women, and for people living in cities as opposed to rural areas. The kinds of illness and disabilities and the needs for curative and preventive care for each of these population groups also tend to be different.

The most widely available indicators of health status are derived from death rates. Deaths have been registered in selected States for many years and in all States since 1933. These data make it possible to compare geographic areas and different periods of time and to make at least short-term projections for purposes of standard-setting and evaluation.

Table 1

In 1974, there were 1,934,388 deaths registered in the United States, 9.2 deaths per 1,000 persons. This was lower than the death rate in 1973 or any previous year. Provisional data show that the rate in 1975 had declined to 9.0.

The rates in 1974 were lower than those in 1973 for each age group. In 1974, as in previous years, the lowest rate (0.4 per 1,000) was for children ages 5–14. The rates increase steadily with increasing age, reaching 165 per 1,000 for those aged 85 or older. The death rates for males are higher than for females in each age group; at certain ages they are two to three times as high—at ages 15–34 largely because of violent deaths and at ages 55–69 largely because of deaths from diseases of heart.

Rates for the white population are lower than those for the black population at all ages until 80, when the rates reverse.

Diseases of heart account for 38 percent of deaths in the United States and are the leading cause of death. Next are malignant neoplasms (19 percent) and cerebrovascular diseases (11 percent). Because these three categories account for more than two-thirds of all deaths, the overall crude death rate is not greatly affected by changes in death rates from other causes such as motor vehicle accidents, which account for only two percent of all deaths.

The decline in overall mortality in recent years is due primarily to a decline in the death rates from heart disease and cerebrovascular disease. When the death rates are age-adjusted (to the 1940 population) to facilitate comparisons, the death rate from ischemic heart disease declined 20 percent from 1968 to 1974 and the rate from cerebrovascular disease 16 percent. Unfortunately, the age-adjusted death rate for malignant neoplasms has not declined. It was 130.2 per 100,000 persons in 1968 and 131.8 per 100,000 in 1974. There is evidence from provisional data that the rate in 1975 may be still higher.

Preventing the death of a 75-year old from a cerebrovascular accident does not have the same demographic, social, and economic consequences as preventing the death of a 25-year old from a motor vehicle accident. One way to measure the social and economic impacts of mortality is to estimate the years of productive life which would be saved if that particular cause were eliminated. Given the 1970 population of the United States and defining productive years to be those below age 70, there would be 199 million productive person years gained if all heart disease were eliminated as a cause of death, 146 million if malignant neoplasms were eliminated, but

only 4 million years for cerebrovascular disease. There would be 54 million productive person years gained if motor vehicle accidents were eliminated as a cause of death. The crude death rate from motor vehicle accidents is less than one-fourth that from cerebrovascular disease; the estimated number of productive person years lost is 14 times higher.

Table 2

Another approach to measuring impact is to estimate the amount of money that individuals dying of a particular cause would have earned during the remainder of their working lives had they not died when they did. Using this approach, diseases of the circulatory system (a category which includes both heart and cerebrovascular disease) account for 35 percent of the cost of mortality, and neoplasms for 19 percent. Accidents, poisoning, and violence (which includes motor vehicle accidents) account for 22 percent.

Table 3

Substantial variation in death rates exists across the United States among regions, between rural and urban areas, and within small areas of large cities. The crude death rate for individual States ranges from a low of 4.4 per 1,000 persons to a high of 10.9. Eleven States had rates of 10 or higher in 1974 and seven States had rates lower than 8 per 1,000.

These differences extend to individual causes of death. Unadjusted death rates for diseases of heart range from 87.8 to 443.2 per 100,000 among the States—from 75 percent lower to 27 percent higher than the U.S. rate of 349.2. (Alaska, the State with the very low rate of 87.8 is distinctly different from the rest; the next lowest rate is 164.0.)

The United States death rate from malignant neoplasms in 1974 was 170.5 per 100,000 persons. In the lowest State, it was 53.7; in the highest it was 218.1. Rates were highest in the Northeast and lowest in the West.

Motor vehicle accidents accounted for 22.0 deaths per 100,000 persons (33.2 per 100,000 males and 11.3 per 100,000 females). The lowest rate for any State in 1974 was 11.3 and the highest was 47.6 deaths per 100,000 persons. This is one of the few cases where a causative ecological factor can be clearly demonstrated and quantified. Areas where people drive long distances or at high speeds can anticipate high rates of death and disability from this cause.

Both unadjusted and age-adjusted death rates are given here, as they serve different purposes. While standardized or adjusted rates are important for comparison, unadjusted or crude rates are keys for planning in a specific area. Evaluation requires adjustment; planning for conditions as they exist now requires knowledge of what is happening to the population living in that area. The unadjusted rates are shown in Table 1; relative mortality ratios derived from age adjusted rates are in Table 4. When adjusted rates are used, one State had a death date from all causes 35 percent higher than the National rate, and one State had a rate 20 percent lower. Six had rates which were at least 10 percent higher, and eight had rates at least 10 percent lower.

Table 4

There was less variability for the white population. Only two States had rates more than 10 percent higher than the National rate, and only four were at least 10 percent lower. The great variability was for the population classified as "other." In most areas this means black, in a few areas Native American, and in some Oriental. Since these population subgroups differ from one another in death rates and causes of death, the variation among States is largely a function of the group in that State classified as "other."

Infant and Postneonatal Mortality

After 30 years of rapid decline, infant mortality rates leveled off from the mid-50's through the late 60's and then started down again. In 1974, the infant mortality rate was 16.7 deaths per 1,000 live births, lower than ever before. The provisional 1975 rate of 16.1 is even lower and represents a decrease of 3.6 percent from the final rate for 1974 and the lowest rate ever recorded in the United States.

Again, there is a wide variation among demographic groups. The infant mortality rate for white infants in 1974 was 14.8 deaths per 1,000 live births and for infants other than white, 24.9 deaths per 1,000 live births. The provisional 1975 data indicate that the gap may be closing somewhat. The rate for white infants declined 2.7 percent to 14.4 per 1,000 while the rate for other infants declined 8.0 percent to 22.9 per 1,000 live births. Among the 204 Health Service Areas for which data could be tabulated, the rates in 1969-73 varied from a high of 28.1 (the District of Columbia) to a low of 11.6 (Connecticut 5). A total of 76 Health Service Areas had rates above 20 deaths per 1,000 live births.

Table 5

Even within a State, the infant mortality rates varied widely. In Illinois, for example, rates ranged from 15.8 to 26.6 from one Health Service Area to another. A recent analysis of vital statistics data from 19 of the largest Standard Metropolitan Statistical Areas showed wide variation between poverty and non-poverty areas within single metropolitan areas. This demonstrates again that biological factors alone do not account for differences in death rates. Other factors must be considered such as social and economic conditions, environmental conditions, poor and crowded housing, the spacing of children and age at childbearing, and access to good care and the knowledge of how to obtain it.

Wide differences are found in postneonatal mortality rates (deaths between four weeks and one year). These varied from 2.9 to 13.6 among Health Service Areas in 1968-1973. Because mortality during the postneonatal period is dominated by exogeneous factors, it is thought to be more amenable to influence by medical, nutritional and environmental changes than is mortality during the neonatal period.

Table 6

Life Expectancy

As death rates decline, the expectation of life increases. Under the mortality conditions prevailing in 1974, a child born in that year could expect to

live 71.9 years. The provisional 1975 data show that life expectancy reached 72.4 years, the highest ever attained in the United States. In 1970, life expectancy was 70.9 years; in 1960, 69.7 years; and in 1900, 47.3 years.

Life expectancy varies greatly by sex and race. For white female children it is 76.6 years, for "other" female children 71.2 years, for white male children 68.9 years, and for "other" male children, 62.9 years.

The difference in life expectancy between the white and the other populations has declined dramatically. In 1900 there was a difference of 14.6 years; by 1970, this had shrunk to 6.4 years. On the other hand, the difference in life expectancy between males and females increased in this period from 2.0 years to 7.7 years.

Among the States, according to the 1969-71 State Life Tables, the expectation of life at birth in 1969-71 was highest in Hawaii and lowest in the District of Columbia. Theoretically, a child born in 1970 could expect to live almost eight years longer in Hawaii than in the District of Columbia. This is, of course, hypothetical. Mortality rates do not remain constant over a lifetime and people do move from one place to another.

Table 7

There were no dramatic changes in the State rankings in life expectancy between 1959–61 and 1969–71. In general, those States which were above the United States average in 1959–61 were more likely to show a substantial increase than those which ranked lower. Of the 49 States which had at least 1600 deaths of white persons in both 1959–61 and 1969–71, 20 showed an increase of a year or more for the white population. Of the 27 States which had at least 1600 deaths of minority persons in both 1959–61 and 1969–71, 14 showed an increase of a year or more. Life expectancy in three States increased by more than 2 years. Given the relative stability of life expectancy, an increase of two years over a ten-year period is remarkable.

2. Health Resources

Physicians and other health workers, hospitals and other health care facilities are not evenly distributed across the United States. It is important to bear in mind, however, that health care resources can be in oversupply as well as undersupply. Some analysts claim that the United States is generally oversupplied and that this can lead to unnecessary utilization and even iatrogenic illness. Thus an area which is below the national average for a particular health resource is not necessarily at a disadvantage.

Physicians are concentrated in metropolitan areas, as are dentists, nurses and other health workers. There are about five times as many physicians in proportion to the population in the most populous urban counties as in the least populous rural counties.

As of December 1973, there were 15.0 non-Federal physicians in active

practice for every 10,000 persons in the population, or about one for every 667 persons. Among Health Service Areas, the range was from 4.4 to 43.8 per 10,000 persons. Twenty percent had fewer than 8.5 physicians per 10,000 which is about 1 physician for each 1,200 persons.

Table 8

There is also variation within the individual Areas. Seventy-four percent of the Health Service Areas contain at least one county which has been designated as a physician shortage area for the National Health Service Corps. About 30 Areas have more than 48 percent of their population living in such counties.

Thirteen percent of non-Federal, active physicians are 65 years or older; in one-fourth of the Areas, 16 percent of all physicians are 65 or older. Nearly 20 percent of the office-based primary care physicians in the United States are 65 or over; in ten percent of the Areas, more than one quarter of these physicians are in this age group.

The ratio of primary care physicians in office-based practice (general and family practitioners, internists, pediatricians and obstetrician-gynecologists) is 4.7 per 10,000 population. Variation among Areas is less for primary care physicians; the range is from 2.0 to 9.3 with 20 percent below 3.8. The greatest variation is with respect to specialists; the high correlations among the specialities mean that those Health Service Areas above average for one specialty tend to be above average for other specialties.

Table 9
Table 10

Board certification varies among the specialties; 68 percent of pediatricians are board-certified but only 44 percent of psychiatrists. The percentage of internists, pediatricians, and obstetrician-gynecologists who are board-certified in the highest decile of the Areas is 50–60 percent higher than the percentage certified in the lowest decile and the percentage of psychiatrists who are board-certified is 150 percent higher.

About 20 percent of U.S. physicians are foreign medical graduates. Among the Areas, the proportion varies from zero to 55 percent with a median of 12 percent. One-fifth of the Areas exceed 22 percent.

States vary greatly in their reliance on foreign medical graduates to staff their mental hospitals. The proportion does not seem to be a function of the size of the State's population, its location, or whether the State is predominantly urban or rural. Large States such as New York, Illinois, and Ohio are heavily dependent on foreign medical graduates in staffing their mental hospitals while California and Pennsylvania are not. West Virginia, South Dakota and Montana employ a high proportion of foreign medical graduates, Louisiana, Mississippi and Wyoming a low proportion.

Table 11

In general, the geographic distribution of dentists is nearly as uneven as the physician distribution. Nationally, there were 4.8 civilian dentists per 10,000 population in 1973. Among Health Service Areas the range is from 1.9 to 10.3. Twenty percent of the Areas have fewer than 3.4 dentists per 10,000 population and about 60 percent contain counties which have been

designated as dentist shortage areas for the National Health Service Corps.

In 1972, there were 38.2 registered nurses per 10,000 population in the United States. The nurse-population ratio varies among Areas from 10.1 to 66.4; 20 percent had fewer than 24.8 nurses per 10,000 persons. The lack of adjustment for full-time activity is especially serious for nurses since a substantial proportion of nurses do not work full-time and this proportion is known to vary geographically.

The interrelationship among resources should also be kept in mind. Potential substitution of manpower (nurse practitioners for physicians, one specialist for another, ambulatory and home care for hospital care) makes it important to consider variation in more than one indicator simultaneously. However, the data available at this time makes this impossible.

Data on the distribution of health practitioners by State and county, including physicians, dentists and nurses, can be found in *Health Manpower, A County and Metropolitan Area Data Book, 1972–75* which was published by the U.S. Department of Health, Education, and Welfare as DHEW Pub. (HRA) 76–1234.

Health Facilities

In 1973, there were 43 short-term, general hospital beds per 10,000 population in the United States, according to the American Hospital Association Annual Survey. The range among Health Service Areas was from 16 to 84 beds; 15 percent had more than 60 beds and 20 percent fewer than 40. These data exclude osteopathic hospitals and those not registered with the AHA. The Master Facility Index of the National Center for Health Statistics estimates a total figure of 49 beds per 10,000 persons if Federal hospitals are included.

Table 12

The number of nursing care beds per 1,000 population 65 years and over was 52 in 1973, varying from 17 in West Virginia to 89 in Minnesota. Twenty percent of the States had 35 beds per 10,000 or fewer.

There were 3.2 full-time equivalent employees per patient in U.S. hospitals in 1973. The number ranged from 1.9 in Mississippi, South Carolina and Virginia to more than 3.1 in Alaska, Arizona, and Utah. There were 53 full-time equivalent employees per 100 residents in nursing care and related homes in 1973, ranging from fewer than 43 in Rhode Island, Minnesota, Iowa, the Dakotas and Nebraska to more than 65 in New York, Delaware, and New Mexico.

3. Utilization of Health Resources

The utilization of health care resources varies among Health Service Areas and within them. Partly this is because of differences in the supply of physicians, other health personnel, laboratories, hospitals, and other resources; the more such resources there are, the more likely are they to be used. It is also because needs for health services vary according to age and sex and other characteristics of the population in the area.

There are other determinants of health care utilization. Among them are

income, insurance, public programs, and population-wide services such as immunization; also the practices which physicians and other health personnel follow which are influenced by local norms as well as by economic factors. Regulatory practices connected with payment programs play a part as well.

The consumer also determines utilization. As has been pointed out earlier, his needs, real or perceived, are affected by age, sex, race and place of residence. His access to health care, as measured by travel time, waiting time for an appointment, and waiting time in the office, is a determinant. His awareness of program eligibility and the availability of providers influences his utilization of services. And there are cultural factors to be considered, such as the use of non-physician healers and preferences for certain types of medications.

Differences in utilization are of special concern when there is reason to believe that needs for preventive or illness-related care are not being met. However, high utilization may carry with it waste of resources and substantial risks, as in certain types of surgery, prolonged institutionalization, and use of certain drugs or methods of treatment.

The average number of ambulatory physician contacts per person per year has remained extremely stable since 1971. During each of these years, there has been an average of approximately five contacts per person, including visits to physicians' offices, hospital outpatient departments, emergency rooms, health centers, home calls, and phone contacts for medical advice. Data supporting this and the information presented below come from the Health Interview Survey of the National Center for Health Statistics.

As recently as a decade ago, individuals in families of higher income averaged considerably more physician visits per year than those in lower income families. Partly as a consequence of Medicaid and to some extent Medicare, the averages for the poorer segments of the population are now generally as high or higher than those for the more affluent. However, illness rates and accompanying medical needs are greater in the low income population. In spite of the recent catching-up process, it is likely that in many areas of the country the economically better-off still receive a disproportionately large share of medical care.

