

# An Investigation of the Educational Needs of Health Sciences Library Manpower:\*

## I. Definition of the Manpower Problem and Research Design

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### ABSTRACT

In order to plan adequately for education in health science librarianship and to be able to project future demands and needs we need to know a great deal more about existing manpower in health science libraries. This paper, the first in a series of reports on an investigation to gather this data, discusses the research methodology and the development of an inventory of the institution-program population upon which the survey is based. An analysis in terms of geographic location, type (educational, research, etc.), administrative control, and primary cognate area of these institutions is presented, and their distribution through the various Regional Medical Library areas is noted. Preliminary estimates are made, based on a questionnaire to the libraries, on the size of the library population, their relationship to reporting programs or institutions, exclusive of the hospital population which is being covered in an independent survey. A questionnaire to library personnel is underway which will establish, along with the other questionnaires, a basis for exploring the relationships which exist between institutions or programs, libraries and manpower.

### THE MANPOWER PROBLEM AND EDUCATION FOR HEALTH SCIENCES LIBRARIANSHIP

THE existence of a gap between the available knowledge in the health sciences, resulting from

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the great expansion in research in recent times, and its application in the form of patient care is now commonly accepted. One of the reasons for the lag in the application of relevant research findings, as pointed out by the President's Commission on Heart Disease, Cancer and Stroke (1), is a deficiency in present systems of information delivery and transfer. The need to plan for sufficient numbers of well-trained and competent library and information manpower to help bridge the gap between knowledge and its application has become especially urgent in view of the unprecedented growth of the health care industry and the increasing needs for health-related practitioners of all kinds.

Effective decision-making as to methods of meeting needs and the types of educational programs required has been hampered by the limited knowledge which presently exists with regard to the current work force in health sciences libraries and information centers. Does a shortage exist? If so, what is the nature of this shortage? How sophisticated and skilled is the existing population of librarians? What are the current rates of growth and attrition? What are the usual points of entry into the work force? What is its composition in demographic and educational terms? What types of education should be provided in terms of present demands and future needs? Many additional questions of equal importance can be formulated.

A research project was initiated in March

1968 at the University of Texas Medical School at San Antonio and Case Western Reserve University to shed light on these and other related issues. The primary objective of this research is to determine the manpower requirements necessary to staff current library and information facilities in the health sciences and to recommend educational programs for meeting these needs. Coordinated planning and development of educational programs must be conducted with full cognizance of the availability and skills of present manpower as well as estimates of future requirements. A complete inventory and description of present manpower in terms of supply, demand, and utilization must be regarded as a necessary prerequisite for an accurate assessment of future manpower needs and for the design, implementation, and evaluation of appropriate educational programs.

Of particular interest are the assessment of the current work force in terms of age, sex, marital status, mobility, level of education, job functions, and skills; existing and anticipated position vacancies and attrition rates; availability of present educational programs for health sciences library and information personnel; and an evaluation of educational programs in relation to current and projected manpower requirements. It is anticipated that the accumulation of a data base on present manpower, its distribution and characteristics, will facilitate more accurate estimates as to the types of manpower required both on a short- and long-term basis and for the design and evaluation of appropriate educational programs.

#### GENERAL ASSUMPTIONS

A number of major assumptions underlie the research design. First, the production of a census of current health sciences library and information manpower will not by itself indicate appropriate educational preparation for future manpower. The compilation of such a census must be accompanied by a detailed analysis of the functions, skills, distribution, and utilization of existing manpower. Educational requirements can be understood only in relation to the current and projected demands placed by users upon library personnel in a number of institutions and settings. In other words, educational programs must be relevant to present and future demands likely to be placed on health

sciences library facilities, resources, and services, and must be evaluated in terms of the diversity of institutional settings in which manpower needs now occur, and are likely to occur in the future.

Second, health sciences library and information manpower must be viewed within the context of health-related institutions. Fundamental to the definition of manpower requirements in a service occupation such as librarianship is an assessment of where service is currently being provided, and its adequacy in terms of quantity and quality of personnel, and a determination of where service is *not* being supplied. In this connection, it is vital to determine the total universe of health-related institutions and the existence or absence of libraries within these institutions. The absence of a library is of obvious relevance to the study in that it implies a latent demand for manpower.

