

Health Sciences Libraries in the 1960s: An Overview

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LIBRARY services to the health professions are related to the growth and manpower patterns of the health care industry. These in turn are affected by broader conditions such as demographic changes, public priorities, technological innovations, and the state of the economy. Over the past twenty years, conditions have been such that the health care industry has experienced tremendous growth in both amount of money expended and the number of persons involved in teaching, research, and other services.

In tracing this growth, the U.S. Department of Health, Education, and Welfare found that the national expenditures for health care services increased from \$12.9 billion in 1950 to \$67.2 billion in 1970 (Figure 1). Over the same period, the percentage of the gross national product expended on health care increased from 4.5 percent to 7.0 percent. Projected expenditures for 1980 are between \$155.7 and \$189.2 billion, or 9.8 percent of the gross national product, an increase from 1950 by a factor of over two (1).

Health care personnel, the users of library services, have also greatly increased over the past twenty years. As indicated in Table 1, personnel in the health occupations totalled around 1,682,000 workers in 1950; by 1967, they numbered around 3,515,000. Although the absolute number of workers increased in all occupations, the percentage of physicians and dentists among the total health personnel declined. The number of nurses, environmental health workers, and allied personnel in medicine increased by factors of between two and three. Between 1950 and 1967, allied personnel (as a percentage of workers listed under "Medicine and Allied Services") increased from 27 percent to 47 percent, while the proportion of physicians decreased from 42 percent to 32 percent (2). This in-

creased use of allied health personnel in the practice of medicine is a significant fact in the development of library services.

Thus, the statistics indicate great growth of the health care industry over the past twenty years, with an accompanying growth of manpower, particularly in the allied health occupations. Projections through 1980 indicate continued growth based upon demographic changes—in services, manpower, and training programs (3). It is within this dynamic context that library services must be planned to meet the needs of the health sciences manpower.

BACKGROUND OF THE 1969 SURVEY

There is a remarkable lack of information, prior to 1960, on the universe of institutions which provided library services for health sciences personnel in the United States. Indeed, there did not even exist a commonly accepted definition of "health sciences library." The number of such institutions had been variably estimated to be around 5–6,000 (4). By the early 1960s, studies of selected populations and broad-based investigations of health communications were initiated (4–6). In 1965, the Medical Library Association appointed its first Committee on Surveys and Statistics (COMSAS). Surveys by COMSAS were still selective, but included a wider segment of the medical library population than did previous surveys, which covered only medical schools or medical societies (8–10).

During the middle of the decade, one of the most important events in medical library history took place—the passage of the Medical Library Assistance Act. The role of the National Library of Medicine (NLM) and the chronology of programs and activities resulting from the Act have been well-documented by Cummings (11) and will not be listed here. In

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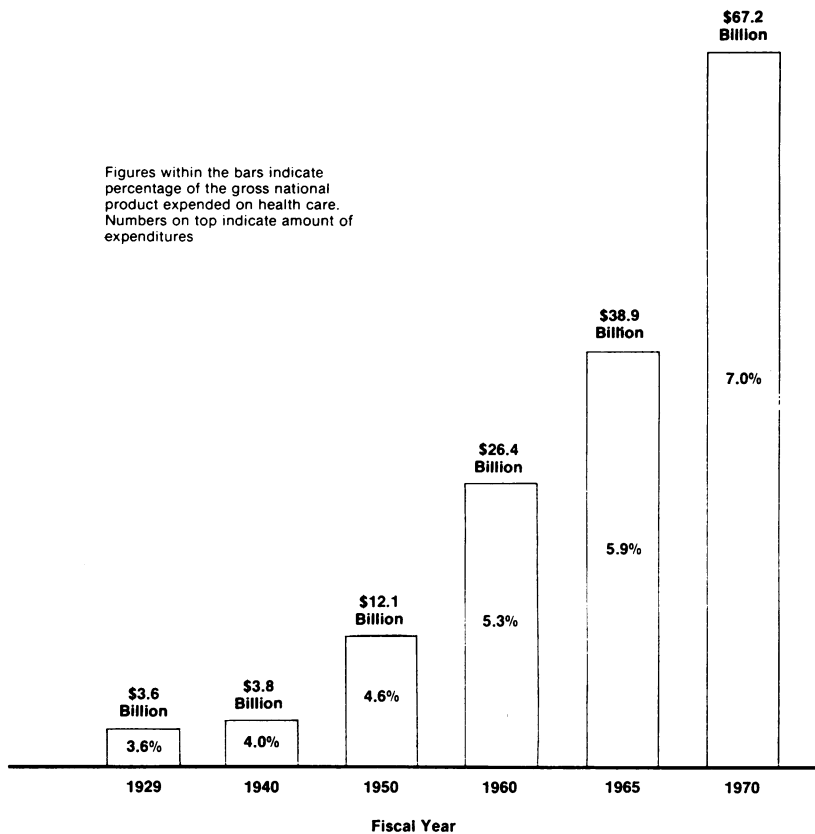