There are differences in physician utilization by age and place of residence. Children under five years of age and adults in their fifties and older average considerably more ambulatory contacts than other age groups.

In general, the number of visits per person per year is higher in large metropolitan areas than in smaller metropolitan areas, and higher in the smaller areas than in nonmetropolitan areas. It is clear that the availability of physician manpower discussed earlier has an appreciable effect on the volume of utilization.

Table 13

There are substantial differences among different population groups in the setting where ambulatory care is obtained. Nationally, about 10 percent of ambulatory contacts of the white population is through hospital outpa-

tient departments and emergency rooms, but more than 20 percent of the contacts of the remainder of the population takes place in such settings. Similarly, there is relatively frequent use of hospital ambulatory facilities among the low income population. This decreases with increasing income. The reduction of financial barriers for the poor has not been the only factor responsible, however, for what has been a steadily upward trend in the use of hospital outpatient departments and emergency rooms. This increased reliance on hospitals has been widespread throughout the population.

In addition to measures of the sheer volume of contacts and the settings in which they take place, it is essential for planning purposes to examine the health care function of the services which are sought and received. It appears that, according to medical criteria, a larger proportion of the services obtained by less affluent, older, and black recipients are "mandatory" as compared to the services obtained by the remainder of the population. This is due in part to the greater prevalence of medical need within these groups; it also suggests that the poor, the elderly and the black are less likely to obtain medical care in the absence of urgent need.

Table 14

There are marked differences between metropolitan and nonmetropolitan areas in the percentage of the population receiving certain preventive care, as shown by 1973 data. For example, 35 percent of those 40 years of age or older residing in metropolitan areas in 1973 had an electrocardiogram in the previous two years, compared to 28 percent of those living in nonmetropolitan areas; 36 percent as contrasted with 28 percent had had a glaucoma test. About 67 percent of the children under age 17 in metropolitan areas had had a routine physical while only 53 percent of the children in nonmetropolitan areas had had such a physical within two years. Similar differences were reported for all of the preventive care services such as chest x-ray, Pap smears, etc. In less populous areas a somewhat smaller proportion of individuals had a physician visit in the previous year; the difference was greatest in the under-17 group. Sixty-eight percent of the under-17 group had such a visit, as compared to 75 percent of those living in metropolitan areas. In 1974, an average of 1.8 visits were made to dentists in metropolitan areas and an average of 1.3 visits outside metropolitan areas. In the nation, about 1.7 visits were made.

There are differences in average length of stay in hospitals in various parts of the United States. According to data from the American Hospital Association, the average in 1973 was 6.5 days in the Pacific Coast States and 9.3 days in the Mid-Atlantic States; the national average was 7.8 days. If the rates in the Pacific States had held throughout the Nation, there would have been 58 million (23.4 percent) fewer hospital days.

Experience Under Medicare and Medicaid

The Medicare program is the source of much information on hospital use and frequency of surgery. In 1973, these data showed wide differences in admissions to short-term hospital and nursing facilities and in average

length of stay. Among the States, the admission rates ranged from less than 250 to more than 400 per 1,000 enrollees for short-term hospitals and from less than 10 to more than 40 admissions per 1,000 enrollees for skilled nursing facilities. The average length of stay in hospitals ranged from 8 days in 3 States and 9 in 10 others, to 13 or more in 8 States.

Table 15

A study conducted by the Social Security Administration based on a 20 percent sample of Medicare claims for 1974 compares utilization for selected diagnoses in 65 conditional Professional Standards Review Organizations. Even though the data are not corrected for patient origin, the comparison reveals large differences which cannot be due to purely biological or technical factors, since a similar population group (Medicare enrollees) and the same diagnoses are involved from area to area. Among these PSRO's, length of stay ranged from 7.2 to 13.8 days. Among 16 diagnoses, the widest range was for urinary tract infection (4.2–13.2 days) and the narrowest for acute myocardial infarction (9.8–17.8 days). For malignant neoplasm of the breast the range was from 7.2 to 16.2 days.

The percentage of discharges in which surgery was performed ranged from 19.4 percent (Upper Michigan) to 49.0 percent (New York City). The mean preoperative segment of the surgical stay for nonendoscopic surgery ranged from 1.9 to 3.9 days and the postoperative from 6.4 to 10.5 days. Total length of stay for all nonendoscopic surgery varied from 8.3 to 14.3 days. The daily charge varied from $75 in one Mississippi PSRO to $187 in a New York PSRO; the mean was $118. The average charge per stay, a reflection of charges and length of stay, ranged from $652 to $2,486 with a mean of $1,234.

Variability in both utilization and expenditure is inherent in the Medicaid program. The law requires that each participating State must cover certain hospital and physician services, but other services are added at the option of the State. Further, a State may limit the number of hospital days or physician visits. Other factors making for variability are the level of medical prices, the scarcity of resources in rural areas, and the percentage of the poor in the area who are covered.

In 1970, the ratio of Medicaid recipients to persons with incomes under the poverty index was 1.03 in the Northeast, 1.16 in the West, but less than 0.33 in the South. Even though approximately 45 percent of the poor live in the South, this region in 1972 had only about 20 percent of the Medicaid recipients and accounted for only a little more than 15 percent of the payments. Payments per poor person were $526 in the Northeast and $85 in the South.

Table 16

There was an even larger disparity in payments per poor child; approximately 10 percent of the poor children in Mississippi received benefits, somewhat over $40 per recipient, while most of the poor and many of the near-poor children in New York received them, $133 per recipient. Rural children, who are likely to be in families whose fathers are present but underemployed or unemployed, are less likely to receive benefits than

urban children who are more likely to be in families headed by nonworking women.

Special Utilization Studies

A utilization deficit for rural residents is also suggested by an analysis which has been made by Aday and Andersen of data pertaining to individuals who had experienced a disabling illness during a specified two-week period during 1971. The ratio of physician visits to days of disability was less than 12.5 for residents of rural areas but greater than 15 for residents of metropolitan areas. Rural residents generally experienced longer travel time and longer periods of office waiting. The problems of access would appear to be at least partly responsible for the utilization deficit.

Table 17

Wennberg and Gittelsohn have described a data system for Vermont's 251 towns which was set up in 1969 and which provides information on local differences in utilization and expenditures (Science 182: 1102–1108, Dec. 14, 1973). Thirteen service areas were delineated and utilization and expenditure rates were classified on the basis of the patient's place of residence rather than the location of the site of care. Per capita expenditures among the service areas for hospital care in 1969 were twice as large in the highest area as in the lowest; for nursing homes, the ratio between high and low areas was more than fivefold. Part B Medicare reimbursement ranged from $54 to $162 per capita. The range of payments for diagnostic X-rays, for electrocardiograms, and for laboratory services was even greater. That the differences in expenditures for hospital care are persistent over time is shown by a high correlation between 1963 and 1969 per capita expenditures.

Data from the 13 areas show differences in utilization of hospitals, rates of performance of all surgical procedures and discharges for four classes of disease. These differences are sustained when the figures are adjusted for age. That factors unrelated to biological need are involved is suggested by an examination of tonsillectomy rates. If one assumed that the observed 1969 age-specific tonsillectomy rate for each area were to remain constant for a 20-year period, 16 percent of the children in the area with the lowest rate would have a tonsillectomy by age 20 as compared to 66 percent of the children in the area with the highest rate.

The distribution of physicians in the 13 areas is associated with the density and income level of the population rather than with its age distribution or other indicators of medical need.

4. Expenditures for Health Care

Expenditures for health care have tripled in the past 10 years. In fiscal 1965 they were $39 billion, or 5.9 percent of the Gross National Product. In fiscal 1975 they were $118 billion, or $547 per capital, or about $2,200 per household of four. This was 8.3 percent of the GNP.

About half the increase can be attributed to the rising prices of medical

goods and services and about 40 percent to greater per capita utilization of health services and to quality improvements and the greater complexity of health care. Somewhat less than 10 percent is due to population growth.

Table 18

The cost of an average hospital stay during these 10 years increased from $311 to $1,017. About half of this is due to wage increases and higher prices for the goods and services which hospitals buy and about half to the acquisition of more expensive equipment and greater numbers of staff in proportion to patient populations.

Increases in expenditures for health care were not uniform across the country. There are many reasons for this. The age distribution of a population influences the need for health services and the eligiblity for Medicare and other age-related programs. Price levels of hospital and professional services rose more steeply in some areas than in others. The supply of hospital beds and professional manpower, as we have seen, varies from one area to another and this influences access and thus utilization levels which, along with prices, determine expenditures. Factors in the area's general economy are also significant; the level of personal income governs ability to pay for care and influences the location of professionals, and industrialization is associated with the prevalence of health insurance coverage and use of insurance as a payment source for health care.

Also important in interpreting inter-areal differences are local concentrations of Department of Defense installations and Veterans' Administration facilities. The presence of these or of other specialized medical facilities that serve patients from many areas often lead to high utilization and expenditure. They can make the hospital expenditure appear to be high for a given area without necessarily reflecting excessive services to residents.

The variation in expenditures among the States is shown in a comprehensive comparison developed by the Social Security Administration, using 1969 estimates of private expenditures and the expenditures of the Federal Government and of State and local governments. Excluding the District of Columbia, per capita expenditures varied among States from $138 to $346.

Table 19

There is substantial variation in the funding sources for medical care. State differences in the implementation of various public medical care programs, notably Medicaid, are very pronounced. Overall per capita expenditures varied from $51.93 from State and local sources in the Northeast to $19.25 in the South, a ratio of 2.7 to 1. Federal spending exerts somewhat of a compensatory effect, the Northeast to South ratio for total public funding dropping to approximately 1.2 to 1. The per capita combined Federal, State, and local expenditures for the Northeast was $117.39, while for the South it was $72.87.

The variation in the per capita amount of hospital expenditures is due in part to differences in hospital charges and bed supply. In 1969, the District of Columbia, Massachusetts, and New York, all of which serve patients from outside the area, had expenditures for hospital care greater

than $150 per capita while expenditures in Mississippi, Arkansas, and Idaho were below $70 per capita. For the United States as a whole in 1969, 33 percent of all hospital expenses was paid by Federal funds. For Florida, a considerably larger proportion (43 percent) of hospital expenditures was Federal, owing to the large proportion of the population covered by Medicare coupled with only moderate hospital utilization by the non-Medicare segment.

Table 20

Expenditures going to physicians averaged $59 per person nationwide but ranged from $84 in California to $29 in Mississippi (they were $157 in the District of Columbia). Forty States averaged between $40 and $60. Public funds supplied 23 percent overall in 1969 but reached nearly one-third in those States with large welfare and/or elderly populations. Drugs, dentists' services and skilled nursing home care also showed interstate variability in per capita amounts spent and in the role of private financing.

Further information and insight come from the Supplemental Security Income program initiated on January 1, 1974. This program standardized eligibility and benefits for aged, blind and disabled persons' assistance programs, and offered options to the States as regards Medicaid eligibility rules. Among ten States which were studied, most raised the income ceiling for eligibility and most increased the number of services covered. With respect to long-term care, there was an increase in utilization and expenditure in all ten States although only six of them increased the number of recipients.

Data from the Medicare Program reveal wide variability in expenditures within States in addition to inter-regional and interstate disparities. The 1974 figures on reimbursement per enrollee, including hospital and/or medical insurance, show that the mean payment per Medicare enrollee for the United States was $471; in the South it was $397; in the Northeast, $548. Unpublished data from the Social Security Administration show the nine Census Divisions varied as follows:

New England	$566
Middle Atlantic	542
East North Central	468
West North Central	432
South Atlantic	417
East South Central	351
West South Central	402
Mountain	429
Pacific	557

The highest division was 61 percent higher than the lowest. The East South Central group of four States includes Mississippi, lowest in rank among all States for reimbursement per enrollee, at $343. The New England group includes six States, with average reimbursement ranging from $412 in Maine to $618 in Massachusetts.

Table 21

When the 14 counties of Massachusetts are looked at individually, reimbursement per enrollee ranged from $830 to $460—a ratio of 180 percent. The Mississippi average of $343 was $111 higher than the lowest county in that State ($232) and $210 lower than the high county ($553). Two counties in Mississippi had higher payments per enrollee than the lowest county in Massachusetts even though the average payment in Mississippi was $275 lower than the average payment in Massachusetts.

Medicare reimbursement levels also differ according to place of residence, whether urban or nonurban. The average reimbursement including hospital and medical services per enrollee in Medicare is $400 in metropolitan counties with central cities, but $280 in nonmetropolitan counties, a difference of 43 percent. For hospital services under Part A, the difference is 37 percent ($290 and $212) and for services under Part B, Supplemental Medical Insurance, there is a difference of 61 percent.

Unusually comprehensive data are available for Northeastern Kentucky medical care utilization and expenditures. These data are discussed below in some detail as an illustration of certain causes of observed differentials between local and National expenditure statistics. The types of factors considered here need to be taken into account in interpreting other local data for planning purposes.

Northeastern Kentucky is one of a number of selected areas in which community funds flow studies have examined expenditure patterns and compared them with national parameters. Expenditures for health services and supplies in 1971 for the approximately 225,000 people residing in a 15-county, largely rural area of Northeastern Kentucky are estimated to have been $214 per capita compared to $351 for the United States as a whole.

Table 22

It is important to note that the Northeastern Kentucky expenditure figures were derived from data pertaining only to providers located within the 15-county area. It is known from patient origin studies that residents of the area obtain a considerably higher volume of services outside the area than non-residents obtain from the area's providers. More specifically, over one-quarter of the admissions for the area's residents were in hospitals outside of the area; there were more than twice as many out-of-area hospital admissions for area residents as there were in-area admissions for non-residents. It is likely that the out-of-area admissions for residents are for longer, more complex stays than the in-area admissions. Thus, while the funds flow study showed 1971 per capita hospital expenditures for the area of only $63, as compared to national expenditures of $147, the actual average expenditure for the residents' hospitalizations was unquestionably greater than $63.

Relatively low expenses per patient day in Northeastern Kentucky hospitals also contributed to the difference from the national average. The area's hospitals are less technologically advanced than hospitals in metropolitan areas. The paucity of specialized services results in lower costs. Again, it appears likely that the out-of-area hospitalizations for residents were more

expensive than the within-area admissions, the out-of-area hospitals generally being located in larger cities.

There is evidence that the volume of hospital utilization by the area's residents is at least as great as the national average. Thus, the relatively low per capita hospital expenditure of $63 appears to be due both to the substantial out-of-area utilization and to the relative inexpensiveness of area hospitals. The low expenditures may reflect problems of access for area residents who develop conditions for which high technology specialized services are advantageous.

Medicare benefit data, which are tabulated on the basis of the beneficiary's place of residence rather than the place of service, show that per capita hospital payments for Northeastern Kentucky elderly are considerably below the national average. This is, at least, an indirect confirmation of what one would infer from the fund flow data.

In contrast with the $214 estimate for Northeastern Kentucky, the estimated per capita expenditure for Philadelphia, Pa., was $548. In Northeastern Kentucky residents go out of the area for medical care while Philadelphia provides more services to non-residents than its residents obtain outside. Even when this difference is taken into account, per capita expenditures for Philadelphia residents were still undoubtedly far greater than for the Kentucky area's residents. In general, expenditures for health services and supplies for metropolitan area residents tend to be a great deal higher than for populations living outside of metropolitan areas.