Third, library and information science manpower must be analyzed, and educational programs planned, with reference to present and future requirements for general health-related manpower. The intensified awareness of health as a desirable and attainable goal has resulted in a rapid growth of the health care industry. The total annual cost of U.S. health care is now \$53 billion, which represents 5.9 percent of the gross national product. Of the \$28.1 billion spent in the private sector by consumers, 79 percent went towards the purchase of services (2). The demand for health care is predominantly a demand for personal services, with the result that the health-related work force has expanded at a rapid rate. Despite these rates of growth, manpower shortages continue to exist, and predictions for the recruitment and training of library personnel must be related to the overall demand for manpower in the health sciences (3).

It has been estimated that by 1975, 3.4 to 3.6 million health workers will be required in the health care industry. To meet this need a net increase of about 100,000 workers per year is necessary, which represents a growth rate 50 percent higher than it has been during the past decade (4). These increases unquestionably will be reflected in the need for information and library services. It is most probable that a similar shortage exists with respect to health sciences library manpower. Determination of the

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magnitude and nature of the shortage constitutes a major objective of the present investigation.

Fourth, emphasis has been placed upon the health sciences in general, including many of the peripheral and adjacent activities and interests, rather than upon the more narrow field of medicine, in that the notion of medicine as a single, disease-oriented discipline concerned only with the restoration of individual health is rapidly being replaced by the concept of a number of health professions working in concert to foster and preserve the health of society as a whole. For this reason, a wide spectrum of institutions, facilities, programs, and services, both public and private, at the local, state, regional, and national levels, has been adopted as the base for the survey of library manpower. This spectrum includes not only medical institutions and programs but also a large number of social agencies engaged in health-related activities.

Finally, it is assumed that the provision of adequate information and library services is essential in the rational planning, development, and support of health-related institutions. In this connection, library-based information is viewed as a necessary and indispensable input into patient care, education, research, and other components of the total health care system. Adequately trained manpower, in sufficiently large numbers, is of vital significance in the development of library and information networks. The definition of "adequate" and "sufficiently large numbers" constitutes an integral part of the research investigation.

### RESEARCH DESIGN AND METHODOLOGY

Five major areas of interest exist in relation to the research project. These are:

- (1) *Patterns for the delivery of library services in health-related institutions and programs* involving the use of both health sciences libraries and all other types of libraries in the supply of library services in the health sciences.
- (2) *Characteristics of the current library work force* in terms of geographical distribution, age, sex, marital status, educational and work experience, attrition, mobility, tasks performed, source of recruitment, and entry into library practice.
- (3) *Existing and anticipated library position vacancies* by job title and skills required, by type of employing institutions, and by geographical distribution.
- (4) *Inventory of current educational programs* in the training of health sciences library personnel and information specialists at all levels (graduate, undergraduate, technician).
- (5) *Evaluation of present educational programs* in relation to present and projected manpower needs and requirements.

A sequence of four basic steps is involved in producing a comprehensive inventory and description of health sciences libraries and their manpower. These four successive steps are:

- (1) Definition, identification and statistical analysis of health sciences-related *institutions and programs*.
- (2) Definition, identification and statistical analysis of health sciences *libraries* and other libraries serving the health sciences.
- (3) Identification of health sciences *library personnel* and other library personnel engaged in the delivery of library services to the health sciences population.
- (4) Statistical description of health sciences and other relevant library *personnel* in relation to demographic factors, educational background, work experience and current job duties.

Figure 1 graphically illustrates the sequence and interrelationships of these steps. An amplification of these steps, specifying the actual phases of effort, their sequence, and the relationships between operational tasks is shown in Figure 2. The basic sequence involves identification of institutions and programs → identification of the associated libraries → identification of the personnel within the libraries.

