SERIES A–1

HEALTH STATISTICS

FROM THE U. S. NATIONAL HEALTH SURVEY

origin and program of the U. S. National Health Survey

A description of the developments leading to enactment of the National Health Survey Act, and a statement of the policies and initial program of the Survey

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U. S. NATIONAL HEALTH SURVEY

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The U. S. National Health Survey is a continuing program under which the Public Health Service makes studies to determine the extent of illness and disability in the population of the United States and to gather related information. It is authorized by Public Law 652, 84th Congress.

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U. S. NATIONAL HEALTH SURVEY

In the summer of 1956 the President signed a bill authorizing a continuing survey of the United States to secure information about health conditions in the general population. The new law established, within the Public Health Service, the U. S. National Health Survey which embarked on a program to produce statistics on disease, injury, impairment, disability, and related topics on a uniform basis for the nation as a whole. Its enactment marked a significant step in the efforts of government to provide tools for improving the health of the people.

THE NEED FOR HEALTH STATISTICS

The need for comprehensive health statistics stems from the fact that a healthy people is perhaps a nation's greatest resource. The high rank in importance which health holds is justified whether the evaluation is strictly in monetary terms or in terms of less well-defined but more appropriate scales of national vitality, morale, the well-being of individuals, and other human values. The gauge of this important factor—the people's health—is found in statistical measurement of well-being.

Among the primary users of general health statistics, and, in particular, morbidity data, are those persons responsible for the direction of operating health agencies. To them an accurate appraisal of the extent and character of disease, and the distribution and trends of morbidity, are essential for effective planning and evaluation of their programs and for extending the scope and improving the balance of their work.

Originally devoting themselves primarily to the control of infectious diseases, public and private health agencies have seen their responsibilities broaden in several dimensions. As emphasis shifted to the control of the chronic diseases, many health departments began to be concerned with the detection of cases by a variety of screening methods and the co-ordination of medical care efforts. The adequacy of the supply of beds for the care of chronic disease patients in special and general hospitals and nursing homes, and the establishment of home nursing care programs, rehabilitation programs, and in some areas public medical care programs for the medically indigent—all these became of interest to the health department. The nature of occupational health programs and maternal and child hygiene programs changed. The importance of health education and of the techniques of the behavorial sciences increased.

In the United States this evolution in the nature of the activities of official health agencies has been accompanied by a growth in the number and variety of voluntary health agencies and by expanding efforts in the area of medical research.

New types of statistics are required to identify the new problems, and to develop and appraise the new programs. Quantitative information on the prevalence of chronic diseases and impairments, the volume and degree of disability, the utilization of medical services and hospital beds, and the patterns of behavior of chronically ill persons are only a few of the types of facts needed by modern health agencies.

The needs of social security and vocational rehabilitation agencies for health statistics are closely similar to those of the health agencies. For example, total benefit payments for unemployment and disability bear a relationship to the volume and nature of illness, and the question of how many could benefit by vocational rehabilitation is of crucial importance.

In a more tangential way, statistics of morbidity have a contribution to make in the field of medical research. Clues to the etiology and pathogenesis of disease can often emerge from the study of association between the incidence or prevalence of disease and various demographic, social, and geographic factors.

An increasing general awareness of economic problems has brought to the fore some of the more direct economic applications of morbidity statistics. Some of these applications relate to improved evaluation of manpower resources for civilian and for defense purposes. In a more general way the economic loss of productive capacity because of illness is recognized as an important factor in the changing economic picture. The more stable component of this loss, attributable to chronic diseases and impairments, represents a potential source of extra productive capacity if available methods for the rehabilitation of workers can be effectively utilized.

In another application, morbidity statistics related to demographic factors form the actuarial

cornerstone for the development of voluntary hospital and medical insurance plans. As such plans increase in number and scope, health data covering all segments of the population become indispensable. Closely related to these uses of health statistics are the interest of drug and appliance manufacturers in estimating potential markets for new products and the use of such statistics for general guidance in market analysis and production scheduling.