Only about one-third of the 1971 hospital expenditures in Northeastern Kentucky were derived from public sources, due in part to a relatively small Medicaid program and the absence of publicly-supported hospital facilities in the area. It has been estimated that in New York City, 72 percent of all spending for care rendered by hospitals and related facilities in 1971 came from public sources as compared to a comparable figure of approximately 50 percent for the country as a whole.

The Need for Continuing Information

Effective health planning obviously requires the use of reliable data and sound statistical methodology. The National Health Planning and Resources Development Act sets this forth clearly in Section 1513: "(1) The agency shall assemble and analyze data concerning (A) the status (and its determinants) of the health of the residents of its health service area, (B) the status of the health care delivery system in the area and the use of that system by the residents of the area, (C) the effect the area's health care delivery system has on the health of the residents of the area, (D) the number, type and location of the area's health resources, including health services, manpower, and facilities, (E) the patterns of utilization of the area's health resources, and (F) the environmental and occupational exposure factors affecting immediate and longer-term health conditions."

Unfortunately, the amount of National information available on a small area basis is severely limited at present. In addition, the methodology required to measure many of the interrelationships between the health care

delivery system and the health status of the population still must be developed. Both the data sources and the techniques must be expanded and developed; there are no simple indexes which serve all needs. Better data will become available with time, and better means of managing and using them. With this will come more effective health planning and inevitably improved and better quantified health goals and standards both for the National government and for the Area and State agencies.

List of Tables

Table 1. Number of births and total population, infant mortality rate and death rates for major causes of death in the United States according to color and sex, region, division and State: United States, 1974.

Selected demographic characteristics	Infant Mortality		Total Mortality						
				Death Rates					
	Number of births	Rate [2]	Total population (in thousands)	All causes [1]	Diseases of heart [3] (390–398, 402, 404, 410–429)	Malignant neoplasms [3] (140–209)	Cerebrovascular diseases [3] (430–438)	All accidents [3] (E800–E949)	Motor vehicle accidents [3] (E810–E823)
Total	**3,159,958**	**16.7**	**211,390**	**9.2**	**349.2**	**170.5**	**98.1**	**49.5**	**22.0**
Male	1,622,114	18.7	102,945	10.4	399.7	191.1	87.8	71.1	33.2
Female	1,537,844	14.6	108,446	8.0	301.2	151.0	107.9	29.0	11.3
White	2,575,792	14.8	184,109	9.2	362.7	174.4	99.2	48.5	21.9
Male	1,325,019	16.8	89,919	10.4	415.5	193.7	87.6	69.1	33.0
Female	1,250,773	12.8	94,190	8.1	312.3	156.1	110.3	28.3	11.4
Other	584,166	24.9	27,281	8.7	258.0	144.1	90.9	56.0	22.0
Male	297,095	27.3	13,026	10.4	291.0	173.5	89.4	85.3	34.5
Female	287,071	22.4	14,255	7.2	227.9	117.2	92.3	29.3	10.6
Region									
Northeast	637,766	16.0	49,426	9.7	398.7	193.7	91.1	38.0	16.1
North Central	859,345	16.7	57,544	9.3	368.3	170.8	103.2	46.2	20.3
South	1,072,349	18.3	67,177	9.2	332.8	164.0	106.2	57.7	26.4
West	590,498	14.5	37,244	8.0	283.6	151.2	85.1	55.0	24.2
Northeast									
New England	151,873	14.7	12,150	9.4	372.0	191.0	95.0	41.7	16.7
Maine	15,120	16.1	1,047	10.2	408.5	194.5	105.6	53.3	20.4
New Hampshire	11,642	13.9	808	9.6	344.6	193.1	111.4	43.6	18.9
Vermont	6,887	14.1	470	9.4	370.4	171.7	94.9	50.4	23.8
Massachusetts	70,083	13.9	5,800	9.7	384.4	193.5	97.1	44.0	17.3
Rhode Island	11,388	15.5	937	9.7	431.1	203.0	76.5	37.9	14.3
Connecticut	36,753	15.6	3,088	8.5	325.7	184.1	88.6	33.0	13.6
Middle Atlantic	485,893	16.5	37,276	9.8	407.4	194.5	89.8	36.8	15.9
New York	239,504	16.3	18,111	9.8	403.5	195.7	83.5	32.9	14.2
New Jersey	94,950	15.9	7,330	9.2	385.8	190.8	87.0	36.2	15.3
Pennsylvania	151,439	17.1	11,835	10.4	426.8	195.2	101.3	43.2	19.0

North Central									
East North Central	615,917	17.1	40,862	9.1	364.8	168.9	97.3	43.3	18.9
Ohio	160,609	16.1	10,737	9.2	367.0	171.4	99.6	42.3	17.1
Indiana	83,254	16.4	5,330	9.1	343.3	163.4	113.1	48.2	22.9
Illinois	169,215	19.4	11,131	9.7	409.3	179.3	96.7	39.4	16.6
Michigan	137,636	17.4	9,098	8.4	321.5	156.6	84.1	46.4	21.2
Wisconsin	65,203	13.9	4,566	8.9	362.9	169.0	101.0	43.4	19.5
West North Central	243,428	15.8	16,682	9.7	376.7	175.3	117.7	53.2	23.8
Minnesota	55,789	14.4	3,917	8.6	324.2	157.8	110.8	48.8	22.1
Iowa	40,220	14.3	2,855	10.1	399.1	187.3	125.8	53.0	25.4
Missouri	69,624	16.8	4,777	10.6	411.0	187.0	122.0	52.1	21.4
North Dakota	9,972	17.0	637	9.1	348.5	163.9	97.0	64.1	28.7
South Dakota	11,193	19.8	682	9.6	372.6	165.1	112.8	68.6	33.7
Nebraska	23,711	15.4	1,543	9.7	371.4	172.2	122.8	57.0	26.5
Kansas	32,919	15.9	2,270	9.8	380.0	174.1	114.0	53.0	23.8
South									
South Atlantic	497,188	18.2	33,206	9.3	337.5	167.8	100.4	55.8	26.0
Delaware	8,276	16.9	573	8.7	351.1	185.2	62.1	38.2	20.1
Maryland	53,470	15.4	4,094	8.1	311.2	163.8	63.2	40.1	18.5
Dist. of Columbia	10,034	26.7	723	10.9	322.0	212.3	90.9	44.7	11.3
Virginia	71,091	16.9	4,908	8.2	299.3	152.5	85.3	52.1	20.9
West Virginia	27,878	18.9	1,791	10.9	443.2	181.7	108.9	56.2	25.1
North Carolina	84,244	19.5	5,363	8.6	311.9	140.5	103.1	60.1	29.7
South Carolina	48,554	21.1	2,784	8.7	301.1	135.8	103.7	67.7	31.0
Georgia	53,291	18.1	4,882	8.8	304.9	137.6	114.8	64.2	32.3
Florida	110,350	17.3	8,090	10.9	400.0	218.1	118.3	56.1	26.8
East South Central	221,281	19.2	13,387	9.8	351.8	164.3	124.0	62.6	29.0
Kentucky	53,443	16.7	3,357	10.0	392.4	175.6	116.9	57.4	23.7
Tennessee	64,265	17.3	4,129	9.5	353.6	162.2	125.6	61.4	31.1
Alabama	59,451	20.6	3,577	9.7	323.7	158.8	126.9	67.1	30.7
Mississippi	44,122	23.0	2,324	10.0	332.9	160.2	126.9	65.3	30.0
West South Central	353,880	17.9	20,584	8.9	313.0	157.5	104.1	57.7	25.2
Arkansas	34,548	17.2	2,062	10.8	385.9	192.5	144.7	61.3	26.1
Louisiana	65,819	18.9	3,764	8.9	329.4	158.5	98.2	60.5	22.1
Oklahoma	42,450	17.5	2,709	10.1	375.7	175.0	123.1	62.8	27.9
Texas	211,063	17.8	12,050	8.3	281.3	147.3	94.6	55.1	25.5

Table 1 (cont.)

Selected demographic characteristics	Infant Mortality		Total Mortality						
				Death Rates					
	Number of births	Rate [3]	Total population (in thousands)	All causes [1]	Diseases of heart [2] (390–398, 402, 404, 410–429)	Malignant neoplasms [2] (140–209)	Cerebrovascular diseases [2] (430–438)	All accidents [2] (E800–E949)	Motor vehicle accidents [2] (E810–E823)
West									
Mountain	173,558	15.5	9,411	7.5	243.0	127.6	72.1	66.3	32.4
Montana	12,266	16.5	735	8.9	300.5	152.9	91.0	75.9	38.6
Idaho	15,617	15.3	799	8.1	284.1	133.9	85.9	79.1	39.4
Wyoming	6,541	15.9	359	8.8	289.7	136.5	83.0	100.0	47.6
Colorado	39,042	15.7	2,496	7.2	246.0	121.7	67.1	52.6	25.1
New Mexico	21,319	18.2	1,122	7.2	171.7	114.9	64.6	80.7	43.9
Arizona	39,841	14.8	2,153	7.9	256.9	141.8	69.8	68.0	32.7
Utah	29,966	12.2	1,173	6.3	208.8	97.3	66.4	53.0	23.3
Nevada	8,966	20.3	573	7.6	226.9	141.0	78.5	67.5	32.3
Pacific	416,940	14.1	27,833	8.1	297.3	159.2	89.4	51.1	21.4
Washington	50,045	15.2	3,476	8.6	313.1	169.1	93.8	53.3	23.4
Oregon	32,519	15.0	2,266	9.0	327.9	162.6	105.3	60.9	29.6
California	311,820	13.7	20,907	8.2	300.1	160.9	89.7	49.5	20.5
Alaska	7,053	17.9	337	4.4	87.8	53.7	28.5	117.8	22.3
Hawaii	15,503	15.5	847	5.1	164.0	110.0	46.3	30.5	14.3

By place of residence. Refers only to resident deaths occurring within the United States. Excludes fetal deaths. Numbers after causes of death are category numbers of the Eighth Revision, International Classification of Diseases, Adapted, 1965.

[1] Per 1,000 population in specified group.

[2] Per 1,000 live births.

[3] Per 100,000 population in specified group.

Source: Monthly Vital Statistics Report, Advance Report Final Mortality Statistics, 1974, Volume 24, Number 11, Supplement DHEW Pub. No. (HRA) 76–1120.

Table 2. Productive person years gained up to age 70 by the elimination of selected causes of death: United States, 1970

Selected causes	Person years gained (in thousands)
All Heart Diseases	199,434
Ischemic Heart Disease	171,330
All Malignant Neoplasms	146,046
Acute Myocardial Infarctions	115,938
Motor Vehicle Accidents	53,551
Respiratory Diseases (excluding neoplasms)	32,390
Malignant Neoplasms of Digestive System	31,506
Cirrhosis of the Liver	25,514
Influenza and Pneumonia	15,775
Diabetes	12,142
Bronchitis, Emphysema and Asthma	9,587
Cerebrovascular Diseases	3,790
Arteriosclerotic Disease	1,510

Source: Unpublished data from the National Center for Health Statistics.

Table 3. Economic costs of illness by total cost, estimated direct costs, indirect costs (morbidity) and present value of lifetime earnings discounted at 6 percent (mortality) according to diagnosis: United States, 1972.

Diagnosis	Total	Direct costs	Indirect costs	
			Morbidity	Mortality
	Amount in millions			
Total	$174,934	$75,231	$42,323	$57,380
Infective and parasitic diseases	3,234	1,412	1,200	622
Neoplasms	15,641	3,872	862	10,907
Endocrine, nutritional, and metabolic diseases	5,717	3,436	1,137	1,144
Diseases of the blood and blood-forming organs	875	491	220	164
Mental disorders	13,782	6,985	6,179	618
Diseases of the nervous system and sense organs	10,703	5,947	3,944	812
Diseases of the circulatory system	37,430	10,919	6,417	20,094
Diseases of the respiratory system	15,764	5,931	7,089	2,744
Diseases of the digestive system	16,931	11,100	2,606	3,225
Diseases of the genitourinary system	6,344	4,471	1,249	624
Complications of pregnancy, childbirth and the puerperium	2,914	2,607	245	62
Diseases of the skin and subcutaneous tissue	2,040	1,525	460	55
Diseases of the musculoskeletal system and connective tissue	8,913	3,636	5,103	174
Congenital anomalies	1,375	381	238	756
Accidents, poisonings, and violence	21,649	5,121	3,883	12,645
Other	11,625	7,398	1,494	2,733
	Percent distribution			
Total	100.0	100.0	100.0	100.0
Infective and parasitic diseases	1.8	1.9	2.8	1.1
Neoplasms	8.9	5.1	2.0	19.0
Endocrine, nutritional, and metabolic diseases	3.3	4.6	2.7	2.0
Diseases of the blood and blood-forming organs	.5	.7	.5	.3
Mental disorders	7.9	9.3	14.6	1.1
Diseases of the nervous system and sense organs	6.1	7.9	9.3	1.4
Diseases of the circulatory system	21.4	14.5	15.2	35.0
Diseases of the respiratory system	9.0	7.9	16.7	4.8
Diseases of the digestive system	9.7	14.8	6.2	5.6
Diseases of the genitourinary system	3.6	5.9	3.0	1.1
Complications of pregnancy, childbirth and the puerperium	1.7	3.5	.6	.1
Diseases of the skin and subcutaneous tissue	1.2	2.0	1.1	.1
Diseases of the musculoskeletal system and connective tissue	5.1	4.8	12.1	.3
Congenital anomalies	.8	.5	.6	1.3
Accidents, poisonings, and violence	12.4	6.8	9.2	22.0
Other	6.6	9.8	3.5	4.8

Source: Cooper, Barbara S. and Rice, Dorothy P. The Economic Cost of Illness Revisited, DHEW Pub. No. (SSA) 76-11703.

Table 4a. Relative mortality ratios for specific causes of death according to State: United States, 1969–71

State	All causes	Malignant neoplasms (140–209) [1]	Diseases of heart (390–398, 402, 404, 410–429) [1]	Cerebro-vascular diseases (430–438) [1]	Motor vehicle accidents (E810–E823) [1]
	Death Rates per 100,000				
United States	716.9	129.9	256.0	67.0	27.5
	Relative Mortality Ratios				
United States	100.0	100.0	100.0	100.0	100.0
Alabama	109.8	92.7	96.0	140.7	148.4
Alaska	105.1	*	73.6	*	*
Arizona	99.1	92.0	82.9	83.3	146.2
Arkansas	99.1	91.1	92.6	117.6	123.3
California	93.3	98.2	89.4	92.8	96.7
Colorado	90.3	82.3	82.6	81.2	105.1
Connecticut	89.4	102.1	91.1	87.9	59.6
Delaware	106.8	108.2	121.3	82.2	91.6
District of Columbia	134.5	129.5	111.1	99.9	72.0
Florida	97.8	98.6	86.3	94.2	119.3
Georgia	114.3	93.7	105.1	153.7	144.0
Hawaii	80.2	84.5	74.2	82.8	69.1
Idaho	91.4	82.1	85.4	*	153.5
Illinois	104.6	104.3	117.5	98.5	84.4
Indiana	100.3	101.0	100.9	116.4	115.6
Iowa	88.2	94.1	88.5	92.2	117.8
Kansas	87.8	89.2	85.9	87.0	113.1
Kentucky	105.2	98.7	106.7	114.0	117.5
Louisiana	113.0	106.1	114.1	119.3	120.0
Maine	100.6	105.2	106.1	93.0	91.3
Maryland	104.6	110.6	110.9	83.6	77.1
Massachusetts	94.6	104.3	98.6	85.5	61.8
Michigan	101.2	102.7	103.4	98.1	98.9
Minnesota	85.6	91.2	85.5	95.1	101.1
Mississippi	115.8	94.7	98.4	137.6	160.0
Missouri	100.7	98.9	93.6	103.1	113.8
Montana	99.6	90.1	87.2	93.9	170.9
Nebraska	87.6	92.1	84.8	90.4	116.4
Nevada	110.5	103.2	98.3	106.6	158.5
New Hampshire	99.0	108.5	96.6	94.2	100.4
New Jersey	99.9	109.9	113.0	87.3	68.0
New Mexico	99.6	83.9	74.0	85.8	184.0
New York	102.2	109.0	108.6	84.5	64.4
North Carolina	109.0	90.0	105.8	130.3	130.2
North Dakota	86.9	86.5	86.5	*	121.8
Ohio	101.2	104.7	105.3	102.4	90.9
Oklahoma	94.8	92.6	90.5	99.9	114.9
Oregon	90.5	91.9	86.2	96.1	124.0
Pennsylvania	104.3	104.8	112.0	96.9	77.1
Rhode Island	93.6	109.6	104.3	76.9	53.5
South Carolina	118.6	94.8	116.6	152.7	141.1
South Dakota	90.0	89.5	89.0	84.2	148.4
Tennessee	103.9	94.2	102.9	126.2	128.4
Texas	97.5	94.7	88.8	103.1	118.9
Utah	86.0	72.8	77.3	80.6	112.4
Vermont	96.1	104.9	95.8	*	91.6
Virginia	104.8	98.5	104.6	110.4	96.0
Washington	93.7	95.9	91.9	95.7	98.5
West Virginia	109.7	100.9	110.9	107.5	114.5
Wisconsin	89.5	95.1	93.9	93.7	91.6
Wyoming	99.9	83.6	87.7	*	198.5

[1] Eighth revision of ICOA.