This progression of steps in producing an inventory and description of manpower is necessitated by the fact that personnel can be identified and evaluated only in relation to the libraries in which they are employed and the institutions or programs they serve. Since no complete and accurate listing of health sciences libraries existed, it was necessary to devise a method for compiling an inventory of libraries. The method of identifying libraries adopted was a survey of the institutions and programs which they served. It appeared obvious that the com-

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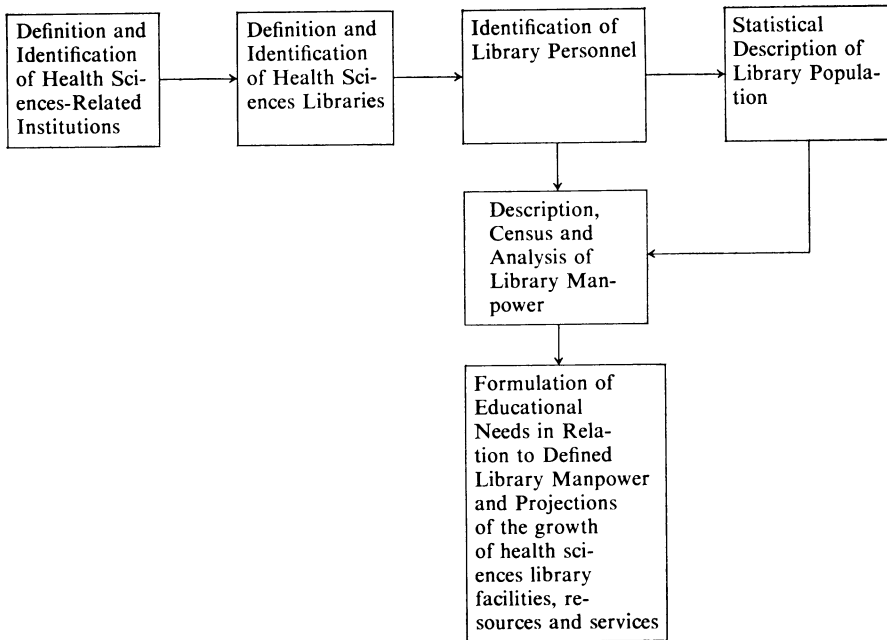


FIG. 1—Research design sequence of Texas-Case Western Reserve University manpower project

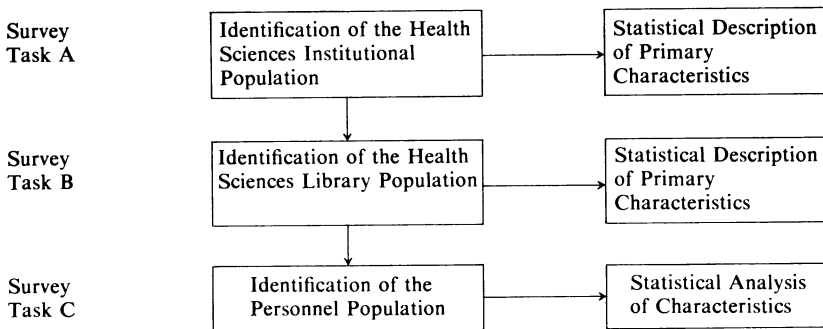


FIG. 2—Sequence of survey tasks

pilation of lists of relevant institutions, libraries, and manpower had to progress on a logical-inductive basis.

SURVEY POPULATIONS

Three major populations are of fundamental interest to the present manpower investigation:

- (1) Health sciences-related *institutions*.
- (2) Health sciences-related *libraries* and other libraries serving the health sciences.
- (3) Health sciences-related *library and information personnel*, including general library manpower, providing library services to persons in the health sciences.

The three populations were defined in the following manner:

(1) *Health sciences-related institutions* include a variety of institutions, programs, governmental agencies, research centers, etc., primarily concerned with any aspect of the health sciences; for example, patient care (diagnosis and treatment), research, education, or socio-economic activity relevant to health care. Primary emphasis was placed on the identification of institutions in which it was anticipated that library personnel would be found.

