

Health Science Libraries in the United States:

I. Overview of the Post-World War II Years*

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ABSTRACT

Data from three surveys of health sciences libraries in the United States (1969, 1973, and 1979) were analyzed within the context of scientific, technological, and sociopolitical developments. Findings included decrease in the number of separately administered libraries, growth of some, decline or discontinuation of others, and geographic movement. Overall, the aggregate resources are increasing, as is cooperation among libraries.

THE post-World War II years have been characterized by Adams as an "age of discontinuity" for the health sciences in America [1]. By this, he meant that these decades brought abrupt changes: scientific, technological, and sociopolitical. In the beginning, it was the era of Big Science, when biomedical research was high among public priorities and the National Institutes of Health came into existence and rose to its present stature. Research tended to be discipline oriented, as reflected in the organization of university departments and of the Institutes. Then, after the Manhattan Project successfully produced the atomic bomb, it was believed that biomedical research could also target efforts toward specific diseases; a mission-oriented approach was attempted, as in the "wars" on heart disease, cancer, and stroke [2,3]. Still later, the nation turned away from its view of science as infallible and as an endless frontier, and directed its support to problems of organization, funding, and delivery of health care and of quality of life [4].

The health care industry, meanwhile, had grown at an unprecedented rate; by 1978 it accounted for 9.1% of the gross national product, as compared with 6.8% only ten years earlier [5]. This growth was accompanied by sociopolitical changes that

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altered the patterns of health care delivery and planning; among them were increased government regulation, new types of organizations for provision of care, and consumer awareness. The economy, meanwhile, cycled from high growth to recession then recovery, finally settling to a prolonged stagnation. Efforts to contain health care costs continued, with no effective solution in sight.

As the national effort in the health sciences burgeoned, so did the production of information and subsequent problems in its handling and control. It was also an era of revolution in computers and communications technology. From cooperative activities of moderate scale in both manpower and cost, bibliographic programs assumed corporate organization and management in what became characterized as the "information industry."

What have been the effects of these changes on health sciences libraries in the United States? From three surveys made by the American Medical Association's Division of Library and Archival Services, in cooperation with the National Library of Medicine (NLM), Case Western Reserve University, and other health-related organizations were compiled longitudinal data covering the years 1969, 1973, and 1979. This report analyzes these data and provides an overview of trends among the general population during this period.

METHOD FOR DERIVATION OF POPULATION

In each of the three surveys, some 12,000 to 14,000 health-related organizations were sent questionnaires to determine whether they maintained health sciences libraries or collections. A collection was defined as a "library" if two of the following criteria were met: twenty-five or more current subscriptions, 500 or more bound volumes, and some personnel to administer the collection. The criteria were set low so that marginal and developing libraries, especially those in hospitals, could be included in the analyses.

The method for deriving the population is detailed in each of the three editions of the *Dir*

tory of Health Sciences Libraries issued after each survey [6-8]. The sheer number of data collected as well as their complexity compelled the investigators to adopt special safeguards. The validity of data on the number of separately administered libraries may be estimated by calculating the probability of error at several crucial points in collecting the data:

1. Derivation of the population of health-related organizations;
2. Response rate resulting from four mailings and a telephone contact; and
3. Accuracy of responses from the institutions queried.

At each of these stages, the investigators used checks to assure accuracy and inclusiveness by comparing the content of new listings with those generated from previous surveys. Return rate, after four mailings and a telephone canvas of all nonrespondents listed in previous directories, is estimated at 95% or more for each of the three surveys. The fifth follow-up, made on organizations based on size and other known characteristics, ensured that few "significant" libraries were left out. Where other data were available, as in surveys made by the Association of Academic Health Sciences Library Directors, the data were compared. By the third survey, the investigators were familiar with data subsets, and irregularities were readily perceived. These were discussed with the respective respondents.