THE DEVELOPMENT OF HEALTH STATISTICS

Just as the original activities of health agencies were focused for the most part on control of infectious diseases, so the early health statistics were largely confined to reportable diseases and mortality. The expanding programs of the health agencies clearly indicated a need for a corresponding extension of the field of health statistics. In view of this, it is a remarkable fact that the health aspects of the national economic and social life have so long remained without the systematic statistical measurements that are generally available, for example, for agriculture, finance, manufacturing, employment, foreign trade, and population.

Measurement Problems

The relatively slow development of the statistics of illness for the general population can be ascribed to the inherently difficult problems of measurement involved. In the case of mortality statistics, the fact of death is a clearly defined event, occurring only once for each person and at a closely determinable point in time. The existence of a condition of morbidity, on the other hand, is by no means always clearly distinguishable from acceptable good health. Likewise, the beginning and end of the condition of morbidity cannot always be accurately specified, even by the person affected.

As has often been pointed out, there is a continuous scale of well-being extending from the best of health to severe sickness. The point on this scale which is appropriately taken to represent the dividing line between illness and health depends upon the purpose to which the statistics are to be put, as do the appropriate standards of measurement. For some purposes this point must be based upon medical evidence, and the whole scale must be marked off in terms of clinical and pathological criteria. For other purposes it is more appropriate to consider a person ill when he considers himself to be ill and to mark off the scale in terms of the actions he takes as a result of his illness, the extent to which he cuts down on his usual activities because of his condition, takes to his bed, calls upon a physician for help, and so forth. The application of two such different means of measurement will in the case of many individuals produce quite disparate results in terms of a health-illness scale.

Difficulties in dealing with morbidity statistics also stem from the large number of ways in which the events may be counted and classified. The basic measures are "point prevalence," or simply "prevalence," meaning the number of a specified type of conditions existing at any given time, and "incidence," meaning the number of new cases of a specified type starting in a defined period of time. There are also variants and combinations of these. The classifications may be of many types, such as whether the condition is acute or chronic, or according to the diagnosis, the prognosis, the severity, the kind and amount of care received or required, the consequences to the individual's family or to the community, and so forth. Each of the possible units of tabulation and each of the various axes of classification may provide the statistics required for some important application of the data.

The variety of types of data is paralleled by the variety of sources from which morbidity data can be obtained. Three principal types of sources are those that provide data as the by-product of the operation for some medical care or insurance plan; those that derive data from other types of existing medical records, such as the records of physicians and hospitals; and those that are based upon records created specifically for the morbidity statistics, such as interview records and special health examinations. Because of the greater possibilities for relating the data to samples of the general population, the last of these classes has notable advantages in the compilation of health data. However, the full potentialities have not been explored with regard to any of these sources of data.

Data Heretofore Available

Prior to the establishment of the U. S. National Health Survey, the information on the extent and characteristics of illness was largely limited to that derived from the reporting by physicians under State laws of selected communicable diseases; the results of a large number of specialized and local health studies and surveys; and scattered and disparate reports from hospitals, clinics, and health and hospital insurance plans. Whatever the quality and adequacy of these data for the purposes for which they were developed, their ad hoc and various character provided no basis for constructing a uniform and valid nationwide measure of the essential features of the health of the American people. A single exception in the field of health statistics was the statistical information relating to mortality. In this field the legal demands for controlling the disposition of bodies and for proof of death led to the early establishment in every State

of a system requiring the medical certification and official registration of every death. This death registration system has provided data for an annual series of detailed, national mortality statistics extending back for a number of years. These statistics serve many essential scientific and administrative purposes in the medical, demographic, and actuarial fields. Most of the existing evidence regarding the distribution and trends of morbidity is based upon study of these mortality statistics. There has been a constant awareness, however, that mortality statistics alone could not serve the great variety of needs for information about illness and disability. For example, it is well known that death rates can be misleading indices of the relative volume of disability resulting from different diseases.