(2) *Health sciences-related libraries* include those libraries providing library services to the identified institutions and programs. Within the total library population three subclasses may be delineated:

- (a) health sciences libraries whose principal

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purpose is the provision of library services to institutions in which the *primary* mission is patient care, research, or education in the health sciences, e.g., medical schools, treatment centers.

- (b) libraries concerned with sociological, economic, psychological, rehabilitation, welfare, and other health care-related missions and problems.
- (c) general academic and public libraries identified as providing some degree of library service to a health sciences institution.\*

(3) Health sciences library personnel are defined in terms of the health sciences institution and library populations. Relevant library personnel are considered to be those persons engaged in providing library services to practitioners, teachers, researchers, administrators, and others involved in any aspect of the health sciences. Personnel of primary interest are those employed in libraries whose basic mission is in the health sciences.

Members of each population are encoded in terms of the population group from which they are drawn. That is, a health sciences library is defined in terms of the institutions or programs which it serves, and personnel are identified both in terms of the kinds of libraries in which they are found as well as in terms of the institutions or programs served by that library. These definitions make it possible to provide highly discriminatory comparisons between health sciences libraries and health sciences library personnel. For instance, it is possible to compare those libraries which serve the same combination of health professional training programs, e.g. medicine, dentistry, and nursing, rather than comparing libraries which serve different combinations of institutions and programs.

### SURVEY ACTIVITY

The execution of this study was planned to proceed in a sequential pattern, proceeding from the identification of institutions to the identification of libraries in these institutions and

\* A fourth class not included in the survey of institutions and libraries are hospital libraries, since this group is being surveyed independently by the American Hospital Association. It is anticipated that the personnel data from the AHA survey will be incorporated into this study.

to the identification of personnel in these libraries (Fig. 2).

Three instruments have been designed and used for the purpose of executing the three survey tasks. The first, a postcard questionnaire, was addressed to all institutions and programs identified to solicit information as to the existence, nonexistence, and use of libraries. The second, a short printed questionnaire was directed to the libraries identified as a result of the postcard questionnaire requesting information concerning library facilities, resources, services, and manpower. This was designed and mailed in a cooperative effort with the American Medical Association. The third, the Health Sciences Library Questionnaire is being sent to all persons identified from the data gathered by the previous questionnaire. The data gathered by this questionnaire will be related to demographic, educational, and occupational characteristics of the current work force.

### *Survey Task A: Identification of health-related institutions and programs.*

The population of health sciences institutions and programs was compiled by identifying classes of appropriate institutions. Six general classes of institutions were identified. These are:

- (1) educational institutions and programs
- (2) treatment and service centers
- (3) professional organizations, societies, and foundations
- (4) service-oriented organizations, societies, and foundations
- (5) research centers
- (6) industrial organizations.

Types of institutions within each class were identified with the assistance of professional organizations such as the American Medical Association, the American Dental Association, the American Hospital Association, and the Association of American Medical Colleges. Specific names and addresses for each institutional type to be included were located by searching directories and membership lists.

Considerable effort was expended in the identification and selection of health-related institutions since these data formed an empirical basis for subsequent steps. Since the primary objective of the research is to identify and to describe health-related library manpower, it was not considered necessary to undertake a definitive research effort in identifying institutions.

Of basic interest are those institutions whose *primary* mission is patient care, research, or education, and which are considered likely to have libraries. Certain peripheral institutions or programs have therefore been deleted. Approximately six months were devoted to assembling the initial institutional list, and the evidence indicates that the core of the nation's health sciences institutions are represented.

The total health sciences related *institutional* population identified consists of some 14,000 institutions and programs of which there are approximately 7,000 nonhospital institutions and programs, and some 7,000 hospitals (Table 1). Only nonhospital institutions and programs are included in the institutional analysis, since the American Hospital Association plans eventually to produce a descriptive analysis of libraries and manpower in hospitals.

For purposes of statistical description the nonhospital population was classified on the basis of geographical location, type, administrative control, and primary cognate area. These are defined as follows:

- (1) *Geographical Location*: in terms of Zip Code to permit the production of state and regional groupings.
- (2) *Type*: in terms of the classes of institutions included in the health sciences institutional population.
- (3) *Administrative Control*: in terms of source of institutional funding—public or private.
- (4) *Primary Cognate Area*: defined in terms of the subject/professional orientation of the institution as determined from institutional descriptions.