THE UNIVERSE OF HEALTH SCIENCES LIBRARIES

The total number of health sciences libraries identified in each of the surveys is shown in Figure 1. In 1969, 3,155 health sciences libraries were identified, compared with 2,984 in 1973 and 2,775 in 1980. The data show a decrease of some 400 libraries (12%) during the 1970s. The trend is also consistent over the three surveys, as indicated by a decline of 5.4% between 1969 and 1973, and a decline of 7.0% between 1973 and 1979.

The data were then examined to determine if there were differences in population change by type of library. Table 1 indicates that from 1969 through 1979, medical school libraries increased by 25%, from 101 to 126. Hospital libraries also increased by almost 13%, from 1,727 in 1969 to 1,949 in 1979. State and county medical society libraries, however, decreased by 59%, continuing a trend noted in earlier surveys [9,10]. All other libraries (federal or state government, business or industry, health planning organizations, groups or

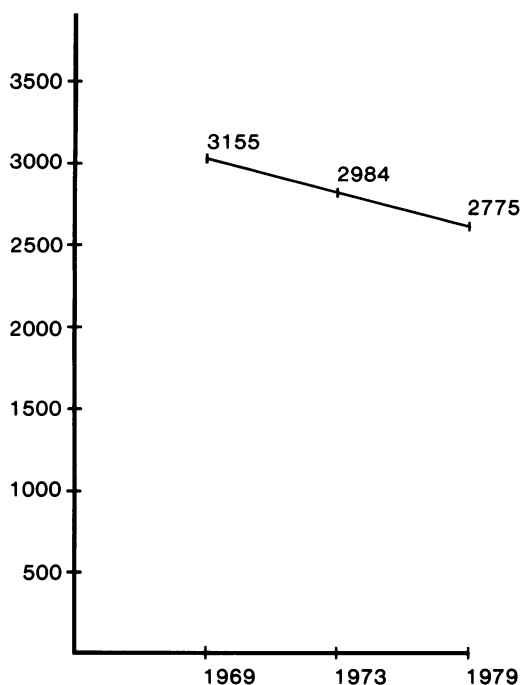


FIG. 1.—The universe of health sciences libraries in the United States, 1969, 1973, and 1979. Left column indicates number of libraries.

clinics, and area health education centers) also decreased, from 1,288 to 684 (-47%).

The data thus show a progressive decline of 5% to 7% in the number of health sciences libraries every three years. The changes are also selective by

TABLE 1
NUMBER OF HEALTH SCIENCES LIBRARIES

Type of Library	No. of Libraries		Difference	
	1969	1979	No.	%
Hospital	1,727	1,949	+222	+13
Medical school	101	126	+25	+25
Medical society*	39	16	-23	-59
All other†	1,288	684	-604	-47
Total	3,155	2,775	-380	-12

*Medical society libraries are here defined as state and county libraries of the American Medical Association and libraries of local independent professional societies. Libraries of national specialty societies, e.g., American Psychiatric Association or American Hospital Association, are included in the category "All other."

†Include federal and state government, allied health programs, business or industrial organizations, area health education centers, health planning organizations, groups and clinics, and others.

TABLE 2
DISTRIBUTION OF HEALTH SCIENCES LIBRARIES
BY REGIONS OF NATIONAL LIBRARY OF MEDICINE

Region	No. of Libraries		Difference	
	1969	1979	No.	%
I—New England	259	236	-23	-8.8
II and III—New York and mideastern	749	543	-206	-27.5
IV—Mid-Atlantic	255	299	+44	+17.2
V—East central	305	283	-22	-7.2
VI—Southeastern	241	257	+16	+6.6
VII—Midwest	467	441	-26	-5.5
VIII—Midcontinental	244	196	-48	-19.6
IX—South central	226	209	-17	-7.5
X—Pacific Northwest	140	113	-27	-19.2
XI—Pacific southwest	290	291	+1	+0.3

type of library, as indicated by increases in medical school and hospital libraries and by decreases in medical society and other types of libraries.