FIG. 1.—National Health Expenditures and Percent of Gross National Product, Selected Fiscal Years, 1929–1970.

short, the Act authorized funds for programs to improve biomedical communication, which included the construction of facilities, manpower training, research, and establishment of regional medical libraries.

According to NLM's concept of a network of health sciences libraries in the United States, the country was divided into eleven geographic regions, each with a Regional Medical Library (RML) which would serve as a node or center to which requests not fulfilled by local libraries could be channelled. The network was decentralized and hierarchical, with three levels of nodes. The first-order nodes were the local libraries, which communicated vertically upward with the regional libraries; the RML's were second-order nodes, in direct contact with the National Library of Medicine, which was at the apex of the system.

These and other developments underscored the necessity for initiating and maintaining a

system capable of providing reliable, descriptive, and nationwide statistics on health sciences libraries. The development of a library network required identification of information centers, their types, and their locations in order to formulate the most effective configuration of linkages between them.

Recognizing this need, the National Library of Medicine awarded to the American Medical Association a four-year grant to develop a continuing data-collection-and-analysis program, with the objective of building a national data bank for health sciences libraries (12). The funding provided for two surveys to be undertaken in four stages. The methodology is outlined in the first publication generated from the survey, the *Directory of Health Sciences Libraries in the United States, 1969*, issued under the auspices of the American Medical Association and the Medical Library Association (13). The present volume is a companion to the *Di-*

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TABLE 1
TRENDS IN EMPLOYMENT IN HEALTH OCCUPATIONS: 1950, 1960, AND 1967

Occupation within group	1950	1960	1967
ALL HEALTH OCCUPATIONS, total	1,682,800	2,493,400	3,515,000
Other than "allied health"	1,396,600	1,978,200	2,708,500
"Allied health"—at least baccalaureate	64,500	123,400	229,500
"Allied health"—less than baccalaureate	221,700	391,800	577,000
MEDICINE AND ALLIED SERVICES, total	522,700	718,700	956,800
Physicians (M.D. and D.O.)	219,900	259,400	305,500
Selected practitioners ¹	162,800	180,000	199,800
"Allied health"—at least baccalaureate ²	46,500	92,400	175,000
"Allied health"—less than baccalaureate ²	93,500	186,800	276,500
DENTISTRY AND ALLIED SERVICES, total	161,100	209,200	235,700
Dentists	77,900	89,200	98,700
"Allied health"—less than baccalaureate ³	83,200	120,000	137,000
NURSING AND RELATED SERVICES, total	737,000	1,185,000	1,754,000
Registered nurses	375,000	504,000	659,000
Licensed practical nurses	137,000	206,000	320,000
Nursing aides, orderlies, and attendants ⁴	225,000	475,000	775,000
ENVIRONMENTAL HEALTH SERVICES, total	63,000	116,000	218,000
"Allied health"—at least baccalaureate ⁵	18,000	31,000	54,500
"Allied health"—less than baccalaureate ⁵	45,000	85,000	163,500
ALL OTHER SERVICES, total ⁶	199,000	264,500	350,500

¹ Optometrists, pharmacists, podiatrists, clinical psychologists, clinical social workers, chiropractors and naturopaths, and lay midwives.

² Personnel in administration, biomedical engineering, clinical laboratory services, dietetic and nutritional services, health education, medical record services, occupational therapy, orthotic and prosthetic technology, physical therapy, radiologic technology, specialized rehabilitation services, speech pathology and audiology, vision care (other than ophthalmologists and optometrists), and miscellaneous health services not elsewhere classified.