TABLE 1  
INSTITUTIONAL POPULATION BY CLASSES  
OF INSTITUTIONS

1. Educational Institutions/Programs.....	4,396
A. Professional Schools.....	1,608
B. Paramedical Schools.....	2,788
2. Treatment and Service Centers.....	527
3. Professional Organizations, Societies, and Foundations.....	396
4. Service-Oriented Organizations, Socie- ties, and Foundations.....	186
5. Research Centers and Industrial Organi- zations.....	1,328
6. Independent Libraries.....	8
<hr/> Total.....	<hr/> 6,841

Frequency counts and cross-tabulations have been produced by each characteristic and by combinations of two or more characteristics. The classification scheme used permits a versatile formatting of information to suit the particular interests of various users.

A statistical description for the entire United States and for each Regional Medical Library (RML) region has been produced. RML regions were chosen for the initial geographic breakdown in view of the interest of many persons engaged in the design, planning, and implementation of regional health sciences library services.\*

The data reveal the various densities of the institutional population. Of particular interest is the proportion of public to private institutions: 26 percent of the 6,841 institutions was public, and 74 percent was private. The preponderance of private institutions in the population is undoubtedly greatly influenced by the large number of hospital-based programs in nursing and in the allied health professions, which represent almost two-thirds of all the institutions/programs identified. It is interesting to note that an educational mission is assigned to 4,396 (64.2 percent) out of the total of 6,841 institutions/programs and that the next highest allocation is to research and industrial organizations (19.4 percent) which attests to the truism that the greatest use of the literature takes place where teaching (learning) and research are most important.

The geographic tabulation by RML regions and by states underscores the relative concentration of health care institutions in certain areas. For example, Region II (New York and Northern New Jersey) and Region VII (Minnesota, Wisconsin, Iowa, Illinois, and Indiana) have high concentrations. The tabulation by states shows New York, Pennsylvania, Illinois, and California to be centers of institutional concentration. The eleven regions were identified for the purpose of the Regional Medical Library Programs on the basis of certain parities, e.g. each region has roughly the same number of health professionals, although their territorial coverage varies considerably. Region II, for instance, covers only New York State and Northern New Jersey, while Region IX covers the five large, south-central states of Arkansas,

\* The full body of data on which the analysis is based is available from the authors on request.

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TABLE 2  
INSTITUTIONAL POPULATION BY REGIONAL MEDICAL LIBRARY PROGRAMS

Region	Totals by Regions	Percentage of Total Population	Region	Totals by Regions	Percentage of Total Population	
<i>Region I</i>	504	7.3%	Iowa . . . . .	110		
Maine . . . . .	32		Illinois . . . . .	484		
New Hampshire . . . . .	30		Indiana . . . . .	170		
Vermont . . . . .	30		<i>Region VIII</i>	587	8.5%	
Massachusetts . . . . .	245		North Dakota . . . . .	48		
Connecticut . . . . .	114		South Dakota . . . . .	36		
Rhode Island . . . . .	53		Nebraska . . . . .	66		
<i>Region II</i>	932	13.6%	Kansas . . . . .	91		
New York . . . . .	749		Colorado . . . . .	89		
Northern New Jersey . . . . .	183		Wyoming . . . . .	9		
<i>Region III</i>	536		7.8%	Utah . . . . .	43	
Pennsylvania . . . . .	455		Missouri . . . . .	205		
Southern New Jersey . . . . .	57		<i>Region IX</i>	467	6.8%	
Delaware . . . . .	24			Louisiana . . . . .	90	
<i>Region IV</i>	482	7.1%		Arkansas . . . . .	34	
Maryland . . . . .	133			Oklahoma . . . . .	63	
Virginia . . . . .	114		Texas . . . . .	255		
West Virginia . . . . .	66		New Mexico . . . . .	25		
D.C. . . . .	169		<i>Region X</i>	222	3.2%	
<i>Region V</i>	693		10.1%	Washington . . . . .	97	
Michigan . . . . .	255			Oregon . . . . .	64	
Ohio . . . . .	347	Idaho . . . . .		27		
Kentucky . . . . .	91			Alaska . . . . .	5	
<i>Region VI</i>	728		10.6%	Montana . . . . .	29	
North Carolina . . . . .	158			<i>Region XI</i>	588	
South Carolina . . . . .	52			Nevada . . . . .	16	
Georgia . . . . .	113			California . . . . .	509	
Florida . . . . .	145			Arizona . . . . .	40	
Alabama . . . . .	75	Hawaii . . . . .		21		
Mississippi . . . . .	49	Pacific Islands . . . . .		2		
Tennessee . . . . .	122		Canal Zone . . . . .	3		
Puerto Rico . . . . .	14		Virgin Islands . . . . .	16		
<i>Region VII</i>	1,109		16.2%	<b>Total</b>		6,841
Minnesota . . . . .	165					
Wisconsin . . . . .	180					