GEOGRAPHIC DISTRIBUTION

Table 2 compares the numbers of health sciences libraries among the eleven regions established by the National Library of Medicine from 1967 through 1982 with 1969 and 1979. For the purposes of this analysis, region II (New York and New Jersey) and region III (Delaware, Pennsylvania, and New Jersey) are combined. A change in the distribution of libraries is shown by decreases in eight of the regions and increases in three. The greatest losses occurred in the New York and mideastern regions (-27.5%), the midcontinental region (-19.6%) and the Pacific Northwest region (-19.2%). Regions that gained in number of

libraries are mid-Atlantic (+17.2%) and southeastern (+6.6%).

Table 3 gives in rank order the nine states with the largest number of libraries. For both 1973 and 1979, the order remained unchanged. New York still has the most libraries, but fewer than in 1973. California still ranks second, but the difference in number of libraries has significantly diminished. In 1973, New York had 64 more libraries than California, but by 1979 the difference is only three libraries. Among this group, the greatest loss of libraries occurred in two northeastern states: New York (-71 libraries) and New Jersey (-17 libraries).

Can we identify some of the determinants of this change in distribution of libraries? Since the Civil War and the shift from an agricultural to an industrial economy in the latter part of the nineteenth century, the northeastern states (New York, Pennsylvania, Massachusetts) have been the center of industry, education, culture, and commerce. They have also been the center of medical education, research, and health care, with such distinguished institutions as Harvard, Johns Hopkins, Columbia, and Yale universities. Consequently, the Northeast also had a concentration of medical libraries.

After the 1960s, the South began to rejuvenate. Eastern cities were old, crowded, and began to level off in growth; the cost of doing business became more expensive than in other areas of the country; and immigration no longer created a concentration of people who stayed in eastern urban centers to seek jobs. By the 1970s, industries and businesses had started to move west and south—to areas that provided cheaper labor and more advantageous tax laws. These changes in the population distribution are reflected in the 1980 census, which showed that

TABLE 3
STATES WITH LARGEST NUMBER OF HEALTH SCIENCES LIBRARIES

Rank Order, 1973	No. of Libraries	Rank Order, 1979	No. of Libraries	Difference, No.
1. New York	322	1. New York	251	-71
2. California	258	2. California	248	-10
3. Pennsylvania	205	3. Pennsylvania	197	-8
4. Illinois	175	4. Illinois	177	+2
5. Ohio	139	5. Ohio	138	-1
6. Massachusetts	128	6. Massachusetts	119	-9
7. Michigan	126	7. Michigan	118	-8
8. Texas	118	8. Texas	112	-6
9. New Jersey	101	9. New Jersey/Wisconsin	84	-17 (NJ)
Total	1,572	—	1,528	-44

the United States had major shifts in population during the previous ten years from the Northeast to the midsouthern, southwestern, and northwestern states. The distribution of health sciences libraries appears generally to correlate with changes in distribution of the general population. It is still too early to identify long-term trends, as the effects take time and will likely be more obvious in the next survey.

RESOURCES AND SUPPORT OF HEALTH SCIENCES LIBRARIES

The total book and journal resources of all health sciences libraries in the United States are compared for 1973 and 1979 in Table 4. There is an increase of some four million bound volumes (14%). There is also a slight decrease of some 6,000 (-1%) in number of current serial titles subscribed to by libraries. These aggregate figures are difficult to interpret, as they reflect a number of factors. The relative rate of increase and decrease in titles should not be compared between serials and bound volumes, as the latter tend to cumulate over time, in contrast with the number of current serial titles. In addition, these figures should be viewed as rough indicators of trends in acquisitions only when we divide the population into meaningful groups, such as by type of library.