³ Dental hygienists, dental assistants, and dental laboratory technicians.

⁴ Includes home health aides.

⁵ Engineers, scientists, technologists, technicians, and aides in environmental control and food and drug protective services in 1950 and 1960.

⁶ Personnel in information and communication, library services, mathematical sciences, natural sciences (other than clinical laboratory services and environmental health), social sciences (other than psychology), secretarial and office services, veterinary medicine, and vocational rehabilitation counseling.

Source: U.S. Dept. of Health, Education, and Welfare. Health Manpower Source Book. Section 21: Allied Health Manpower, 1950-80. Washington, Govt. Print. Off., 1970, p. 4.

rectory and analyzes the data collected in the 1969 survey.

THE SURVEY POPULATION

In a classic work on human ecology, McKenzie defined an institution as a "unit of col-

lective activity performing a specialized function" (14). The institution thus conceived is composed of an aggregate of individuals and an accumulation of cultural artifacts assembled and organized to facilitate that function. It has a physical structure, a definite locus in space, and, likewise, a continuum in time.

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This introduction to health sciences libraries may appear somewhat abstract, but its relevance to this survey becomes apparent as one attempts to define such concepts as "library" or "network of libraries." According to McKenzie's definition, libraries are distinct entities which may be defined and located, and are thus amenable to quantitative treatment. We now have regular censuses of churches, households, hospitals, and the general population—libraries may be similarly identified and counted by type and size. We may, therefore, examine their spatial arrangement, the vital linkages which exist between the units, their relations with other institutions, and their birth, growth, and mortality over time.

In this survey, health sciences libraries are defined as collections of published materials which are health-related, serve health sciences personnel, and satisfy at least two of the following three criteria: a minimum of 500 bound volumes, a minimum of 25 current serial subscriptions, or some designated staff to administer the collection. The basic units identified and measured are defined according to administrative structure. In general, health sciences libraries are administratively organized according to one of three models:

1. A combined health sciences library whose collection includes more than one subject specialty of the health sciences, and serves more than one professional group. An example is the large university medical center library, which provides services for faculty and students in medicine, pharmacy, dentistry, and nursing.
2. A single-user group library whose collection focuses on one discipline or specialty. Examples are nursing school libraries and libraries of psychoanalytic training institutes.
3. A general or multidisciplinary library which includes a health sciences collection interfiled and administered with the general collection. Examples are the Los Angeles Public Library and John Crerar Library.

The survey, therefore, is a census of separately administered library units. These units are by no means equal, as they range from small hospital libraries to great national libraries such as the National Library of Medicine. The *Directory* is a listing of these separate administrative units.

The statistical analyses presented in the succeeding papers are based upon varying response rates by type of library and by data item. Only actual and presumably valid responses to the AHA or AMA questionnaires were used. Health sciences libraries with considerable holdings which failed to respond to the questionnaire were listed in the *Directory*, but considered nonrespondents in the *Statistical Profile*. Among nonhospital libraries, the response rates for resources (bound volumes and current subscriptions) varied from a high of 98 percent for medical school libraries to a low of 72 percent for health sciences collections in two-year academic institutions. Response rates were lower for personnel and for expenditures. Especially among collections within general libraries, respondents were not able to report separately identifiable budgets. Approximately two-thirds of the respondents provided data on total floor space.

The response rate among hospital health sciences libraries was lower, ranging from 75 percent for hospitals of bed-size 300 or over to 35 percent in those of bed-size below twenty-five. Since the probability of having a library in a hospital of less than twenty-five beds is extremely low, we believe that small returns from this group do not significantly affect derivation of the true population.

GEOGRAPHIC DISTRIBUTION

In a study by Rothenberg *et al.* (15) the distribution of library resources has been found to be highly correlated with the distribution of the general population ($r = .90$). It is, therefore, not surprising that health sciences libraries are unequally distributed over the states. In Figure 2, we have condensed the data of Table 1 in the *Directory of Health Sciences Libraries* (p. 8) to show the distribution of states by number of health sciences libraries. Twenty-two states or U.S. possessions have twenty-five health sciences libraries or less, with the Canal Zone and Guam having one library each, at the lower limit. There are twelve states with 25–49 libraries; eight states with 50–74 libraries; and three states with 75–99 libraries. The nine states with the greatest number of libraries are Michigan (106); New Jersey (109); Texas (119); Massachusetts (143); Ohio (158); Illinois (197); Pennsylvania (246); California (255); and New York (378). This distribution of resources by state is an important