THE EXPERIENCE IN HEALTH STATISTICS COLLECTION

As the health statistics existing in 1956 fell far short of meeting national needs, so the techniques of data collection in the health field suffered from underdevelopment. Nevertheless, the experience of a number of earlier studies, surveys, and committee projects was of great benefit to the new U. S. National Health Survey. Without this experience the new program would have had to spend a number of years in experimentation before any extensive collection of statistics for publication could begin.

Important Early Studies

The last effort to obtain comprehensive illness statistics for the general population of the country was the nationwide health survey of 1935-36. This was a tremendous undertaking in which interviewers visited 737,000 urban households to find out which members of the household had experienced disabling illness and which had specified chronic diseases or impairments.

Although this survey was by far the largest ever devoted to learning the facts of illness and injury in the general population, it was not the first of its kind in this country. A number of smaller studies had demonstrated that the interview method can provide useful information about the amount and distribution of disease, the circumstances of injury, the loss of time from work or other usual activities resulting from disease and injury, and the utilization of medical care in connection with morbidity. Best known of these are the Hagerstown, Md., studies of the early 1920's and the survey made during the years 1928-31 by the Committee on the Costs of Medical Care. The smaller, community-type studies continued after 1936, and additional refinements were made in the techniques. An important example of an intensive community study is the Eastern Health District Study conducted in Baltimore from 1938 to 1943 by the Public Health Service, the Milbank Memorial Fund, the Johns Hopkins University School of Hygiene and Public Health, and the Baltimore City Health Department.

At the same time, great advances were made in the science of population sampling, with the Bureau of the Census leading the way in the development of practical methods for applying the theory of probability sampling in the field. In 1943, the Census Bureau, building upon an earlier survey by the Works Progress Administration, began to collect information on the labor force by conducting interviews each month in a national sample of households. Now known as the Current Population Survey, that survey, almost from its start, was used to satisfy some of the demand for national morbidity statistics by the addition, from time to time, of special questions, or supplements, to the basic questionnaire. Owing to the fact that the sample size is large—35,000 households per month—supplements to the Current Population Survey continue to be a uniquely valuable source of health data for inquiries of limited scope. The Current Population Survey, however, was originally designed to have, and still has, as its foremost task the collection of information on the characteristics of the labor force. It cannot, therefore, simultaneously provide the wide range of specialized health statistics which are now urgently needed.

Recent Activities

In January 1949, the United States National Committee on Vital and Health Statistics was established. Recognizing the inadequacy of available sources and the obsolescence of the existing data, the committee gave immediate attention to the problem of obtaining adequate national morbidity statistics. Two successive subcommittees were set up by the chairman of the national committee "to frame the problems in morbidity statistics, including chronic diseases and medical care statistics, in order that morbidity data may be directly related to demographic factors." These subcommittees recommended study of a number of methodological questions, but, even as the recommendations were being made, steps were being taken in several parts of the country to get some of the answers in community surveys. About the same time a bill calling for an 18-month study of methods of measuring illness passed the Senate but failed of passage in the House of Representatives.

Within the next few years there was an upsurge of interest in illness surveys as various groups set out to fill the gaps in available statistics in order to answer particular questions with which they were faced.

In New York City a committee undertook to compare the health of the members of the Health Insurance Plan of Greater New York with that of the people of the city in which these members lived, by parallel surveys in the two populations.

The California Department of Public Health launched first a study of methods for the measurement of illness in San Jose and then a statewide survey to compile statistics to guide the health department's activities.

The Graduate School of Public Health of the University of Pittsburgh established a series of community studies in the Arsenal Health District and in the city as a whole, partly for the purpose of training scientists and partly to study patterns of illness in relation to demographic and social factors.