Louisiana, New Mexico, Oklahoma, and Texas. Nine hundred and thirty two (13.6 percent) of the identified institutions/programs fall within Region II. Regional distributions of institutions and programs are useful in providing data for network planning. For example, out of a total of 186 service-oriented organizations, societies, and foundations identified in the survey, two-thirds fall within three regions, Region II (the New York area: 64), Region IV (the Washington, D.C. area: 23), and Region VII (the Chicago area: 34).

Analysis of the institutional population sug-

gests that some population groups are undoubtedly under-represented. Agencies operating on the state and local level—both public and private—are certainly under-represented. Since the probability that these institutions employ relevant library personnel is low, it is not felt that their exclusion seriously affects the validity of the population. However these, and similar, groups must be considered in designing national health sciences information networks since they represent a latent demand for library and information services.

*Survey Task B: Identification of Health Sciences Libraries.*

The health sciences institutional population provided the basis for the definition of the health sciences *library* population. During August and September 1968, a postcard questionnaire was mailed to each nonhospital institution or program requesting information as to their source of library services, if any. A 77 percent return was obtained from a total mailing of 6,841. Analysis revealed that most of the non-respondents were paramedical training programs located in hospitals.

The return from the postcard questionnaire resulted in the identification of some 2,300 health sciences libraries located outside of hospitals. These libraries served a total of 2,572 institutions and programs. A further 2,000 health sciences libraries located in hospitals were reported as serving some 2,700 institutions and programs. Only nonhospital libraries have been further analyzed in this project at this time.\*

The method of identifying the population of health sciences libraries in terms of the institutions served was adopted since it offered several distinct advantages. It permitted the enumeration of institutions possessing visible sources of intramural library support and also of those obtaining library resources in an indirect and vicarious manner through extramural sources. The method also revealed many important health sciences library resources not listed in any of the relevant directories. Approximately one-third of the libraries included in the library population are not to be found in current library directories.†

Another advantage offered by this approach is of basic importance in projecting the future need and demand for library resources and personnel. Future need and demand may be seen as a function of the expansion of existing institutions and of the growth of new institutions. From the resulting data it is possible to identify those institutions and programs without visible

\* Manpower in hospital libraries will be analyzed when the AHA survey data are made available.

† Standard library directories were screened in order to supplement the library population with those health sciences libraries which were not identified as a result of the institutional/program survey effort.

means of current library support—an important statistic since it represents what may prove to be significant manpower gaps. It is evident that many health sciences-related institutions presently obtain library resources from other health-related institutions, or from their parent university, or from other nonexclusive health sciences libraries. The extent of this pattern of service forms a rough index of the latent demand for library personnel and must be taken into account in projecting manpower needs. The type of library resources and services likely to be required in the future can be discerned by studying current service and usage patterns.