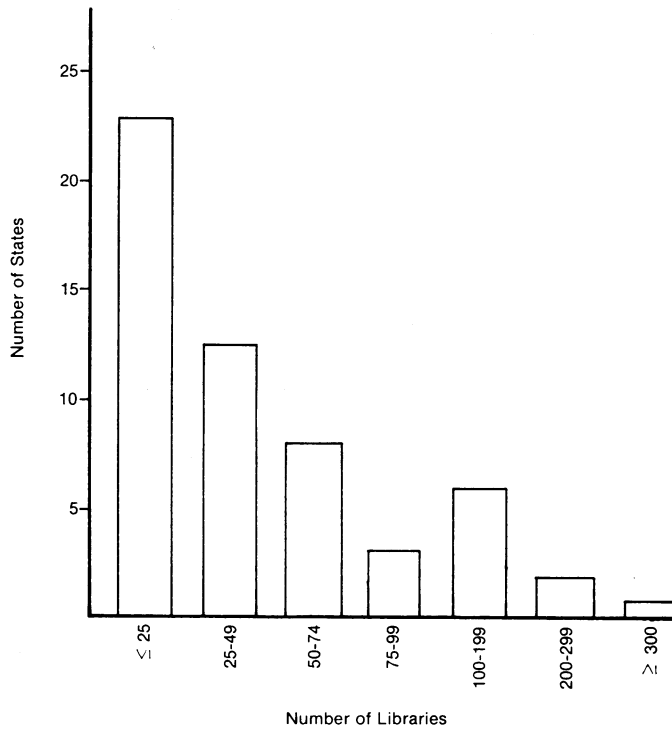


FIG. 2.—Geographic Distribution of Health Sciences Libraries: Number of States or U.S. Possessions by Number of Libraries.

Figures within the bars indicate percentage of the gross national product expended on health care. Numbers on top indicate amount of expenditures.

Source: Rice, D. P. and B. S. Cooper. National Health Expenditures, 1929-1970. Social Security Bull. 34: 3-18, Jan. 1971.

consideration in the development of a nationwide network of health sciences libraries.

TYPES OF LIBRARIES BY INSTITUTIONAL CONTEXT

The purpose of the *Statistical Profile* is to provide an overview and to focus upon the more important subsets of health sciences libraries and their characteristics. In this analysis, the libraries are grouped by type of sponsoring institution (which, in most cases, correlates with the primary class of user).

For each type of library, we found extensive variation in richness of contextual and historical data, and our analytic approach was adjusted to provide for these differences. We were fortunate, in the case of hospital libraries, to have access to data tapes from the American Hospital Association that enabled us to stratify the hospitals by bed-size. The medical school li-

braries are a well-surveyed group, and, consequently, we had much historical data to compare with present statistics. Not only were we able to trace their growth curves over time; we were also able to relate them to important variables such as federal funding. In the case of allied health sciences training programs, industrial organizations, and foundations, there were no comparable survey data, and much effort was focused upon defining these concepts. The papers, therefore, do not follow a standard format, but are adjusted to the dictates of historical precedence as well as availability of supporting data.

In this *Statistical Profile*, some methodological changes were adopted, resulting in small discrepancies between the universe data of the *Directory* (p. xi) and this report. In the *Directory*, each type of library in a hospital (e.g., physician, nursing) was counted as a separate

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entity, so that 2,002 hospital libraries were identified. In the *Statistical Profile*, we had to relate hospitals as a unit with the data on bed-size. Therefore, data for all libraries within each hospital were combined and the libraries were counted as a single unit, resulting in 1,727 hospitals with one or more libraries. Since 275 libraries were amalgamated, there is a total of 2,880 libraries in the *Statistical Profile*, in contrast with 3,155 libraries listed in the *Directory*. In addition, the categories of (1) Research and Industrial Organizations and (2) Libraries and Research Centers in the *Directory* were further subdivided into smaller classes.