LIBRARY MANPOWER

The number of health sciences library personnel for 1969, 1973, and 1979, including both professional and nonprofessional staff, is shown in Table 5. The 1969 data are not comparable, as they are defined on a different base, but are presented here as the sole source of data for this period. Between 1973 and 1979, the figures indicate a decrease from 10,277 to 9,302 full-time equivalent personnel—a difference of 975 (9%).

TABLE 4
HEALTH SCIENCES LIBRARY RESOURCES*

Total	1973	1979
Total bound volumes (monographs and serials)	30,519,759	34,706,434
Total current serial titles	736,588	732,408
Total nonprint materials	NA†	1,136,711

*Data derived from *Surveys of Health Sciences Libraries in the United States* [4, 5].

†NA indicates not available.

TABLE 5
HEALTH SCIENCES LIBRARY PERSONNEL

Year	No. of Personnel*
1969	9,245
1973	10,277
1979	9,302

*Includes professional and nonprofessional staff. The 1969 data represent the total number of personnel, part- or full-time; the 1973 and 1979 data represent the number of full-time equivalents.

The aggregate data thus indicate a loss of approximately one of every ten full-time equivalent staff. Many underlying factors are suggested: effects of automation, increase in resource sharing, development of consortia and networks, and the decline in total number of health sciences libraries. This finding is worth investigating, as there are implications for the future training of health sciences library personnel from the viewpoint of number, specialization, and types of libraries.

DISCUSSION

Given these findings and the assumption of discontinuities in the scientific and sociopolitical environment, what determinants can we isolate to explain changes that are specific to health sciences libraries?

Libraries are organization dependent and operate within an order of systems, beginning with their primary or sponsoring organizations, through local, state, and national frameworks. The macrosystem over which libraries have little control includes such independent variables as advances in science and technology, political changes, public priorities, and the state of the economy. An example of the first is the eradication of particular disabling and crippling diseases that led to the closing of many chronic-disease and tuberculosis (TB) hospitals. Because TB is no longer a public health problem, the number of TB hospitals decreased from 414 in 1949 to 12 in 1979 [11]. An example of the second is the community mental health movement, started during the Kennedy era, that has resulted in the dismantling of many long-term state psychiatric hospitals [12]. Changes in federal priorities have led to the authorization or demise of a series of agencies, among them regional medical programs and health systems agencies. A more recent development was the proposed phasing out of Public Health Service hospitals [13]. These conditions have a strong "ripple effect" on library organization and funding.

On the level of the interlibrary system, federal support has been an important factor during this period in improvement of biomedical communication. The Medical Library Assistance Act of 1965 mandated the NLM to develop a national system of regional libraries, to improve both the resources and facilities of medical libraries, to support research and scientific publication, and to train health sciences librarians [14]. Between 1964 and 1980, federal support to the NLM grew from approximately \$4,055,000 to over \$46,350,000 [15,16]. Undoubtedly, support for resource improvement and construction has contributed to the growth of many individual libraries and the development of networking.

On the level of the individual library, the nature and goals of sponsoring organizations and the needs of the immediate user population (primary clientele) are important determinants. During the survey period, both medical schools and hospitals experienced great growth. Medical societies, on the other hand, did not grow at a comparable rate, some even declining in membership [17]. During the same period, maintaining a medical library became more and more costly; the average subscription price of medical journals increased by 284%, from around \$19 in the base year 1967 to \$73 by 1980 [18]. With leveling of growth and the inflation factor, one medical society executive observed that the library program constituted 10% of his entire society budget [19].

In summary, data from the three surveys over a ten-year period clearly indicated that health sciences libraries are dynamic and changing. The number of libraries has decreased every three years, for a total of 12% during ten years. When the data are analyzed by type of library, however, we find that some libraries (medical school and hospital) have increased in number, support, and resources. Others (medical society, federal or state government-sponsored, and business or industry) have declined. The picture, then, is one of decrease in the total number of separately administered libraries, accelerated growth of some, decline or discontinuation of others, and geographic movement. Overall, the aggregate resources are increasing, as is cooperation among libraries.

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