Yet another advantage to be derived from the empirical documentation of concentrations of health sciences institutions and libraries is in relation to the planning involved in Regional Medical Programs (RMP). Potential regional resource libraries can be identified in terms of these concentrations of institutions and programs together with an enumeration of the types of potential and actual users. The institutional-library relationships inherent in the data gathered through the postcard questionnaire are in the process of being analyzed and will undoubtedly reveal some interesting patterns of library service and usage.

It is also planned to analyze the library population in a manner similar to the institutional population. The characteristics of particular importance are geographical location, administrative control, and the number and type of institutions served.

*Survey Task C: Identification of Health Sciences Library Manpower.*

Survey effort to date has resulted in the identification of 14,000 health-related institutions and programs, some 2,100 nonhospital libraries within these institutions and programs, and an estimated 4,575 personnel in these libraries.‡ Data on personnel within the libraries identified were obtained from a second questionnaire mailed in April of this year as a joint effort between the present investigators and the American Medical Association. This questionnaire was concerned with budget, collections,

‡ To this total one may add some 3,700 persons employed in approximately 3,000 hospital libraries in 7,167 hospitals. The total health sciences library work force is therefore in the neighborhood of 8,275.



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and library facilities, and contained a section requesting identification of library personnel. At present, follow-up procedures are still being executed, but already a large data base of names and addresses of personnel has been accumulated.

The health sciences-related library manpower population identified has been classified in two major categories:

- (1) Sub-Population A: All professional and nonprofessional personnel (full- and part-time) in health sciences libraries. (Estimate: 4,275)
- (2) Sub-Population B: All professional and nonprofessional personnel (full- and part-time) in academic, public, industrial, etc., libraries directly involved with relevant health sciences holdings. (Estimate: 300)

PRELIMINARY RESULTS

Analysis has begun to explore the geographical distribution of institutions, the co-occurrence of various institutions and programs in the same location, the distribution of training programs in the health sciences, and other factors related to the institutional population. Of fundamental concern is the relationship of library resources to each reporting institution and program and the types of institutions and programs served by various classes of health sciences and other libraries. On the basis of these analyses it will be possible to proceed to the exploration of the relationships between institutions, libraries, and manpower.

The general relationship between reporting institutions and libraries supplying service is shown (Table 3) in terms of the type and administrative control of the institutions. Three categories of library usage are indicated: usage of in-house library resources within an institution; usage of external library resources outside of an institution; usage of both in-house and external library resources. A preliminary analysis, as yet incomplete, shows that 79 percent of the institutions reported usage of in-house libraries, 19 percent reported usage of library resources in other institutions, and 2 percent reported usage of both in-house and external library resources.

It appears that some institutions rely extensively on external library resources. The reasons for this may be economic, geographical, or

TABLE 3  
RELATIONSHIP OF LIBRARY RESOURCE TO REPORTING INSTITUTION, BY TYPE OF INSTITUTION  
(N = 2,676 Institutions)

Type of Institution	Within Reporting Institution (a)	Outside of Reporting Institution (b)	(a) and (b)	TOTAL
Public, Educational.....	855	88	13	956
Private, Educational.....	483	104	4	591
Public, Health Care Centers.....	94	31	1	126
Private, Health Care Centers....	112	35	3	150
Professional Organizations.....	116	67	2	185
Service Organizations.....	64	32	—	96
Public, Research...	98	44	2	144
Private, Research and Industry....	298	108	6	412
Public, Information Agency or Independent Library.....	5	—	—	5
Private, Information Agency or Independent Library.....	11	—	—	11
Total.....	2,136	509	31	2,676

perhaps related to a deficient supply of trained manpower. The extent to which it is possible for health sciences institutions and programs to utilize external resources without in-house library manpower needs further investigation.

A preliminary estimate of the total manpower in health sciences libraries is now possible as a result of the survey effort conducted. Some 2,300 libraries have been identified in the 6,841 nonhospital institutions and programs surveyed employing approximately 4,575 persons. These libraries and the estimated number of personnel for each type of library is shown in Table 4.