Note: Asterisks are used to indicate frequencies under 20 deaths.

Source: Unpublished data from the National Center for Health Statistics.

Table 4b. Relative mortality ratios for the white population for specific causes of death according to State: United States, 1969–1971

State	All causes	Malignant neoplasms (140–209) [1]	Diseases of heart (390–398, 402, 404, 410–429) [1]	Cerebro-vascular diseases (430–438) [1]	Motor vehicle accidents (E810–E823) [1]
	Death Rates per 100,000				
United States	681.2	127.5	251.2	62.4	27.0
	Relative Mortality Ratios				
United States	100.0	100.0	100.0	100.0	100.0
Alabama	103.8	91.4	95.9	126.4	149.6
Alaska	110.1	*	87.1	*	*
Arizona	100.0	94.2	85.3	88.5	129.3
Arkansas	98.0	92.1	92.2	110.6	128.2
California	96.9	99.6	91.3	98.2	99.3
Colorado	94.3	83.5	84.1	86.5	107.4
Connecticut	91.9	103.2	92.4	92.8	60.0
Delaware	103.6	104.9	118.1	*	83.7
District of Columbia	107.8	104.1	97.0	*	*
Florida	93.9	97.4	84.4	90.2	116.7
Georgia	106.8	91.5	121.7	131.7	144.4
Hawaii	84.2	85.8	85.0	*	*
Idaho	95.4	83.9	86.8	*	152.2
Illinois	103.5	103.4	115.1	99.8	88.5
Indiana	102.8	100.9	102.0	121.0	119.3
Iowa	92.4	95.6	89.9	98.6	120.4
Kansas	90.7	90.0	86.7	91.2	115.6
Kentucky	106.8	97.7	105.8	116.4	120.4
Louisiana	106.4	102.6	109.3	103.9	116.7
Maine	105.8	107.3	108.2	99.7	93.0
Maryland	101.9	107.9	109.7	81.9	75.8
Massachusetts	98.6	105.9	100.6	91.0	62.6
Michigan	101.6	102.3	103.7	100.6	103.6
Minnesota	89.7	93.1	87.2	102.2	101.5
Mississippi	107.2	95.5	98.2	119.6	166.7
Missouri	100.6	98.2	93.9	104.8	119.3
Montana	101.9	91.7	88.4	99.2	158.5
Nebraska	90.6	93.5	85.6	96.0	118.5
Nevada	114.2	105.5	100.4	*	159.3
New Hampshire	104.3	110.8	98.6	101.3	101.9
New Jersey	100.0	110.0	113.0	89.1	65.9
New Mexico	101.1	86.5	76.9	91.4	163.7
New York	102.3	109.5	110.0	86.5	65.6
North Carolina	102.8	87.8	102.0	118.3	120.0
North Dakota	89.7	88.0	87.6	*	113.3
Ohio	102.7	104.2	105.8	106.4	93.0
Oklahoma	97.3	94.1	92.2	104.3	113.3
Oregon	94.8	93.8	87.9	103.0	125.2
Pennsylvania	105.4	104.5	114.0	100.6	78.5
Rhode Island	97.6	111.7	106.2	81.7	54.8
South Carolina	109.6	94.4	110.6	130.1	127.8
South Dakota	89.9	90.6	89.8	90.2	128.5
Tennessee	102.0	91.8	100.4	121.8	132.6
Texas	97.5	94.0	87.8	102.1	119.6
Utah	90.3	74.3	79.5	86.9	112.2
Vermont	101.2	107.1	97.7	*	93.7
Virginia	100.2	94.2	101.2	101.8	88.9
Washington	97.3	97.6	93.5	101.8	96.3
West Virginia	113.2	101.8	111.6	112.0	116.3
Wisconsin	93.4	96.6	95.6	99.7	93.0
Wyoming	104.1	85.4	89.2	*	197.4

[1] Eighth revision of ICDA.
Note: Asterisks are used to indicate frequencies under 20 deaths.
Source: Unpublished data from the National Center for Health Statistics.

Table 4c. Relative mortality ratios for the non-white population for specific causes of death according to State: United States, 1969–1971

State	All causes	Malignant neoplasms (140–209) [1]	Diseases of heart (390–398, 402, 404, 410–429) [1]	Cerebro-vascular diseases (430–438) [1]	Motor vehicle accidents (E810–E823) [1]
	Death Rates per 100,000				
United States	996.7	151.2	292.9	108.4	31.7
	Relative Mortality Ratios				
United States	100.0	100.0	100.0	100.0	100.0
Alabama	104.4	88.3	90.3	132.4	137.2
Alaska	88.0	*	*	*	*
Arizona	105.7	72.4	57.6	*	312.9
Arkansas	94.2	82.7	92.8	120.1	99.4
California	72.7	86.9	72.0	64.5	79.5
Colorado	77.8	79.4	*	*	*
Connecticut	86.9	*	81.6	87.9	*
Delaware	117.0	*	139.9	*	*
District of Columbia	110.6	129.2	107.2	72.4	71.0
Florida	111.6	103.8	98.3	112.8	130.0
Georgia	112.5	92.1	107.3	158.7	134.1
Hawaii	58.4	73.3	61.6	55.5	*
Idaho	98.3	*	*	*	*
Illinois	107.8	111.8	134.3	90.9	60.3
Indiana	98.3	114.3	98.4	109.8	82.3
Iowa	92.1	*	*	*	*
Kansas	86.9	93.2	88.3	*	*
Kentucky	112.8	118.3	126.8	118.2	*
Louisiana	104.1	104.5	116.4	111.6	118.9
Maine	*	*	*	*	*
Maryland	103.7	118.0	112.0	76.8	77.6
Massachusetts	84.4	102.2	79.6	67.5	*
Michigan	99.0	106.2	100.1	83.8	74.4
Minnesota	74.7	*	*	*	*
Mississippi	103.3	83.5	90.7	119.4	138.8
Missouri	106.7	108.4	93.6	99.1	76.7
Montana	128.5	*	*	*	*
Nebraska	102.0	*	*	*	*
Nevada	95.4	*	*	*	*
New Hampshire	*	*	*	*	*
New Jersey	102.7	11.4	116.6	84.0	81.4
New Mexico	98.1	*	*	*	*
New York	97.9	106.2	95.2	71.5	57.1
North Carolina	109.6	90.5	112.3	130.6	153.9
North Dakota	118.3	*	*	*	*
Ohio	99.0	114.7	104.4	84.8	74.4
Oklahoma	84.2	81.9	79.4	77.8	127.4
Oregon	73.9	*	*	*	*
Pennsylvania	107.7	116.4	95.5	82.3	68.1
Rhode Island	83.6	*	*	*	*
South Carolina	113.4	87.3	121.8	148.2	159.6
South Dakota	135.9	*	*	*	*
Tennessee	104.6	103.0	113.4	134.5	104.7
Texas	96.1	97.7	95.5	103.1	112.9
Utah	66.4	*	*	*	*
Vermont	*	*	*	*	*
Virginia	107.3	108.9	113.2	113.8	118.0
Washington	85.5	*	79.9	*	*
West Virginia	115.9	*	126.4	*	*
Wisconsin	80.1	*	77.8	*	*
Wyoming	97.8	*	*	*	*

[1] Eighth revision of ICDA.
Note: Asterisks are used to indicate frequencies under 20 deaths.
Source: Unpublished data from the National Center for Health Statistics.

Notes on Tables 5, 6, 8 and 12

The Health Service Areas designated in the following Table, and Tables 6, 8 and 12, differ from officially designated Health Service Areas in the following particulars:

1. Alaska's three Health Service Areas are considered as one area, because of their relatively small population.

2. Illinois Area 6 and Area 7, and Massachusetts Area 3 and Area 6, are considered as single areas because of data constraints.

3. The tri-State area of Arizona 4, New Mexico 2 and Utah 2 is defined, for data purposes, as consisting of Navajo and Apache Counties in Arizona and San Juan County, Utah. Data for the New Mexico and Utah portions, excluding San Juan, appear with their respective States.

4. In three States, Health Service Areas have been redefined because of data constraints so that they fall within county boundaries. The new definitions are as follows: Arizona: Area 1, Gila, Graham, Maricopa, Pinal Counties. Area 2, Cochise, Greenlee, Pima, Santa Cruz Counties. Area 3, Coconio, Mohave, Yavapai, Yuma Counties. Area 4, Apache, Navajo and San Juan County, Utah. Connecticut: Area 1, Fairfield County. Area 2, New Haven County. Area 3, Middlesex, New London, Windham Counties. Area 4, Hartford, Tolland Counties. Area 5, Litchfield County. Massachusetts: Area 1, Berkshire, Franklin, Hampden, Hampshire Counties. Area 2, Worcester County. Areas 3 and 6, Essex, Middlesex Counties. Area 4, Norfolk, Suffolk Counties. Area 5, Barnstable, Bristol, Dukes, Nantucket, Plymouth Counties.

5. Data for 14 Interstate Areas appear twice each under their dual State designations. The pairings are as follows:

Tennessee 3 – Georgia 1
Georgia 4 – South Carolina 5
Georgia 5 – Alabama 7
Iowa 1 – Nebraska 4
Nebraska 3 – Iowa 2
Iowa 3 – Illinois 10
Ohio 1 – Kentucky 3
North Dakota 2 – Minnesota 1
Minnesota 2 – Wisconsin 7
North Dakota 3 – Minnesota 3
Missouri 1 – Kansas 4
Missouri 3 – Illinois 11
New York 4 – Pennsylvania 8
Tennessee 1 – Virginia 6

Table 5. Average annual infant mortality rates by Health Service Area: United States, 1969–1973

State	Health Service Area													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Rates per 1000 live births													
Alabama	21.2	25.7	21.8	24.6	26.4	24.1	23.9							
Alaska	19.5													
Arizona	16.7	17.4	20.7	25.8										
Arkansas	18.5	20.9	20.5	20.6										
California	16.8	15.4	17.0	14.9	16.7	16.4	14.3	16.1	17.7	16.0	17.1	17.8	15.1	16.9
Colorado	17.0	21.6	20.5											
Connecticut	17.1	16.9	17.0	16.7	11.6									
Delaware	18.6													
Dist. of Columbia	28.1													
Florida	21.7	20.4	20.7	20.4	19.6	22.3	23.5	20.5	18.1					
Georgia	21.5	20.2	19.0	20.5	23.9	23.1	23.5							
Hawaii	16.8													
Idaho	17.3													
Illinois	18.9	19.9	18.7	20.2	17.8	26.6	15.8	17.8	21.0	19.9	20.1			
Indiana	20.2	18.9	17.8											
Iowa	17.5	18.9	19.9											
Kansas	17.5	15.4	20.3	18.2										
Kentucky	18.2	20.1	17.2											
Louisiana	22.6	22.1	24.0											
Maine	18.8													
Maryland	18.7	13.6	17.3	18.6	21.4									
Massachusetts	18.9	17.8	15.2	18.4	15.3	15.2								
Michigan	20.2	18.9	19.6	17.5	20.0	18.0	18.9	17.1						
Minnesota	16.4	17.7	15.2	15.8	16.8	16.9	17.4							
Mississippi	23.9													
Missouri	19.2	18.3	20.1	18.3	22.0									
Montana	20.9													
Nebraska	17.8	14.6	18.9	17.5										
Nevada	19.6	20.6												
New Hampshire	17.9													
New Jersey	17.0	20.4	21.6	16.5	18.0									
New Mexico	20.8													
New York	18.5	16.8	17.7	18.6	17.4	16.7	21.1	15.4						
North Carolina	24.4	21.2	21.9	22.1	24.4	25.0								
North Dakota	16.3	16.4	15.2											
Ohio	17.2	17.9	19.5	19.6	17.3	18.7	18.2	17.3	19.4	19.0				
Oklahoma	19.1													
Oregon	16.4	16.4	19.0											
Pennsylvania	25.1	16.3	18.5	15.3	19.2	18.4	19.4	18.6	19.8	16.1	17.0			
Rhode Island	19.1													
South Carolina	21.2	23.7	27.8	19.6	20.5									
South Dakota	19.1													
Tennessee	19.3	19.7	21.5	20.0	23.0	22.6								
Texas	22.0	25.9	18.0	22.0	20.8	21.0	23.3	18.5	20.0	20.8	19.9	22.2		
Utah	14.1													
Vermont	16.5													
Virginia	20.7	16.1	22.1	21.5	21.7	19.3								
Washington	17.3	18.5	19.0	19.8										
West Virginia	21.1													
Wisconsin	15.1	16.8	14.5	16.6	14.4	15.0	17.7							
Wyoming	23.1													

Source: Unpublished data from the National Center for Health Statistics.