The Commission on Chronic Illness sponsored two important surveys with the objective of obtaining data on prevalence of chronic illness and disability and estimating what these data meant in terms of needed care. One was carried out in a rural area, Hunterdon County, N. J., and the other in an urban locality, Baltimore, Md. These surveys were unique in that they were the first to attempt to combine the results of household interviews with comprehensive medical examinations offered to representative samples of the population.

In Kansas City, Mo., Community Studies, Inc., set under way a survey to identify a sample of persons with handicapping conditions who were examined to determine whether they could benefit from rehabilitation. Those that could benefit were offered the services they required. These persons were then followed to evaluate the rehabilitation.

These and many other studies initiated during the late 1940's and early 1950's contributed to the knowledge of how morbidity data could be made more accurate and useful. The Bureau of the Census acted as collecting agent in several of the surveys, and the Public Health Service served in a consultant capacity in almost all of them. Thereby both agencies gained experience which was to be of great value to them later.

In the meantime, anticipating progress in the solution of the methodological problems raised by the earlier subcommittees, the chairman of the U. S. National Committee on Vital and Health Statistics established a new subcommittee in February 1951. This was the Subcommittee on National Morbidity Survey which was charged with the drafting of "a plan for a national morbidity survey keeping in view the interests of local areas." The report of this group, "Proposal for Collection of Data on Illness and Impairments: United States," submitted in October 1953, was the basis for specific legislative authorization for a continuing national health survey program. (See Appendix I for the complete text of the report.) In view of the fact that the report set the initial pattern for the U. S. National Health Survey, it is a basic document of the program.

Other activities during the years immediately prior to the enactment of the National Health Survey Act helped to clarify the purposes and concepts of the Survey. Among these were a series of meetings held within the Public Health Service at which the staff of each of the major programs discussed their needs for statistical data of the sort that a survey might supply, the results of the meetings being summarized in a report to the Surgeon General; and the discussions of the Working Group on General Illness Statistics of the Public Health Conference on Records and Statistics, which were devoted to the matter of definition of terms.

Of interest also was the health survey experience in other countries. In Great Britain a number of local or special studies were followed by the nationwide Survey of Sickness which was carried on from 1944 to 1952; Canada made a nationwide survey in 1950-51; and Japan and Denmark have made health surveys on a national basis.

THE NATIONAL HEALTH SURVEY ACT

In 1955 the Department of Health, Education, and Welfare proposed a plan under which the Surgeon General of the Public Health Service would be authorized to conduct a continuing survey of illness and disability in the Nation. A recommendation that Congress enact such legislation was included in the President's legislative program on health matters. Bills incorporating the proposals were introduced in both the Senate and the House of Representatives in February 1956, and after hearing testimony on the needs for improved health statistics,[1,2] the Congress passed the National Health Survey Act (Public Law 652, 84th Congress). The bill was signed by the President on July 3, 1956, and later the same month funds were appropriated for the first fiscal year of operation. The text of the National Health Survey Act is given in Appendix II.

A number of salient points of this legislation deserve special note since they determine some of the unique aspects of the program of the U. S. National Health Survey.

The fact that previously existing data on the health of the Nation's population is seriously out of date and that current information is urgently needed for many purposes is explicitly recognized in the Act. But in the stated broad terms of refer-

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1. U. S. Congress, Senate: Continuing survey and special studies of sickness and disability in the United States. Report No. 1718 to accompany S.3076. 84th Cong. 2d. sess. Washington, D. C., U. S. Government Printing Office, 1956.

2. U. S. Congress, House of Representatives: National Health Survey Act. Report No. 2108 to accompany S.3076. 84th Cong. 2d. sess. Washington, D.C., U. S. Government Printing Office, 1956.

ence for the authorized Survey program, it is clear that the Congress had in mind not limited or sporadic attempts to collect better health information, but an earnest and sustained program directed to the solution of the problem of producing current health information.