Table 2 indicates the great variety of health sciences libraries by type of sponsoring organization. Hospital libraries are the most numerous, comprising 60 percent of all health sciences libraries. Following in order of frequency are allied health education programs in academic institutions (508); business and industrial organizations (139); medical schools (103); and professional organizations (87). These five types of organizations account for 89 percent of all health sciences libraries.

SIZE OF HEALTH SCIENCES LIBRARIES

Although there are only 103 medical school libraries, they are clearly the largest of health sciences libraries as measured by the average number of bound volumes and average number of serials. Figure 3 compares health sciences libraries by number of bound volumes. The average medical school library has over 95,000 bound volumes and almost 1,900 current serial subscriptions. Their bound-volume collections are over three times that of the average professional society library (29,000 bound volumes) and over 25 times that of the average hospital library (3,700 bound volumes). On the average, in number of current serials they exceed professional society libraries by a factor of eight, and hospital libraries by a factor of fifteen.

MANPOWER OF HEALTH SCIENCES LIBRARIES

An extensive analysis of manpower in health sciences libraries has been published in the manpower study papers of Kronick, Rees, and Rothenberg (16). In the latter study, the data were separated for health sciences libraries in hospitals and those outside hospitals. The sum-

mary of findings presented here includes manpower for all health sciences libraries, both hospital and nonhospital.

Based upon a 75 percent response rate, a total of 9,390 professional and nonprofessional personnel were identified, working part- or full-

TABLE 2
HEALTH SCIENCES LIBRARIES: AVERAGE RESOURCES
BY TYPE OF SPONSORING ORGANIZATION

Organizational Category	Number of Libraries	Percentage of Libraries	Average Number of Bound Volumes	Average Number of Serials
Hospitals ¹	1,727	60.0	3,730	115
Allied Health Educational Programs in Academic Institutions	508	17.6	1,047	254
Business and Industrial Organizations	139	4.8	7,249	234
Medical Schools	103	3.6	95,357	1,882
Professional Societies	87	3.0	28,892	215
Foundations	62	2.1	9,729	205
Federal Libraries ²	50	1.7	NC ⁴	NC
State or Local Public Health Department Libraries	49	1.7	12,653	264
Group Practice Clinics	38	1.3	3,900	94
Voluntary Health Organizations	19	.7	2,944	185
Psychoanalytic Societies and Training Institutions	18	.6	3,165	111
Municipal Public Libraries	8	.3	NC	NC
Miscellaneous ³	72	2.6	NC	NC
Total	2,880	100.0		

¹ For this analysis, data for all libraries within each hospital (i.e., medicine, nursing, etc.) were combined and counted as a single unit. As 275 libraries were amalgamated, the result is a total of 2,880 libraries, in contrast with 3,155 libraries listed in the *Directory*. See also p. 8-9 for explanation.

² Libraries of federal, state, and local government hospitals are included in statistics for hospital libraries.

³ These include infrequently recurring classes of libraries or those which provided insufficient data and are not analyzed in this report.

⁴ NC = not calculated.

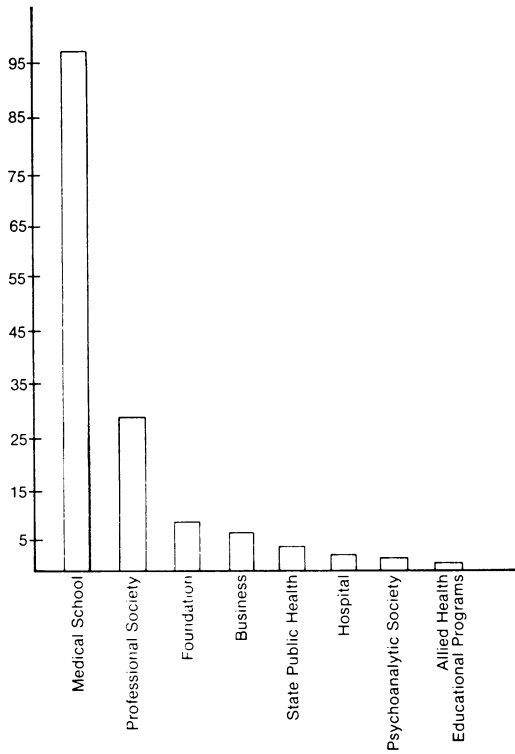


FIG. 3.—Health Sciences Libraries: Average Number of Bound Volumes By Type of Library (in thousands of volumes).

time in health sciences libraries (Table 3). Of the full-time personnel, 2,747 were rated as professional by the respondents and 2,384 were rated as nonprofessional. Of the part-time personnel, 1,079 were rated as professional and 1,760 as nonprofessional. There was a total of 1,420 student assistants.