Table 6. Average annual post-neonatal mortality rates by Health Service Area, United States, 1969–1973

State	Health Service Area													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Rates per 1000 live births													
Alabama	6.1	8.2	[illegible]	9	9.1	6.8	7.9							
Alaska	6.5													
Arizona	5.0	4.9	8.2	13.6										
Arkansas	5.2	6.1	4.9	6.5										
California	5.1	4.2	4.3	4.6	4.3	4.8	4.1	4.2	5.1	3.8	4.7	4.7	3.4	4.9
Colorado	4.5	5.5	4.4											
Connecticut	4.0	3.6	3.9	3.7	2.9									
Delaware	4.1													
Dist. of Columbia	6.7													
Florida	5.8	6.0	5.1	5.6	4.8	5.8	6.7	4.7	4.4					
Georgia	6.1	5.6	5.1	7.2	7.9	9.6	6.7							
Hawaii	3.5													
Idaho	4.7													
Illinois	4.7	4.3	4.1	5.0	3.8	7.2	3.3	4.3	4.5	4.4	4.7			
Indiana	4.8	4.5	3.9											
Iowa	3.6	4.6	4.4											
Kansas	3.9	3.6	3.8	4.8										
Kentucky	4.6	5.8	4.3											
Louisiana	5.3	5.8	6.3											
Maine	4.7													
Maryland	3.9	3.1	4.3	5.2	6.1									
Massachusetts	3.9	3.6	3.2	3.8	3.8	3.2								
Michigan	4.9	4.6	4.9	4.3	4.4	4.2	4.8	3.6						
Minnesota	3.8	4.1	3.4	3.7	4.0	3.2	3.8							
Mississippi	8.3													
Missouri	4.8	3.9	4.7	4.3	5.9									
Montana	5.7													
Nebraska	3.1	3.4	4.6	3.6										
Nevada	5.5	5.7												
New Hampshire	4.4													
New Jersey	4.0	4.6	5.1	[illegible]	4.4									
New Mexico	6.4													
New York	4.1	4.2	4.4	4.3	4.2	3.9	5.5	3.6						
North Carolina	5.7	5.8	6.0	5.9	7.6	7.5								
North Dakota	3.8	3.8	3.4											
Ohio	4.3	4.2	4.3	5.1	4.7	4.1	4.3	4.0	4.9	4.1				
Oklahoma	5.0													
Oregon	5.4	4.7	6.8											
Pennsylvania	6.2	4.0	4.0	3.6	4.8	3.9	4.7	4.3	4.0	3.4	3.4			
Rhode Island	4.2													
South Carolina	6.6	7.4	10.2	6.6	7.2									
South Dakota	5.7													
Tennessee	3.9	5.7	6.1	5.1	6.4	5.4								
Texas	5.0	7.4	4.5	5.7	5.0	5.8	6.6	5.7	5.1	5.0	4.8	6.4		
Utah	3.7													
Vermont	3.8													
Virginia	4.9	3.3	5.2	5.2	5.2	3.9								
Washington	5.1	5.1	6.4	5.6										
West Virginia	4.8													
Wisconsin	3.9	4.7	3.7	4.3	3.7	3.6	4.1							
Wyoming	4.9													

Note: For explanation of Area designations, see notes preceding Table 5.
Source: Unpublished data from the National Center for Health Statistics.

Table 7a. Average lifetime in years, change from 1959–61 to 1969–71 and rank in 1959–61 and 1969–71 according to State: United States, 1959–61 and 1969–71

State	Average lifetime		Change from 1959–61 to 1969–71	Rank	
	1969–71	1959–61		1969–71	1959–61
Hawaii	73.60	71.55	2.05	1	7
Minnesota	72.96	71.84	1.12	2	4
Utah	72.90	71.61	1.29	3	6
North Dakota	72.79	71.72	1.07	4	5
Nebraska	72.60	71.95	0.65	5	1
Kansas	72.58	71.90	0.68	6	3
Iowa	72.55	71.91	0.64	7	2
Connecticut	72.48	71.02	1.46	8	10
Wisconsin	72.48	71.22	1.26	8	8
Oregon	72.13	70.85	1.28	10	14
South Dakota	72.08	70.94	1.14	11	12
Colorado	72.06	70.79	1.27	12	16
Rhode Island	71.90	70.60	1.30	13	18
Idaho	71.87	71.13	0.74	14	9
Massachusetts	71.83	70.61	1.22	15	17
Washington	71.72	70.95	0.77	16	11
California	71.71	70.82	0.89	17	15
Vermont	71.64	70.35	1.29	18	22
Oklahoma	71.42	70.89	0.53	19	13
New Hampshire	71.23	70.41	0.82	20	19
Maine	70.93	70.02	0.91	21	27
New Jersey	70.93	69.80	1.13	21	30
Texas	70.90	70.12	0.78	23	26
Indiana	70.88	70.37	0.51	24	21
Ohio	70.82	70.18	0.64	25	23
Missouri	70.69	70.40	0.29	26	20
Arkansas	70.66	70.16	0.50	27	24
Florida	70.66	69.84	0.82	27	29
Michigan	70.63	70.13	0.50	29	25
Montana	70.56	69.49	1.07	30	35
Arizona	70.55	68.91	1.64	31	40
New York	70.55	69.61	0.94	31	33
Pennsylvania	70.43	69.47	0.96	33	37
New Mexico	70.32	69.48	0.84	34	36
Wyoming	70.29	69.90	0.39	35	28
Maryland	70.22	68.72	1.50	36	42
Illinois	70.14	69.64	0.50	37	32
Tennessee	70.11	69.43	0.68	38	38
Kentucky	70.10	69.66	0.44	39	31
Virginia	70.08	68.80	1.28	40	41
Delaware	70.06	69.38	0.68	41	39
West Virginia	69.48	69.53	−0.05	42	44
Alaska	69.31	67.51	1.80	43	48
North Carolina	69.21	68.40	0.81	44	43
Alabama	69.05	68.11	0.94	45	45
Nevada	69.03	67.42	1.61	46	49
Louisiana	68.76	68.13	0.63	47	44
Georgia	68.54	67.91	0.63	48	46
Mississippi	68.09	67.70	0.39	49	47
South Carolina	67.96	66.41	1.55	50	51
Dist. of Columbia	65.71	66.62	−0.91	51	50

Source: National Center for Health Statistics: unpublished data and U.S. Decennial Life Tables, 1969–71, Vol. II. DHEW Pub. No. (HRA) 75–1151.

Table 7b. Average lifetime in years for the white population, change from 1959–61 to 1969–71 and rank in 1959–61 and 1969–71 according to State: United States, 1959–61 and 1969–71

State	Average lifetime		Change from 1959–61 to 1969–71	Rank	
	1969–71	1959–61		1969–71	1959–61
North Dakota	73.09	71.95	1.14	1	4
Minnesota	73.04	71.91	1.13	2	5
South Dakota	72.96	71.64	1.32	3	7
Utah	72.95	71.76	1.19	4	6
Nebraska	72.89	72.22	0.67	5	1
Connecticut	72.88	71.33	1.55	6	12
Kansas	72.87	72.18	0.69	7	2
Iowa	72.64	71.98	0.66	8	3
Wisconsin	72.64	71.35	1.29	8	11
Oregon	72.20	70.99	1.21	10	18
Colorado	72.18	70.91	1.27	11	19
Florida	72.16	71.62	0.54	12	8
Rhode Island	72.07	70.73	1.34	13	24
Massachusetts	72.01	70.72	1.29	14	25
Idaho	71.99	71.25	0.74	15	14
Washington	71.95	71.15	0.80	16	16
California	71.95	71.02	0.93	16	17
Oklahoma	71.85	71.50	0.35	18	10
New Jersey	71.84	70.45	1.39	19	32
Texas	71.74	71.29	0.45	20	13
Arkansas	71.71	71.61	0.10	21	9
Vermont	71.62	70.34	1.28	22	36
Virginia	71.61	70.64	0.97	23	30
Missouri	71.57	71.23	0.34	24	15
Maryland	71.55	70.09	1.46	25	39
New York	71.48	70.28	1.20	26	38
Michigan	71.47	70.64	0.83	27	30
Ohio	71.44	70.72	0.72	28	25
Delaware	71.42	70.76	0.66	29	23
Indiana	71.32	70.80	0.52	30	22
Arizona	71.30	69.71	1.59	31	47
Illinois	71.23	70.40	0.83	32	34
Tennessee	71.22	70.83	0.39	33	21
New Hampshire	71.21	70.41	0.80	34	33
Pennsylvania	71.16	69.99	1.17	35	42
North Carolina	71.08	70.68	0.40	36	27
Montana	71.01	69.89	1.12	37	43
New Mexico	71.00	69.85	1.15	38	44
Maine	70.93	70.04	0.89	39	41
Alabama	70.93	70.67	0.26	39	29
Louisiana	70.70	70.34	0.36	41	37
Kentucky	70.66	70.36	0.30	42	35
Dist. of Columbia	70.64	69.48	1.16	43	48
Georgia	70.62	70.68	–0.06	44	27
Mississippi	70.50	70.86	–0.36	45	20
Wyoming	70.47	70.08	0.39	46	40
South Carolina	70.32	69.79	0.53	47	46
West Virginia	69.78	69.84	–0.06	48	45
Nevada	69.43	67.85	1.58	49	49

Note: Includes only States which had at least 1600 deaths of white persons in both 1959–61 and 1969–71.

Source: National Center for Health Statistics: unpublished data and U.S. Decennial Life Tables, 1969–71, Vol. II. DHEW Pub. No. (HRA) 75–1151.

Table 7c. Average lifetime in years for the non-white population, change from 1959–61 to 1969–71 and rank in 1959–61 and 1969–71 according to State: United States, 1959–61 and 1969–71

State	Average lifetime		Change from 1959–61 to 1969–71	Rank	
	1969–71	1959–61		1969–71	1959–61
Hawaii	73.67	72.42	1.25	1	1
California	70.10	68.75	1.35	2	2
Oklahoma	67.82	65.47	2.35	3	5
Massachusetts	67.73	66.20	1.53	4	3
Connecticut	67.17	64.58	2.59	5	9
Arkansas	65.88	65.36	0.52	6	6
Texas	65.51	64.75	0.76	7	7
Indiana	65.37	64.45	0.92	8	10
Ohio	65.34	64.66	0.68	9	8
New York	65.10	63.96	1.14	10	12
Michigan	64.97	66.02	–1.05	11	4
Maryland	64.59	62.65	1.94	12	20
Tennessee	64.52	63.35	1.17	13	18
New Jersey	64.44	63.91	0.53	14	13
Louisiana	64.40	63.78	0.62	15	15
Virginia	64.09	62.54	1.55	16	21
Mississippi	64.03	63.66	0.37	17	17
Alabama	63.93	62.54	1.39	18	21
Missouri	63.88	63.21	0.67	19	19
Pennsylvania	63.80	64.01	–0.21	20	11
Illinois	63.69	63.79	–0.10	21	14
Kentucky	63.58	62.52	1.06	22	23
Dist. of Columbia	63.55	63.73	–0.18	23	16
North Carolina	63.20	62.16	1.04	24	25
Florida	62.94	62.39	0.55	25	24
Georgia	62.89	61.56	1.33	26	26
South Carolina	62.64	60.28	2.36	27	27

Note: Includes only States which had at least 1600 deaths of non-white persons in both 1959–61 and 1969–71.

Source: National Center for Health Statistics: unpublished data and U.S. Decennial Life Tables, 1969–71, Vol. II. DHEW Pub. No. (HRA) 75–1151.

Table 8. Total active, non-Federal physicians per 10,000 [1] by Health Service Area: United States, 1973

State	Health Service Area													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Number per 10,000 population													
Alabama	6.7	6.8	16.9	5.7	7.0	8.2	8.5							
Alaska	9.3													
Arizona	17.5	21.0	8.9	4.4										
Arkansas	8.7	5.2	19.5	5.7										
California	12.6	18.0	16.2	35.6	18.1	12.5	23.5	14.4	11.6	16.3	20.4	14.4	17.3	18.9
Colorado	22.0	10.6	11.4											
Connecticut	19.0	26.8	11.9	19.7	12.2									
Delaware	13.9													
Dist. of Col.	40.3													
Florida	8.5	19.0	13.2	12.4	12.4	14.9	14.7	16.2	26.4					
Georgia	10.6	7.0	15.6	14.0	8.5	7.0	8.7							
Hawaii	16.1													
Idaho	10.0													
Illinois	9.4	9.6	9.6	8.7	7.1	19.2	19.2	11.1	8.0	7.9	16.3			
Indiana	8.7	13.2	8.5											
Iowa	10.5	17.0	7.9											
Kansas	7.6	10.1	10.6	15.2										
Kentucky	11.5	10.7	15.2											
Louisiana	18.4	8.8	8.8											
Maine	11.5													
Maryland	9.9	31.3	8.0	23.8	11.0									
Massachusetts	13.7	13.8	16.7	43.9	10.6	16.7								
Michigan	16.1	9.8	9.8	9.9	10.1	7.8	10.9	6.8						
Minnesota	7.1	9.5	8.9	6.4	18.3	6.8	35.9							
Mississippi	8.5													
Missouri	15.2	9.2	16.3	7.8	5.8									
Montana	10.5													
Nebraska	7.0	9.2	17.0	10.5										
Nevada	14.0	10.6												
New Hampshire	14.5													
New Jersey	16.8	18.8	13.2	13.9	11.2									
New Mexico	12.1													
New York	16.2	19.2	14.2	13.5	16.6	23.4	29.7	18.6						
North Carolina	8.6	11.5	9.9	31.4	6.9	6.6								
North Dakota	8.3	7.1	8.9											
Ohio	15.2	9.8	7.2	12.1	13.8	6.4	8.6	13.5	19.0	10.3				
Oklahoma	10.4													
Oregon	20.9	11.6	9.8											
Pennsylvania	27.8	12.9	9.1	12.0	10.1	13.7	8.8	13.5	9.2	18.8	13.4			
Rhode Island	16.4													
South Carolina	10.5	9.9	6.4	13.7	14.0									
South Dakota	7.7													
Tennessee	8.2	10.6	10.6	13.2	6.3	19.5								
Texas	7.8	9.3	9.9	8.4	13.5	11.2	8.7	8.2	13.8	8.1	18.1	7.2		
Utah	15.5													
Vermont	18.6													
Virginia	18.4	13.3	9.9	17.4	9.4	8.2								
Washington	17.5	8.7	9.3	14.3										
West Virginia	10.7													
Wisconsin	18.4	14.0	9.7	7.9	9.2	10.0	9.5							
Wyoming	10.0													

[1] April 1. 1970 Population used as denominator.

Note: For explanation of Area designations. see notes preceding Table 5.

Source: Unpublished data from the National Center for Health Statistics.

Table 9. Physicians [1] per 10,000 population [2] by medical specialty according to percentiles of Health Service Areas: United States, 1973.

Percentile	Medical Specialty					
	General Practice	Internal Medicine	Pediatrics [3]	Obstetrics and Gynecology [4]	General Surgery	Psychiatry
United States	2.4	1.5	2.4	3.7	1.0	0.8
90	3.3	2.3	3.6	5.0	1.3	1.4
75	2.9	1.7	2.6	4.3	1.1	0.8
50	2.4	1.1	1.8	3.[illegible]	0.9	0.5
25	2.1	0.7	1.3	2.4	0.8	0.3
10	1.8	0.6	1.0	1.8	0.7	0.2

[1] Excluding interns, residents, inactive and Federal physicians.
[2] April 1, [illegible] ...ation used as denominator.
[3] Per 10[illegible] ...ion under 15 years.
[4] Per 1[illegible] ...5–44.
Source: U[illegible] ...rom the National Center for Health Statistics.

Table 10. Percent of physicians certified by medical specialty according to percentiles of Health Service Areas: United States, 1973

Percentile	Medical Specialty				
	Internal Medicine	Pediatrics	Obstetrics and Gynecology	General Surgery	Psychiatry
	Percent Certified				
United States ..	47.9	68.1	66.3	61.3	43.9
90	57.1	80.0	75.9	72.8	52.6
75	52.8	75.0	70.5	67.3	46.7
50	47.3	69.8	64.3	61.5	38.1
25	40.0	60.5	59.0	55.3	29.2
10	35.6	54.5	48.4	46.8	20.7

Note: Based on physicians in each area with designated specialty; excluding interns, residents, inactive and Federal physicians.
Source: Unpublished data from the National Center for Health Statistics.