Another point of interest is that in this legislation the subject of methodology is explicitly mentioned. The methods to be used in accomplishing the purposes of the Act are specified only in general terms, but the need for studying the technical problems of morbidity statistics methodology is stressed. It might be assumed that in any authorized program the administering agency would give attention to the methodology relating to the work being undertaken; but the National Health Survey law goes beyond this and specifically provides for study of methods and survey techniques in the health statistics field with a view to their continued improvement.

The Act also takes cognizance of the fact that other agencies have an interest in health survey information or may have available technical resources or materials useful to the program. The Act gives a broad authority for co-operation with such agencies and the utilization by written agreement of facilities that can be made available. In a similar sense, inasmuch as the program of the U. S. National Health Survey cannot serve all needs for health data, it is recognized that other agencies and organizations will carry on their own special purpose studies, and the Surgeon General is authorized to make available to them technical advice and assistance on the application of statistical methods to their surveys or studies in health and medical fields.

POLICIES AND ORGANIZATION OF THE SURVEY

The scope of the authorization in the National Health Survey Act is such that in order to be productive and economical the operating plan of the Survey program must be carefully delimited. An attempt to cover too broad a range of health statistics could only result in a program of cumbersome and scattered character, and for this reason the outlines of the program must be clearly drawn. Yet the needs for a great variety of different types of data must be recognized; and this means that within definite outlines the goals and methods must be eclectic, concentrating on the most productive objectives and procedures, and the program must be flexible enough to deal seriatim with many areas of interest and respond readily to changing requirements. However, the unique responsibility of the Survey program is considered to be the collecting of types of data which are based on a general sample of the population in contrast to studies based on records of health agencies or health administrative programs. The importance of data of this type stems from the fact that statistical measures of health or morbidity take on their scientific meanings, as contrasted with certain administrative applications, only when they can be expressed as proportions or rates. It is not sufficient to know, for example, that at a given time so many people of such-and-such population group are ill with such-and-such disease. The important meaning of this aggregate figure emerges only when it is expressed in relation to the total number of persons of the same population group.

Statistics based solely on records of hospitals, clinics, or medical practitioners can yield only part of the needed information, and by themselves are of value principally to describe the nature of medical practice and to guide hospital administration. To serve the purposes of general health statistics, the collection of data on sick people by condition, age, sex, occupation, area of residence, etc., must be accompanied by a parallel collection of corresponding data for the population as a whole. The focusing of the Survey program on population-based types of studies meets this technical condition.

The use of a population sample as the origin of the data takes advantage also of the fact that there is only one point from which all the needed information is generated. That point is the individual. Some of the desired data can be garnered from hospital records—the causes of hospitalization, for example; some can be found in physicians' records, which can show the illnesses for which medical care is sought; some information can be gathered from rehabilitation agencies—which know the impairments they are working with; etc. But only in the person involved do all the facts have their genesis—the fact of illness, the duration of the illness, the actions taken as a consequence of the illness, and the various demographic and personal facts.

The Survey program has another basic characteristic—one which distinguishes it from many other studies in the health field. With the exception of the general mortality and natality data compiled by the National Office of Vital Statistics, most of the statistical projects in the Public Health Service are designed to serve some particular program interest. Such programs collect detailed data on a particular disease entity, test specific hypotheses relating to the etiology or pathogenesis of certain conditions, or measure or assist in the administrative control of some health-operating program. Other types of statistical projects, especially those carried on by State, county, or city health agencies, are designed to assay health conditions or study some problem in relation to a selected population group or in a limited local area.

In contrast, the National Health Survey is not designed to serve any single health program interest only, nor to meet the needs for detailed local data. Its task is to provide general background data which reflect the over-all health pic-

ture and show the various components of the health problem in proportionate relation to each other. It is to measure the extent of illness and disability, the number, age, sex, ability to work, and usual activity status of persons afflicted with diseases or handicapping conditions, the length of time that afflicted persons have had varying degrees of disability, the amounts and types of care sought or received, and the economic and social impact of illness and disability.