Although medical school libraries constitute only 3.6 percent of all health sciences libraries, they accounted for 21 percent of all full-time professionals (566 professionals) and 38 percent of full-time nonprofessionals (905 nonprofessionals). Hospital libraries, which constitute 60 percent of all health sciences libraries, accounted for 40 percent of all full-time professionals (1,197 professionals) and 18 percent of all full-time nonprofessionals (434 nonprofessionals). Hospital libraries rely heavily upon voluntary help; indeed, the number of part-time nonprofessionals employed in hospitals (1,207) exceeds the total number of full-time professionals (1,197).

USER GROUPS

As a unit of analysis, the separately administered library does not indicate the number of libraries that serve each user group. The "combined library," or library in which there is a co-occurrence of user groups, is common among health sciences libraries. To derive data on the number of libraries providing some type of service to the various user groups, we asked all libraries to check the categories of occupation or the areas of training that were most representative of their users.

As shown in Table 4, 2,051 libraries (71 percent) served physicians or medical students; 1,817 (63 percent) served nurses or nursing students; and 1,168 (40 percent) served health professions other than medicine, nursing, dentistry, pharmacy, veterinary medicine, and biomedical research. Two hundred fifty-three li-

TABLE 3
PERSONNEL IN HEALTH SCIENCES LIBRARIES: BY CATEGORIES OF PROFESSIONAL, NONPROFESSIONAL, AND STUDENT ASSISTANT (N = 9,390)

Status	Personnel Category		
	Professional	Nonprofessional	Student Assistant
Full-Time.....	2,747	2,384	—
Part-Time.....	1,079	1,760	1,420
Total.....	3,826	4,144	1,420

TABLE 4
OCCUPATIONAL GROUPS SERVED BY HEALTH SCIENCES LIBRARIES*

User Category	Number of Libraries Serving	Percentage of Libraries Serving
Medicine or Osteopathy....	2,051	71.38
Nursing.....	1,817	63.17
Other Health Professions..	1,168	40.06
Biomedical Research.....	711	24.75
Nonhealth Professions....	253	8.87
Dentistry.....	243	8.44
Pharmacy.....	169	5.27
Veterinary Medicine.....	105	3.65
Total Number of Libraries.....	2,880	

* Based upon response rate of 99.7%.

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braries (9 percent) indicated that they served the nonhealth professions or public-at-large.

SUMMARY

During the decades after World War II, the health care industry in the United States experienced tremendous growth. The social climate set conditions for development of a great national research program in the sciences as well as for increase in health care services. Consequently, great demands were made upon health sciences libraries in the effort to train more physicians, to reach toward the research front, and to apply new knowledge.

At the beginning of the decade, health sciences libraries were relatively independent units developed for local or special audiences. Cooperation existed among school, hospital, and society libraries, but relationships depended more upon the operation of natural forces than conscious design. The library community was slow to respond to the new challenges at first, but by the middle of the decade, the Medical Library Assistance Act had passed, and a planned effort was made to improve biomedical communication on a national scale.

The 1969 *Survey of Health Sciences Libraries* was conceived during this era. Within this dynamic context, we attempted to identify all the components of the health sciences library community, and to find out something about their characteristics and their functions. Between conceptualization of the survey and its completion, changes were so rapid that an operative network of health sciences libraries had emerged.

The *Statistical Profile* analyzes the data of the 1969 survey. We first present an overview of the health sciences library population—its size, distribution, and composition. Additionally, the social context and selected critical events over the past ten years are briefly outlined. We then group the libraries by their institutional context or type of sponsoring organization, and focus upon each type. With this approach, we have captured certain important attributes of health sciences libraries at a point in time.

Institutions are dynamic units in our social order, ever changing in response to competition and new events. As we face the beginning of the 1970s, we can already observe a shift in pub-

lic demand from basic research toward the production of more services in health, education, and welfare (17). Over time, investigations of this type will enable us to trace ecological changes and to better plan institutional arrangements to meet the challenges of health care.

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