Table 11. American and foreign medical graduates employed in State and county mental hospitals, and percent who are foreign, according to State: United States, 1975

State	All Medical Graduates	American (Incl. Canadian) Medical Graduates	Foreign Medical Graduates	Percent Who Are Foreign Medical Graduates
United States	7,362	3,654	3,708	50.4
Alabama	40	21	19	47.5
Alaska	11	11	0	0
Arizona	50	42	8	16.0
Arkansas	38	36	2	5.3
California	607	573	34	5.6
Colorado	161	144	17	10.6
Connecticut	135	38	97	71.9
Delaware	58	30	28	48.3
Dist. of Col.	161	111	50	31.1
Florida	112	26	86	76.8
Georgia	172	74	98	57.0
Hawaii	.....	.....	.....	.....
Idaho	8	5	3	37.5
Illinois	327	98	229	70.0
Indiana	116	74	42	36.2
Iowa	71	35	36	50.7
Kansas	88	37	51	58.0
Kentucky	40	18	22	55.0
Louisiana	86	74	12	14.0
Maine	21	8	13	61.9
Maryland	193	51	142	73.6
Massachusetts	209	92	117	56.0
Michigan	403	153	250	62.0
Minnesota	64	43	21	32.8
Mississippi	36	29	7	19.4
Missouri	149	44	105	70.5
Montana	9	2	7	77.8
Nebraska	62	46	16	25.8
Nevada	6	3	3	50.0
New Hampshire	18	12	6	33.3
New Jersey	363	112	251	69.1
New Mexico	5	3	2	40.0
New York	1,509	472	1,037	68.7
North Carolina	156	78	78	50.0
North Dakota	12	4	8	66.7
Ohio	348	102	246	70.7
Oklahoma	79	47	32	40.5
Oregon	53	41	12	22.6
Pennsylvania	555	414	141	25.4
Rhode Island	39	5	34	87.2
South Carolina	132	70	62	47.0
South Dakota	15	3	12	80.0
Tennessee	81	42	39	48.1
Texas	190	133	57	30.0
Utah	5	4	1	20.0
Vermont	11	9	2	18.2
Virginia	148	38	110	74.3
Washington	35	22	13	37.1
West Virginia	43	7	36	83.7
Wisconsin	124	110	14	11.3
Wyoming	8	8	0	0

..... Data not reported.
Source: Mental Health Statistical Note No. 131, National Institute of Mental Health, May 1976.

Table 12. General short-stay hospital beds per 10,000 population [1] by Health Service Area: United States, 1973

State	Health Service Area													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Hospital beds per 10,000 population													
Alabama	50.7	37.9	62.2	45.0	49.8	41.8	54.8							
Alaska	25.7													
Arizona	47.4	58.7	48.7	43.7										
Arkansas	56.9	36.8	69.0	41.2										
California	45.2	38.1	37.9	60.2	41.1	41.9	31.0	46.2	37.7	42.5	47.7	42.1	39.3	47.7
Colorado	46.7	50.8	56.4											
Connecticut	34.7	48.0	30.5	36.1	30.6									
Delaware	41.3													
Dist. of Col.	83.6													
Florida	43.1	67.0	47.4	59.9	52.6	59.6	45.2	51.3	62.6					
Georgia	41.9	39.5	44.0	49.3	54.8	45.9	50.7							
Hawaii	35.3													
Idaho	44.0													
Illinois	37.6	57.4	59.8	48.3	55.6	50.8	50.8	48.0	35.7	52.1	57.7			
Indiana	43.3	48.3	44.2											
Iowa	62.6	74.4	52.1											
Kansas	80.7	49.5	65.0	57.4										
Kentucky	54.0	40.5	43.7											
Louisiana	52.2	39.6	60.9											
Maine	46.6													
Maryland	40.9	35.8	15.7	42.4	34.9									
Massachusetts	47.6	49.4	38.6	66.7	33.2	38.6								
Michigan	45.3	40.0	46.1	38.6	49.0	45.8	61.3	59.4						
Minnesota	69.2	79.8	60.7	49.5	58.8	58.0	74.8							
Mississippi	52.2													
Missouri	57.4	58.3	57.7	50.7	51.2									
Montana	52.5													
Nebraska	58.9	63.0	74.4	62.6										
Nevada	63.2	42.0												
New Hampshire	45.9													
New Jersey	37.4	54.3	38.9	34.4	36.1									
New Mexico	43.9													
New York	49.9	39.4	42.9	49.0	54.5	40.8	57.0	31.8						
North Carolina	49.7	38.8	41.9	57.4	47.3	36.3								
North Dakota	80.9	69.2	60.7											
Ohio	43.7	47.5	42.7	47.9	42.6	46.1	43.9	36.3	55.0	46.4				
Oklahoma	50.4													
Oregon	51.9	32.2	47.6											
Pennsylvania	65.7	40.5	47.6	41.0	48.7	48.6	56.0	49.0	53.6	33.3	26.3			
Rhode Island	40.1													
South Carolina	44.4	53.4	42.9	53.4	49.3									
South Dakota	68.3													
Tennessee	57.5	52.6	41.9	55.7	40.1	69.4								
Texas	58.1	54.0	56.6	61.8	46.0	44.4	50.8	37.3	54.6	47.7	60.6	51.6		
Utah	36.6													
Vermont	53.4													
Virginia	46.0	26.8	47.4	57.4	50.1	57.5								
Washington	36.2	38.2	37.7	56.0										
West Virginia	61.0													
Wisconsin	59.0	49.1	51.7	53.2	67.0	57.2	79.8							
Wyoming	54.5													

[1] April 1, 1970 population used as denominator.

Note: For explanation of Area designations, see notes preceding Table 5.

Source: Unpublished data from the National Center for Health Statistics.

Table 13. Physician visits by place of residence and age group: United States, 1973

Age Group	United States	Large metropolitan areas (1 million or more)	Small metropolitan areas (under 1 million)	Non-metropolitan-places of 10,000 or more	Other
	Visits per person per year				
All ages	5.0	5.5	4.9	4.4	4.6
Under 17 years	4.2	4.7	4.1	3.7	3.6
17–44 years	5.0	5.5	5.0	4.5	4.5
45–64 years	5.5	5.8	5.3	5.0	5.2
65+ years	6.5	7.7	5.9	5.3	6.2

Source: Unpublished data from the Health Interview Survey. National Center for Health Statistics.

Table 14. Percent of population receiving medical and dental care by need for and type of care according to poverty level, race, and age: United States, 1970

Demographic Characteristic	Persons seeing physician		Persons undergoing elective surgery	Persons with purely preventive dental care
	All care	Mandatory care only		
	Percent of population			
Total	64.5	31.3	19.5	29.8
Above near-poverty ..	67.3	29.4	20.4	31.0
Below near-poverty ..	55.0	38.8	15.8	22.7
White	66.0	30.6	20.4	30.7
Black	53.3	38.4	10.5	13.3
Under 65	63.6	28.8	NA	NA
65 and over	72.5	50.4	NA	NA

Source: Andersen, R., J. Kravits, and O.W. Anderson, editors. Equity in Health Services: Empirical Analysis in Social Policy. Cambridge, Mass. 1975, pp. 176, 177, 180, 182.

Table 15. Hospital inpatient admissions and average length of stay in short-stay hospitals (Medicare enrollees) according to State: United States, 1973

State	All hospital inpatient admissions (rate per 1,000 Hospital Insurance enrollees)	Average length of stay (covered) in short-stay hospitals
United States	321	11.7
Alabama	353	10.9
Alaska	287	8.8
Arizona	329	10.4
Arkansas	404	10.1
California	307	9.5
Colorado	388	10.1
Connecticut	270	12.2
Delaware	258	12.5
Dist. of Columbia	338	14.3
Florida	323	10.6
Georgia	341	9.9
Hawaii	285	9.6
Idaho	337	8.9
Illinois	321	12.5
Indiana	303	12.2
Iowa	362	10.8
Kansas	388	11.1
Kentucky	345	10.6
Louisiana	369	9.8
Maine	310	10.8
Maryland	241	13.0
Massachusetts	311	13.4
Michigan	303	12.8
Minnesota	386	11.3
Mississippi	398	10.8
Missouri	363	12.1
Montana	422	9.1
Nebraska	389	11.2
Nevada	366	9.5
New Hampshire	310	11.2
New Jersey	253	13.7
New Mexico	323	9.5
New York	262	15.5
North Carolina	316	11.9
North Dakota	457	10.1
Ohio	298	12.7
Oklahoma	378	9.5
Oregon	313	9.2
Pennsylvania	285	13.7
Rhode Island	271	13.5
South Carolina	300	11.0
South Dakota	414	10.0
Tennessee	371	11.3
Texas	402	10.6
Utah	291	9.1
Vermont	347	11.0
Virginia	311	13.0
Washington	326	8.0
West Virginia	375	11.6
Wisconsin	327	12.1
Wyoming	376	10.2

Source: Medicare, Fiscal Years 1969–1973. DHEW Pub. No. (SSA) 76–11711.

Table 16. Medicaid payments per recipient and per poor person, and ratio of recipients to poor, by age and State: United States, 1970

Region and State	Children, under 21			Adults, 21–64			Adults, 65 and over		
	Medical payments per child recipient	Ratio of recipients to poor children	Medicaid payments per poor child	Medical payments per adult recipient	Ratio of recipients to poor adults	Medicaid payments per poor adult	Medical payments per aged recipient	Ratio of recipients to poor aged	Medicaid payments per poor aged
United States	**$126**	**0.55**	**$69**	**$403**	**0.61**	**$250**	**$527**	**0.69**	**$363**
Northeast	**132**	**1.24**	**163**	**404**	**1.31**	**530**	**999**	**0.67**	**667**
Maine	109	0.48	52	321	0.46	147	341	0.32	110
New Hampshire	98	0.46	45	471	0.37	174	150	0.52	78
Vermont	201	0.80	160	361	0.60	215	601	0.72	435
Rhode Island	134	0.72	97	354	1.02	362	633	1.30	825
Connecticut	149	1.04	155	674	0.53	359	1,803	0.51	918
New York	133	1.68	224	450	1.72	773	1,049	1.02	1,075
New Jersey	153	0.70	108	215	0.63	134	1,942	0.22	433
Pennsylvania	117	0.97	113	329	1.28	422	675	0.38	259
North Central	**137**	**0.49**	**67**	**525**	**0.41**	**216**	**700**	**0.40**	**279**
Ohio	103	0.40	41	435	0.36	156	629	0.29	185
Indiana	89	0.26	23	417	0.22	93	376	0.21	78
Illinois	159	0.70	111	558	0.50	279	546	0.34	185
Michigan	122	0.51	62	573	0.62	356	1,260	0.47	593
Wisconsin	237	0.66	155	848	0.47	395	1,054	0.62	656
Minnesota	143	0.72	103	607	0.40	243	1,044	0.55	573
Iowa	103	0.43	44	319	0.32	101	227	0.32	73
Missouri	80	0.33	26	331	0.33	110	296	0.55	161
North Dakota	142	0.20	29	587	0.22	127	928	0.40	367
South Dakota	114	0.14	17	440	0.14	62	690	0.28	196
Nebraska	120	0.31	38	492	0.31	154	382	0.39	150
Kansas	129	0.51	66	498	0.45	226	478	0.36	170
South	**108**	**0.20**	**21**	**349**	**0.23**	**79**	**334**	**0.53**	**176**
Delaware	64	0.81	52	343	0.48	165	151	0.28	42
Maryland	118	0.73	86	376	0.83	313	464	0.68	316
District of Columbia	171	1.10	189	442	0.72	317	431	0.67	291

Virginia	98	0.20	19	374	0.18	69	250	0.28	69
West Virginia	87	0.38	33	183	0.39	71	135	0.19	25
South Carolina	65	0.09	6	325	0.19	60	475	0.38	180
Georgia	87	0.26	23	447	0.31	139	416	0.71	296
Florida	68	0.20	13	192	0.25	48	351	0.43	150
Kentucky	76	0.38	29	262	0.37	96	231	0.68	158
Tennessee	66	0.16	10	222	0.17	37	166	0.32	53
Alabama	97	0.10	10	446	0.11	48	511	0.49	253
Mississippi	43	0.11	5	264	0.07	20	181	0.49	89
Arkansas	56	0.06	4	179	0.10	17	68	0.19	13
Louisiana	112	0.08	9	260	0.18	46	245	0.94	230
Oklahoma	201	0.37	75	402	0.43	174	583	0.64	372
Texas	215	0.08	17	738	0.09	69	326	0.66	213
West	**122**	**0.96**	**117**	**389**	**1.29**	**500**	**35**	**1.97**	**690**
Montana	127	0.28	35	451	0.26	118	669	0.31	207
Idaho	90	0.26	23	436	0.29	126	829	0.26	217
Wyoming	75	0.18	13	308	0.18	56	273	0.24	67
Colorado	91	0.40	36	340	0.55	186	328	1.34	440
New Mexico	97	0.26	25	352	0.29	103	274	0.37	101
Utah	190	0.27	52	329	0.73	240	376	0.50	186
Nevada	119	0.47	56	558	0.34	190	794	0.55	440
Washington	99	0.70	69	317	1.13	359	748	0.67	498
Oregon	99	0.35	35	283	0.47	133	298	0.31	92
California	126	1.33	168	389	1.73	672	321	3.17	1,017
Hawaii	100	0.92	92	319	1.01	322	1,162	0.96	1,119

Note: Data are not reported for Massachusetts, North Carolina, Arizona and Alaska.
Source: Davis, K. Medicaid payments and utilization of medical services by the poor. Inquiry. Vol XIII, June, 1976. pp. 122-135.

Table 17. Measures of access to medical care, in different places of residence by selected aspects of care: United States, 1970

Aspects of care	Urban			Rural	
	SMSA				
	Central city	Other	Non-SMSA	Non-farm	Farm
	Percent of population				
Regular source of care					
Total	100	100	100	100	100
None	15	10	7	9	12
Clinic	24	14	21	16	21
General Practitioner	35	46	50	55	55
Specialist	26	31	23	20	12
With clinic as source, see a particular doctor	46	50	78	57	84
Travel time					
Total	100	100	100	100	100
Less than 15 minutes	51	58	70	44	21
15–30 minutes	40	34	23	44	54
31–60 minutes	8	7	6	10	21
Over 60 minutes	2	1	2	2	4
Have appointment	74	85	77	71	59
Appointment waiting time					
Total	100	100	100	100	100
Up to 2 days	54	66	68	65	68
3–14 days	33	26	29	28	26
15 or more days	14	9	3	7	7
Office waiting time					
Total	100	100	100	100	100
No wait	8	7	6	7	4
1–30 minutes	47	58	49	47	29
31–60 minutes	21	24	27	24	39
60 or more minutes	25	11	18	22	28
Persons seeing a physician in 1970	65	72	71	68	62
Mean Numbers of Visits					
All persons	4.2	4.2	4.4	3.7	3.4
For persons with 1 or more visits	6.5	5.8	6.3	5.5	5.6
Persons with disability days who saw doctor	40	40	42	40	38
Physician visits (per 100 disability days)	15.3	15.7	14.7	12.5	12.3

Source: Aday and Andersen, Development of Indices of Access to Medical Care. Ann Arbor, 1975. pp. 18–58.