The definition of the Survey program in this general sense means that its activities will supplement but not duplicate special or local statistical projects. It can serve as a background or a reference point for various local studies, but cannot replace, nor serve the specific needs which underlie, such studies.

The absence from the Survey of subject matter interests of its own is consonant with the policy of providing service, in the form of statistical information, to those responsible for health research or operation programs. Here, too, a narrow view is inadmissible.

The program must not be unduly weighted in the direction of selected subject matter interests even though these may be the most demanding at the particular moment. The whole group to be served comprises the legislator and the public health administrator—Federal, State, and local—the medical research scientist, the private health agency, the range of health and related professions, the demographer, economist, and sociologist, the teaching institutions, the life and health insurance agencies, the manufacturer of drugs and other health supplies, the market analyst, and numerous other activities and interests related to health of the population. A major task in designing and administering the Survey is the consideration of the statistical needs of this heterogeneous audience, and the conversion of the major common elements of these multitudinous needs into a clearly defined, practical, timely, and economical Survey program.

The proper design of such a program is possible only if there are effective channels through which these needs can be expressed, and one of the first steps taken in the organization of the Survey was to devise a system whereby the planning could proceed with the benefit of advice and suggestions from many quarters. To this end, several advisory committees were appointed and their advice is sought, not only through periodic meetings for general discussions but by requesting their review and opinion on specific proposed courses of action.

One of these committees represents the bureaus of the Public Health Service and other agencies of the Department of Health, Education, and Welfare. Another is made up of representatives of the various interested Government departments and has members, for example, from the Departments of Agriculture, Commerce, and Labor; the Army, Navy, and Air Force; the Veterans Administration; the Atomic Energy Commission; and the National Science Foundation.

To bring nongovernmental agencies and interests into the planning, there was called together at an early stage in the organization of the Survey a group of outside advisers representing the fields of biostatistics, medicine, dentistry, public health, hospital administration, health insurance, health research, public welfare, pharmacy, pharmaceutical manufacturing, safety, labor, and industry. Subsequently a permanent advisory committee drawn from these fields was appointed.

The objective of the Survey to provide a service to a range of health interests requires not only that the data collection be designed in consideration of the various needs, but also that special emphasis be given to the expeditious release of compiled statistics on a timetable as rapid as possible consistent with high technical and scientific standards. The publication program, described in more detail below, is designed to facilitate the early release of the compiled data together with such ancillary information as is needed to make them readily usable by consumers.

This publications policy requires that the statistical tables be accompanied by technical notes, qualifications, definitions, and such illustrative analyses as are necessary for the clear appreciation of the meaning, uses, and limitations of the statistical information.

The analyses included in the Survey publications must, however, be limited in scope, consisting primarily of exposition and illustrative uses of the data. This limitation is desirable since it is the function of the Survey to provide objective and accurate facts, but not to interpret these facts so as to indicate any particular course of action or to support any particular health policy or program. The policy implications of the statistical data are the responsibility of the legislator and the administrator.

The activities of the Survey in collecting data through various channels in all parts of the country obviously require an understanding and acceptance by the public as well as by all the health professions. This is of particular importance in a data-collecting program based on voluntary co-operation of the respondents; and the Survey takes cognizance of the need for developing this general understanding of the purpose of the program and the methods to be used.

In developing the organizational arrangements for the Survey, it was considered advantageous to make maximum use of the provisions of the National Health Survey Act which authorized the Surgeon General to utilize by contract the services or facilities of any agency of the Federal Government, any appropriate State or other public agency or any private agency, organization, group, or individual. The use under contract of existing technical facilities and materials makes available to the Survey valuable special professional talents and resources

which could not be duplicated, and admits of limiting the Survey staff proper to a relatively small group concerned primarily with planning, research, and analysis.