FUTURE EFFORT

Activity up to the present time has resulted in the identification of manpower in health sciences-related libraries in the some 14,000

TABLE 4  
PRELIMINARY DESCRIPTION OF THE HEALTH  
SCIENCES LIBRARY PERSONNEL  
POPULATION\*

Personnel Population Library Population	Number of Libraries	Total Number of Personnel	Personnel Per Library
Primary Health Sciences Libraries including Veteran Administration Hospitals and Other Federal Hospitals . . . . .	958	4,275	4.43
Academic and Public Libraries Serving Health Sciences Institutes . . . . .	1,344	300†	22.75
Total . . . . .	2,302	4,575	—

\* All figures are estimates based on projections of actual returns.

† A total of 29,395 persons has been estimated as being employed in these academic and public libraries reporting provisions of library services to health-related institutions and programs. It is projected that 300 persons are directly involved with the responsibility for providing health-related library services.

health-related institutions and programs. Little is known about the personnel beyond names and position titles. Consequently, a Health Sciences Library Personnel Questionnaire has been designed to solicit selected demographic variables and detailed information regarding the educational activities and occupational history of respondents. A section has been included to be completed by the chief librarian which deals with the availability of employees with specific skills, attrition due to retirement, and library policy dealing with the support of continuing education programs. This questionnaire is at present being prepared for sending to a preliminary mailing list of 2,588 persons. Subsequent mailings will be made so that the total population surveyed will be 4,575 persons.

The Health Sciences Library Personnel Questionnaire will supply a wealth of data. From the demographic data, it will be possible to obtain measures of population mobility (e.g., who moves, how often, and in which direction), age

and sex distributions. The educational data will provide information relating to the sophistication of the current manpower pool, its current educational activity, and its perception of the need for continuing education programs. From the occupational data, an insight will be gained into the skills of the manpower pool, its past experience, salary level, and career patterns. The questionnaire survey will also provide data which will permit the comparison of perceptions of the chief librarian and his staff regarding continuing education programs.

Further analysis of the institutional population will continue in order to provide greater insight into the types of institutions that tend to co-occur in their use of a library. These data will be studied in terms of general growth of institutions in the health sciences sector. Interdependences between the type of institutions using a library and the characteristics of the library's staff in terms of education and job skills will be explored. This information is of vital importance in predicting the demand for manpower and in determining appropriate educational programs.

#### PROJECTED OUTCOME

The ultimate objective is a projection of manpower requirements and the specification of appropriate educational programs. A considerable amount of survey effort has been necessitated as preliminary steps in implementing this objective. This has been required by the absence of data as to the existence of libraries within the nation's health-related institutions. A synthesis and evaluation of all manpower data gathered as a result of this survey effort will be attempted. By the early part of 1970, data will be available as to the size, distribution, location, mobility, skills, level of sophistication, and functions performed on the part of the present work force. Data will also be available as to the relationships existing between present personnel, the libraries in which they are employed, and the institutions that use these libraries. From these data it will be possible to assess the adequacy of the present work force in terms of size and level of professional preparation on the basis of expressed institutional demands. An assessment of the adequacy of the present work force in relation to professionally defined "need" will also be undertaken. The concept

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of "need" will be based, in part, upon (1) a general institutional growth in the health sciences sector, (2) an increase in demand for library services due to institutional expansion, (3) the effect of regionalization upon libraries, (4) an evaluation of the requirements for library service in relation to various user groups, and (5) the extension of library services to institutions and programs not presently provided with libraries or manpower.

It is possible that several levels of educational preparation may be identified given the data base and defined need and demand. This method of determining the requirements and criteria for the establishment of educational programs offers a profitable alternative to the traditional professional versus nonprofessional dichotomy.

The necessity and desirability of employing one kind of *professional* health sciences librarian in all types of health sciences libraries in *all* categories of health-related institutions at *all* levels of library functions may be seriously questioned. A more refined definition of profes-

sionalism will probably be required which would recognize a number of levels of library functions, some of which will be supportive in nature at the nonprofessional level.

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It is essential for the profession to have a highly organized and systematic structure of associations, but what is truly important is that the local groups should have life and vitality.

—Cyril O. Houle. *A Firstling of his Heart and Hand*. *Biol. Med.* 12: 572, Summer 1969.