Table 18. Aggregate and per capita national health expenditures, by source of funds, and percent of Gross National Product: United States, selected fiscal years, 1929–75

Fiscal year	Gross national product (in billions)	Health expenditures								
		Total			Private			Public		
		Amount (in millions)	Per capita	Percent of GNP	Amount (in millions)	Per capita	Percent of total	Amount (in millions)	Per capita	Percent of total
1929	$101.0	$3,589	$29.16	3.6	$3,112	$25.28	86.7	$477	$3.88	13.3
1935	68.7	2,846	22.04	4.1	2,303	17.84	80.9	543	4.21	19.1
1940	95.1	3,863	28.83	4.1	3,081	22.99	79.8	782	5.84	20.2
1950	263.4	12,028	78.35	4.6	8,962	58.38	74.5	3,065	19.97	25.5
1955	379.7	17,330	103.76	4.6	12,909	77.29	74.5	4,421	26.46	25.5
1960	495.6	25,856	141.63	5.2	19,461	106.60	75.3	6,395	35.03	24.7
1965	655.6	38,892	197.75	5.9	29,357	149.27	75.5	9,535	48.48	24.5
1966	718.5	42,109	211.56	5.9	31,279	157.15	74.3	10,830	54.41	25.7
1967	771.4	47,879	237.93	6.2	32,057	159.30	67.0	15,823	78.63	33.0
1968	827.0	53,765	264.37	6.5	33,727	165.84	62.7	20,040	98.54	37.3
1969	899.0	60,617	295.20	6.7	37,682	183.51	62.2	22,937	111.70	37.8
1970	954.8	69,202	333.57	7.2	43,964	211.92	63.5	25,238	121.65	36.5
1971	1,013.6	77,162	368.25	7.6	48,558	231.74	62.9	28,604	136.51	37.1
1972	1,100.6	86,687	409.71	7.9	53,398	252.37	61.6	33,289	157.33	38.4
1973	1,225.2	95,384	447.31	7.8	58,995	276.66	61.8	36,389	170.65	38.2
1974	1,348.9	104,030	484.53	7.7	62,152	294.03	60.7	40,879	190.33	39.3
1975[1]	1,424.3	118,500	547.03	8.3	68,552	316.46	57.8	49,948	230.57	42.2

[1] Preliminary estimates.

Source: National Health Expenditures, Fiscal Year 1975. Social Security Bulletin. February 1976, DHEW Pub. No. (SSA) 76–11703.

Table 19. Per capita personal health care expenditures, by source of funds and state: United States, fiscal year 1969

Region, division, and State	Per capita expenditures				
	Total	Private	Public		
			Total	Federal	State and local
United States	**$256.89**	**$166.31**	**$90.58**	**$58.91**	**$31.67**
Northeast	295.46	178.07	117.39	65.46	51.93
North Central	251.58	173.15	78.42	51.23	27.19
South	211.49	138.63	72.87	53.61	19.25
West	294.58	189.54	105.04	72.02	33.02
Northeast					
New England	307.18	196.76	110.42	71.07	39.35
Middle Atlantic	291.84	172.29	119.54	63.73	55.81
North Central					
East North Central	254.66	179.39	75.27	47.65	27.61
West North Central	243.98	157.77	86.21	60.05	26.16
South					
South Atlantic	223.24	148.10	75.13	54.62	20.51
East South Central	184.17	124.54	59.64	45.24	14.40
West South Central	211.50	133.29	78.22	57.66	20.55
West					
Mountain	247.63	164.32	83.31	61.61	21.70
Pacific	309.09	197.34	111.75	75.24	36.51
New England:					
Maine	210.42	133.46	76.96	57.84	19.13
New Hampshire	214.79	144.50	70.30	49.50	20.79
Vermont	234.49	147.79	86.70	63.97	22.73

Massachusetts	346.44	215.03	131.41	83.85	47.56
Rhode Island	295.56	184.53	111.03	80.41	30.62
Connecticut	303.45	207.49	95.95	55.44	40.51
Middle Atlantic:					
New York	338.42	177.25	161.17	80.32	30.85
New Jersey	236.57	163.21	73.36	43.47	29.88
Pennsylvania	252.99	170.10	82.89	50.24	32.65
East North Central:					
Ohio	230.74	169.32	61.41	41.04	20.37
Indiana	225.29	167.12	58.17	37.59	20.58
Illinois	274.06	188.14	85.91	54.77	31.15
Michigan	270.77	189.79	80.99	45.23	35.76
Wisconsin	266.87	175.40	91.47	63.06	28.40
West North Central:					
Minnesota	268.13	167.62	100.51	64.94	35.58
Iowa	227.71	153.55	74.17	52.78	21.39
Missouri	248.22	165.02	83.20	56.60	26.60
North Dakota	243.02	157.66	85.36	69.87	15.50
South Dakota	219.00	127.32	91.69	77.16	14.53
Nebraska	241.24	158.23	83.01	57.42	25.60
Kansas	225.52	140.98	84.54	62.10	22.44
South Atlantic:					
Delaware	253.67	177.12	76.56	46.90	29.66
Maryland	259.88	179.09	80.79	52.30	28.49
District of Columbia	694.09	399.05	295.05	210.91	84.13
Virginia	197.26	140.03	57.23	40.75	16.48
West Virginia	195.86	131.82	64.04	48.19	15.85
North Carolina	172.38	120.44	51.94	37.57	14.37
South Carolina	156.47	96.03	60.44	43.92	16.52
Georgia	197.02	130.56	66.46	48.98	17.48
Florida	255.81	163.88	91.93	71.68	20.26
East South Central:					
Kentucky	192.35	121.77	70.58	55.38	15.20
Tennessee	206.22	143.84	62.38	44.03	18.34
Alabama	182.85	128.66	54.20	42.33	11.87
Mississippi	137.72	89.57	48.15	37.74	10.42

Table 19 (cont.)

Region, division, and State	Per capita expenditures				
	Total	Private	Public		
			Total	Federal	State and local
West South Central:					
Arkansas	166.39	95.27	71.13	53.65	17.47
Louisiana	194.30	122.85	71.45	44.84	26.62
Oklahoma	233.08	138.02	95.05	73.96	21.09
Texas	220.35	142.47	77.88	58.93	18.95
Mountain:					
Montana	214.46	129.60	84.86	59.52	25.34
Idaho	190.14	132.84	57.30	41.39	15.91
Wyoming	255.53	171.87	83.67	60.81	22.85
Colorado	301.24	191.62	109.62	79.91	29.71
New Mexico	199.04	119.09	79.94	62.51	17.44
Arizona	257.82	174.12	83.70	62.96	20.75
Utah	213.91	162.46	51.45	38.06	13.38
Nevada	281.48	202.15	79.33	59.89	19.44
Pacific:					
Washington	265.29	177.36	87.93	60.64	27.29
Oregon	245.42	169.55	75.86	51.14	24.73
California	325.66	206.35	119.31	79.92	39.39
Alaska	267.21	110.00	157.21	124.71	32.51
Hawaii	268.85	164.44	104.42	67.28	37.14

Source: Personal Health Care Expenditures by State, Volume II, Public and Private Funds, 1966 and 1969, Social Security Administration, DHEW Pub. No. (SSA) 75–11906.

Table 20. Total and public personal health care expenditures, by type of expenditure and State: United States, 1966 and 1969

Region, division, and State	Total			Public		
	Total	Hospital care	Physicians' services	Total	Hospital care	Physicians' services
United States	$256.89	$110.72	$58.65	$90.58	$57.35	$13.49
Northeast	295.46	136.29	63.23	117.39	74.80	15.22
North Central	251.58	109.56	56.43	78.42	51.57	11.37
South	211.49	90.97	48.72	72.87	47.67	10.83
West	294.58	112.58	74.15	105.04	59.82	19.43
Northeast:						
New England	307.18	144.29	62.19	110.42	69.62	13.65
Middle Atlantic	291.84	133.82	63.56	119.54	76.40	15.71
North Central:						
East North Central	254.66	109.80	59.05	75.27	49.22	10.83
West North Central	243.98	108.97	49.98	86.21	57.37	12.69
South:						
South Atlantic	223.24	95.69	51.03	75.13	51.17	10.51
East South Central	184.17	83.17	41.57	59.64	38.61	9.43
West South Central	211.50	88.84	49.90	78.22	48.29	12.27
West:						
Mountain	247.63	102.68	54.86	83.31	52.33	12.91
Pacific	309.09	115.63	80.11	111.75	62.14	21.44
New England:						
Maine	210.42	101.68	46.11	76.96	54.23	11.62
New Hampshire	214.79	92.79	54.89	70.30	45.86	10.83
Vermont	234.49	117.12	46.08	86.70	53.52	13.76
Massachusetts	346.44	171.74	62.47	131.41	81.15	14.86
Rhode Island	295.56	142.44	59.46	111.03	71.92	16.25
Connecticut	303.45	125.01	71.84	95.95	60.97	11.96
Middle Atlantic:						
New York	338.42	158.29	71.77	161.17	103.11	19.07
New Jersey	236.57	96.28	59.03	73.36	46.84	12.67
Pennsylvania	252.99	118.58	53.55	82.89	52.83	12.32
East North Central:						
Ohio	230.74	99.14	57.81	61.41	41.16	9.84
Indiana	225.29	89.28	57.39	58.17	39.74	8.13
Illinois	274.06	123.82	59.83	85.91	61.72	10.96
Michigan	270.77	115.64	60.73	80.99	48.78	12.71
Wisconsin	266.87	112.94	58.69	91.47	49.38	12.35
West North Central:						
Minnesota	268.13	116.21	52.62	100.51	61.16	13.74
Iowa	227.71	96.76	50.98	74.17	49.36	12.17
Missouri	248.22	114.68	51.12	83.20	58.27	13.03
North Dakota	243.02	113.92	51.84	85.36	57.68	11.76
South Dakota	219.00	91.63	39.41	91.69	62.44	10.63
Nebraska	241.24	108.75	49.29	83.01	56.75	12.26
Kansas	225.52	104.37	45.20	84.54	57.98	12.05
South Atlantic:						
Delaware	253.67	122.41	55.47	76.56	56.03	10.09
Maryland	259.88	116.01	56.52	80.79	61.17	7.19
District of Columbia	694.09	313.11	156.51	295.05	199.29	13.81
Virginia	197.26	84.40	43.47	57.23	41.91	6.67
West Virginia	195.86	95.70	45.49	64.04	41.70	11.72
North Carolina	172.38	76.40	41.41	51.94	37.38	6.75
South Carolina	156.47	70.28	29.62	60.44	38.96	7.89
Georgia	197.02	79.28	48.64	66.46	41.85	10.07
Florida	255.81	100.91	60.00	91.93	59.02	19.09

Table 20 (cont.)

Region, division, and State	Total			Public		
	Total	Hospital care	Physicians' services	Total	Hospital care	Physicians' services
East South Central:						
Kentucky	192.35	84.39	44.02	70.58	42.45	12.60
Tennessee	206.22	93.48	47.29	62.38	42.64	8.85
Alabama	162.65	83.36	41.59	54.20	35.06	8.10
Mississippi	137.72	83.77	26.54	46.15	31.64	8.07
West South Central:						
Arkansas	166.39	86.31	36.29	71.13	43.47	11.49
Louisiana	194.30	83.92	50.62	71.45	46.69	10.04
Oklahoma	233.06	92.69	55.60	95.05	51.20	16.04
Texas	220.35	93.21	50.73	77.86	49.01	11.63
Mountain:						
Montana	214.46	87.76	46.55	84.66	55.22	13.32
Idaho	190.14	89.65	42.41	57.30	34.53	10.96
Wyoming	255.53	110.70	62.29	83.67	59.36	10.00
Colorado	301.24	131.49	60.40	109.62	64.88	14.72
New Mexico	199.04	87.05	39.05	79.94	49.63	11.68
Arizona	257.62	110.34	63.04	83.70	57.20	14.57
Utah	213.91	76.09	50.27	51.45	33.42	6.70
Nevada	261.46	105.65	70.98	79.33	44.32	15.19
Pacific:						
Washington	265.29	93.05	73.63	87.93	54.02	13.46
Oregon	245.42	91.42	62.67	75.66	45.61	14.61
California	325.66	122.26	84.07	119.31	64.41	24.15
Alaska	287.21	143.04	43.18	157.21	121.63	10.66
Hawaii	266.65	102.39	68.01	104.42	62.03	10.10

Source: Personal Health Care Expenditures by State. Vol. II. Public and Private Funds 1966 and 1969. Social Security Administration. DHEW Pub. No. (SSA) 75-11906.

Table 21. Reimbursement for Hospital and Medical Insurance (Medicare) by census region, division, and state of residence for all persons, and persons aged 65 and over: United States, 1974

State	All persons	Persons aged 65 and over	State (cont.)	All persons	Persons aged 65 and over
	Amount in dollars			Amount in dollars	
United States	471	467	Delaware	474	465
Northeast	548	544	Maryland	515	506
North Central	456	451	Dist. of Columbia	611	612
South	397	395	Virginia	370	366
West	527	516	W. Virginia	318	327
			No. Carolina	349	344
New England	566	561	So. Carolina	321	319
Middle Atlantic	542	539	Georgia	364	359
E. No. Central	468	463	Florida	479	475
W. No. Central	432	426			
So. Atlantic	417	415	Kentucky	336	335
E. So. Central	341	339	Tennessee	346	341
W. So. Central	402	401	Alabama	337	335
Mountain	429	423	Mississippi	343	345
Pacific	557	545			
			Arkansas	312	316
Maine	412	409	Louisiana	341	347
New Hampshire	419	417	Oklahoma	401	400
Vermont	485	482	Texas	443	438
Massachusetts	618	614			
Rhode Island	569	565	Montana	370	368
Connecticut	574	562	Idaho	402	396
			Wyoming	357	355
New York	625	623	Colorado	463	455
New Jersey	508	497	New Mexico	399	398
Pennsylvania	439	436			
			Arizona	464	458
Ohio	434	431	Utah	327	325
Indiana	416	409	Nevada	578	560
Illinois	473	468			
Michigan	550	548	Washington	401	395
Wisconsin	452	441	Oregon	414	409
			California	606	593
Minnesota	510	498	Alaska	507	499
Iowa	395	389	Hawaii	453	429
Missouri	405	403			
No. Dakota	462	477			
So. Dakota	383	377			
Nebraska	392	387			
Kansas	446	443			

Source: Unpublished data from the Social Security Administration.

Table 22. Per capita expenditures for health by selected sites according to type of expenditure: United States, 1971

Type of expenditure [1]	U.S. Average	Average: 15 Sites	Rhode Island	Delaware (FY–1972)	Arkansas	Philadelphia Pennsylvania	East Los Angeles	St. Louis Missouri	Memphis (CY–1972)	Binghamton New York	Jacksonville Florida (FY–1971)	Lubbock Texas	Rapid City South Dakota	Boise Idaho	Northeast Kentucky	Mon Valley Pennsylvania	Tucson Arizona
Total	378	411	434	401	332	614	422	490	502	472	444	364	389	335	222	212	553
Hospital Care	147	154	180	162	109	251	173	190	171	173	154	86	176	133	63	68	198
Nursing Home Care	16	20	26	19	25	28	18	36	9	30	12	16	25	22	6	5	20
Physician Services	75	75	64	67	79	101	87	92	112	78	92	64	59	65	44	28	105
Dentists' Services	23	26	28	28	19	31	20	25	42	27	30	24	18	22	16	25	30
Other Professional Services	7	8	10	11	1	11	7	10	12	8	8	5	4	6	6	8	21
Drugs and Sundries	37	39	54	25	31	51	23	41	26	48	42	37	49	21	38	42	50
Vision Care & Appliances	9	9	9	14	3	10	11	14	8	7	10	13	6	8	7	8	12
Gov't Public Health Activities	9	17	8	11	43	18	18	13	18	10	19	27	7	8	16	8	21
Other Health Services	15	11	19	16	1	16	16	15	26	14	11	8	2	3	2	9	13
Prepayment and Administration	13	16	15	16	1	31	4	29	16	15	15	11	30	16	16	1	21
Research Education and Construction	27	36	21	32	20	66	45	25	62	62	51	73	13	31	8	10	62

[1] Provisional estimates.

Source: U.S. Average Social Security Administration Community Fund Flow Report.

Chapter VII

Prospects for the Future*

In the past few years, a new school of social scientists, philosophers and planners has evolved which calls itself "futurist." The following discussion outlines what a number of these analysts believe may influence health activities and health status over the next 25 years. It is based on a review of the articles and books listed in the appendix to this paper.

We must keep in mind the caution that "it is very difficult to predict, especially the future." Futurists themselves recognize this; they are at pains to say that they lay no claim to the ability to predict. They emphasize that the future is fluid. To the extent current projections are negative, they may serve to stimulate preventive or corrective actions. Thus, health planners need consider not only how to deal with such projections but also whether to try to change them.

Population and Family Structure

The most familiar predictive tool available is population projections. These are created from estimates of fertility, mortality, and in-and-out-migration. Fertility rates are subject to greater year-by-year fluctuations, and are the critical variable in national projections. Migration rates may be equally or more critical when predictions are made for local areas or individual States.

The assumption made in this paper is a fertility rate of 2.1 children per woman; this is a middle-range projection, and would result ultimately in the population simply replacing itself. With this assumption, the estimated U.S. population will be 234 million in 1985 and 262 million in 2000, as shown below. The latter figure would represent a 24 percent increase over the estimated 1974 population of 212 million.

The proportion of people age 45 and over will increase slightly from about 31 percent in 1974 to 34 percent in 2000. The median age will rise gradually, from 28.6 years to 34.8. Adults will outnumber children by 2.7 to 1 in 2000, compared to 2.2 in 1970. The "dependency ratio" (population 0–17 and 65 and over per 100 persons age 18–64) will increase from 17.8 in 1974 to 19.0 in 2000. Also, as the population over age 65 increases, the gap in numbers between the sexes will increase; by 2000, there may be 6.5 million more women than men among the elderly, as contrasted with an estimated difference of 3.9 million in 1974.

* Anabel Burgh Crane, Editor, Health Resources Administration.

Projected Changes in Population by Age Group

(Population in thousands)

	1974 Estimate	1985 Projection	2000 Projection	Percentage Change 1974–1985	Percentage Change 1974–2000
All Ages	*211,090*	*234,067*	*262,494*	*+10.4*	*+23.9*
0–4 years	16,304	19,785	18,364	+21.3	+12.6
5–17 years	50,960	44,768	52,714	−12.1	+ 3.4
18–44 years	79,501	99,012	102,137	+24.5	+28.5
45–64 years	43,328	43,843	58,678	+ 1.2	+35.4
65–74 years	13,537	16,389	17,079	+21.1	+26.2
75 yrs. & over	8,279	10,270	13,521	+24.0	+63.3

Members of minority groups are expected to increase to about 16 percent of the total population by 2000. The absolute number of blacks will increase by nearly 34 percent; they will represent about 13 percent of the population. There may also be an increased number of Spanish-speaking immigrants as a result of significant rates of growth in Mexico and other Latin American countries.

Some analysts say that individual families will tend to be small, and the "traditional" marriage and nuclear family household will no longer be the overwhelmingly dominant model. Alternative forms of marriage, e.g., group, temporary and homosexual, may become more common. Economic pressures may help revive the extended family, in which friends and relatives join the household to share expenses and domestic work and care for children. It is possible that such arrangements will become increasingly common among elderly people.

It seems likely that both divorce and remarriage rates will rise in the 1980's, with a consequent increase in female-headed families with minor children, since choice of marriage partners in the United States enlarges with age for men and diminishes for women.

Living Conditions

It is likely that Americans will continue to move frequently, although it is expected that major migrations of people within the United States will decline, i.e., South to North, North Central to Southwest. More new families than ever before will be formed between now and 1990 and this will also add to pressures for housing.

Young people will be looking for new housing, since so many older units will be larger than necessary and expensive to maintain. Most young families will settle in large or in growing urban areas, particularly in the South and West.

Suburbs and megalopolises will expand. As a result of higher real estate prices, more and more young families and single people may choose to live in the core cities and reclaim deteriorating houses.

In 1973, 45 percent of new housing starts were multi-family units; one projection shows an increase to 71 percent in 1985, based on rapidly rising

housing costs, shortages of available land, and no-growth policies such as sewer moratoriums. Some analysts believe there may be a dramatic increase in the number of housing units owned by large organizations such as banks, pension funds, and governmentally-chartered housing corporations, which would take on some aspects of a public utility. If this trend occurs, local governments may assume an expanded regulatory role.

One of the clearest socioeconomic trends is the potential for continuing severe competition for jobs with prestige and advancement potential. The "baby boom" generation, born between 1945 and 1960, is larger than the generations preceding and following. The older generation will include fewer senior people to be replaced, and there will be fewer young people coming up to serve as subordinates.

Inability to achieve the level of prosperity these baby-boom adults knew in childhood may lead to an increase in white-collar crime and widespread dissatisfaction with lower-level jobs, as well as more health problems due to tension and frustration. While most Americans will probably continue to seek increased comfort, convenience and status, a sizeable minority may adopt one of a range of alternative lifestyles in the further development of a trend evidenced in recent years.

By virtue of having fewer children, more and more women with economic options will choose to enter the job market and remain there for a longer period of time than formerly. (It should be noted, however, that as of early 1975, nearly 46 percent of all women 16 years and over were in the labor force. An increasing number of women with children under 6 are working outside the home.) This trend will intensify the competition for challenging positions. It will also probably create a greater demand for home health services, since some of the women who join the labor force will require substitute care for invalids who remain in the household.

As the work force becomes smaller relative to the retired population, there will be less potential for redistributing income for social programs without severely diminishing the incomes of significant segments of the population. Unless there are substantial productivity increases, social and political conflict may develop.

On the other hand, pension funds will make more resources available to the elderly retired population during the 1980's and 1990's. Elderly people of the future will probably have higher expectations, since more will have experienced greater economic and educational advantages throughout their earlier years.

Greater numbers of people will be employed in service industries, which will include consolidation of related types of service (e.g., welfare, health, criminal justice). Parallel efforts will be made to give meaning to non-elitist occupations. The quality of goods and services available to most people will probably decline. Work patterns will become more varied and flexible, and there will be new opportunities for using leisure time, often for the benefit of others. New employment opportunities may develop for the elderly in connection with the rising demand for services.

A sense of "bigness" and depersonalization will pervade the society, and

there may be pronounced separations between unequal population groups, e.g., healthy young people and the elderly incapacitated. Inability to overcome such feelings may lead to anomie or depression. There is also likely to be an increase in self-damaging behavior, and neglect of helpless individuals. Therapy groups may gain in popularity as people attempt to restore consciousness of individual worth and sensitivity to others. Interests in decentralizing authority within bureaucracies may grow in order to make institutions more responsive to both their staffs and users.

Traditional forms of education will be supplemented by an increasing array of newer approaches, such as universities without walls, in response to changing social values. More time will be devoted to continuing education. There will be new opportunities to improve the quality of elementary and secondary education, as additional numbers of well-trained people become available for teaching and as less public money is needed for school construction.

As the society becomes more service-oriented, there will be a blurring of the traditional distinctions between public and private sector roles in many areas. Government control will expand in such areas as development of technology (for example, through certificate of need programs). In view of the increasing availability and use of computers, special efforts will be needed to protect individual privacy.

The Government, combined with citizen groups, will make a serious effort to control deterioration of the environment. The tensions between "environmentalists" and "developers" will continue, but there will probably be no valid index for assessing whether the country is becoming more or less livable.

Energy and Raw Materials

Energy supplies will become scarcer, since oil will be available only at higher prices and alternative energy sources are developing so slowly that they cannot be expected to make a substantial contribution to energy supplies within the U.S. before 2000. Economic forces will probably cause the supply of imported oil to gradually decline. Demand for oil and oil-based products will exceed supply and is all but certain to bring on even higher energy prices and rationing efforts.

Oil and natural gas consumption will be curtailed over the next two or three decades—at least to the extent of sharply reducing the rate at which the consumption curve goes up—while new, economically viable energy forms are being developed and brought on stream. Solar energy will receive increasing attention. Synthetic fuels (e.g., artificial gas derived from coal) will be available by the mid 1980's, but only in limited quantities. There is a possibility that certain raw materials (e.g., copper, tin, bauxite) that the U.S. now imports in quantity will also become scarce as a result of restrictions imposed by exporting nations.

Technology

Scientific knowledge and related technologies will continue to advance, making possible further technology-intensive medical applications. By 2000, for example, genetic enegineering, organ banks, and implantation of multiple transistorized components may become commonplace. These capacities will pose new moral and ethical choices. Gradually new mechanisms will be developed to help ensure that the complex decisions required by such technologies are made only after careful consideration.

The rapid rate of new technological development will require more deliberate planning for utilization and obsolescence. Similarly, new procedures and organizational forms will be required to determine which advances represent real gains and to deal with change as a constant.

More mass-produced goods and greater use of new technologies are likely to lead to increased frustration due to the inevitable failures and breakdowns of malfunctioning complex equipment and systems. The computer revolution will expand, with broad implications for health care.

Over the next 15–20 years, efficient, alternative forms of transportation may become available. Examples include pedestrian conveyor systems, computerized automobiles, vertical take off and landing aircraft, and hovercraft. In addition, some travel will be replaced by use of new communications technology. Other developments, such as further reductions in driving speeds to decrease fuel consumption, may also offer improved safety and therefore reduce disability and death from accidents.

Health Status

As a result of "bigness", anomie, and rootlessness deriving from some of the trends noted above, more people—particularly among youths and the elderly—will tend to suffer from conditions identified as emotional disorders. The definitions and nature of such disorders will probably keep changing, however.

Anticipated changes in the population composition are likely to have important implications for increases in the incidence and prevalence of mental illness, especially schizophrenia. This forecast is based on the fact that numbers of people in the age groups at highest risk of mental illness will increase substantially by 1985. Especially for the 25–45 age group, population changes alone are likely to result in higher incidence of schizophrenia (irrespective of other relevant factors, such as societal changes).

There will also be more chronic illness as the numbers of older people increase, caused in part by environmental assaults or destructive behavior during the early years of life. Chronic conditions may become more noticeable, due to advances in treating acute illnesses, although new technologies (such as transplant techniques) may significantly reduce the disabilities resulting from certain chronic illnesses. As more people live past the age of 70, there will be a corresponding growth in demand for geriatric services. In addition, to the extent that more aggressive treatment increases the number of disabled persons, additional health care services will be required.

As women begin to assume more positions in the marketplace, they are likely to be subject in larger numbers to the job-related psychological and environmental hazards associated with the currently higher rates of heart attack, etc., among males. (A recent report indicated that incidence of ulcers among women now equals the male rates.) Examples of these hazards include sustained stress, increased exposure to harmful chemicals and industrial dust, and potential for accidental injury.

If a cure to cancer is discovered, this will save 32 million person-years of productive life, but will result in an anticipated increase in longevity of only about two and one-half years. However, deaths at later years from heart disease and stroke will replace most deaths from cancer and thus the potential impact on total health care costs and resources is uncertain.

The possibilities for iatrogenic illness will increase, due to heavier utilization as well as inadequate controls over a proliferating body of new knowledge and technologies. Concepts of "health" and "illness" may shift, however, thereby altering patterns of demand and utilization. Possible manifestations include additional reliance on self-care, greater use of psychotropic drugs, and an increased tendency to delay in seeking professional treatment. The relative status of the hospital and health professionals may decline.

Health Manpower

The growth of knowledge referenced earlier will probably continue to encourage trends toward specialization. This practice, in turn, will contribute to further fragmentation of knowledge among practitioners and allied workers. Changes in technology will call for "lifetime of learning" to maintain the knowledge and skills of practitioners, and the training and integration of new types of personnel.

The total number of active physicians is likely to increase from about 325,000 in 1970 to about 600,000 in 1990, or from about 159 to 237 per 100,000 persons. Expressed another way, there will be an increase from 1 physician per 630 persons in 1970 to 1 per 420 by 1990.

The proportion of all physicians in primary care (i.e., general practice, family practice, internal medicine, pediatrics, and obstetrics/gynecology) is likely to decline over the next 15 years. However, the absolute numbers are likely to grow by some 90,000 above the estimated 1970 total of 137,000. If this projection holds true, the ratios of primary care practitioners to population would increase from 68 per 100,000 (1 per 1,500 persons) in 1970 to 90 per 100,000 in 1990 (1 per 1,100).

This projection is based on past trends, which have been away from primary care and towards specialization. Some observers believe these trends may now be reversing themselves and that the numbers and proportion of primary care physicians will increase substantially in the coming years.

The supply of registered nurses is expected to more than double, from 723,000 in 1970 to 1,466,000 in 1990. The ratio would increase from 1 per 280 persons to 1 per 170.

The increasing need for specialization in science generally, including

medicine, will reinforce the current trend toward concentration of scientists in academic and urban centers. Academic health centers will assume more responsibility for graduate and continuing medical education. Although maldistribution of health professionals is likely to continue, this problem may be reduced by a variety of approaches, such as linkages among institutions, rotations of personnel, and committed service.

There will be an increased number of paramedical personnel in all categories. Also, the role of nurses can be expected to expand notably, especially in caring for mentally or chronically ill patients, delivering primary care and home care, and counseling on prevention.

Lower-level health care personnel are likely to be in short supply, especially in hospitals. Increased unionization of hospital workers is a related trend.

Qualifications for health manpower will become more standardized, and there will be more reliance on proficiency testing. Practitioners will be required to take retraining and pass examinations on a more systematic basis, as a result of the ever-expanding knowledge base and the demands that proficiency be demonstrated periodically. Health professional schools may give increasing attention to the behavioral factors in health and disease and to prevention, including public education.

Organization of Health Services

Although there will continue to be diverse models of institutions and organizations, it is reasonable to predict, over the long term, a general trend toward grouping of physicians, institutions, and organizations by a variety of mechanisms (e.g., merger, franchise, incorporation) on regional or Statewide bases. Large health care corporations will become more numerous; some will cover wide geographic areas through linkages to rural satellites.

As new facilities are built, they will tend to be clustered in health centers that include an acute care hospital, an ambulatory clinic, a doctors office building, a skilled nursing home, and a building for limited inpatient care, plus perhaps a hotel and a church—all on one campus. Social services may be offered on the campus, as well. Specialized centers for particular diseases will become more common.

Hospitals will deal with a better-defined population, and will give more attention to consumer health education. Patient advocates, e.g., ombudsmen, may become more common.

Home health care may replace institutional care for sizeable numbers of patients. To meet the new demands, home health agencies will move toward a more comprehensive range of services (including, for example, family education and counseling), and will develop services for new groups of patients. In addition to services for the chronically ill or infirm, there may also be a trend toward more frequent inclusion of terminally ill patients in home care programs.

Projections regarding increased incidence of schizophrenia and other conditions indicate an expanded demand for community-based mental health services. Increasing attention to the relation of physical and psychic disability may lead to a closer integration of related services.

Conclusion

While many conditions of the future will be difficult to influence, due to powerful forces from the past and present, others will be susceptible to modification through human creativity and effort. To know the difference and to take appropriate actions in the direction of preferred goals is the essence of planning.

Abelson recently observed that, even in the midst of rapid change, "Many if not all of the traits that make humans human have persisted through the ages: strengths and virtues, the weaknesses and follies." He goes on to suggest that, "In the future, applications of science and technology inevitably will have an increasing role in affecting people's lives. One can choose to live in ignorance and hence be subject to blind fear, or one can enjoy through knowledge a more relaxed attitude. One can live in a state of helpless confusion about the changing world or one can perceive more clearly than most the outlook for the future, the better to adjust to it and shape it."

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