The fact that the Survey operates by contracting for many phases of its work with other agencies does not imply, however, that it is in any sense a grant-in-aid program. Contracts made with other agencies by the Survey are for the conduct of specified studies or operations which are aspects of, or contribute to, the Survey program as an integral part of its own work.

Authority for grants-in-aid for the prosecution of surveys by other groups is not included in the National Health Survey Act and funds are not available for this purpose. There is in the Act, however, the authority to make available to appropriate persons and agencies technical advice and assistance in the application of statistical methods to health surveys.

Any living, on-going statistical program should be also an evolving one. It is significant that a proportion of total resources is allocated to evaluation of Survey results, to assessment of reliability of data, and to exploration of possible improvements in method. Modifications in the Survey program may be expected as experience points the way to improvements in method or to different emphasis on objectives. Certain features of both the questionnaire and the sampling structure of the household-interview survey were under redesign almost from the beginning, and tabulating plans are being modified almost constantly. The methodological work and the continuing evaluation of the results will undoubtedly lead to various revisions in methods and procedures of the program.

PROGRAM OF THE U. S. NATIONAL HEALTH SURVEY

The varied nature of the data desired for planning and evaluating all phases of public and private health work and the requirement that corresponding information be obtained for both the ill and the well population determine the main lines of content of the program of the U. S. National Health Survey. The Survey is not a single survey, with a single method and a fixed set of objectives. Rather it is a program of surveys, using different approaches and having changing end objectives as both the techniques and the needs for data evolve. But basic to all the present and future surveys is the fundamental idea that the data collection must refer to a representative population of people as the only source where all the desired information originates.

The program of the U. S. National Health Survey consists of three parts: a continuing nationwide Health Household-Interview Survey; a series of Special Surveys to gather information of a type for which the household-interview method is not appropriate; and, cutting across and supporting these two aspects of the program, a series of Methodological Studies designed to improve the techniques of collection of health statistics and to check the validity of data collected in the various surveys.

The first major aspect, the continuing household-interview survey, collects data by means of skilled interviewers from respondents within the households. It is designed to give a continuing flow of information on the volume and character of illness and disability, the medical care received, and related demographic, social, and economic variables.

The relatively high stage of development which has been attained in the household-interview method of data collection may tend to obscure the possibilities in other means of surveying morbidity in the population. In building a comprehensive picture of the health of the Nation, the household-interview method needs to be accompanied by additional means of obtaining information. These other means are loosely classified as the Special Surveys and constitute the second part of the total Survey program.

In this area principal attention is given initially to a continuing survey using a health-examination procedure for data collection. This Health Examination Survey undertakes to describe a somewhat different universe of morbid conditions than can be found from interviewing individuals on what they can and will report about themselves. This universe also differs from the universe of medically attended conditions which can be described from records of medical practice. The examinations reveal some undiagnosed illness and nonmanifest disease, and some conditions not thought of as illness by lay respondents. Within the disease categories at which they are aimed, they appraise the health of a cross-section of the sick and well population. The data they yield is expressible in precise medical terms—a situation which cannot be expected to obtain in the household interview survey.

The third part of the U. S. National Health Survey consists of the Methodological Studies. The systematic development of the field of health statistics is in such an early stage that established and proven methods covering all types of data collection do not yet exist. For this reason the study of technical methods must occupy a prominent place in the Survey program. Methodological Studies may be of several types. They may include studies for the calibration and improvement of the household-interview survey, pilot tests preparatory to the design and execution of the Special Surveys, studies related to the Health Examination Survey, and projects which have as their objective the validation of the data to be published from the various parts of the program.

Health Household-Interview Survey

The nationwide Health Household-Interview Survey covers the civilian population of the continental United States. As indicated above, its objective is to provide data on illnesses, impairments, accidents, and injuries of persons; on use of medical, dental, and hospital facilities; and on allied health-related topics. The survey is conducted under a design which provides continuous sampling of the population through household interviewing.

Building on the experience and committee recommendations described earlier in this report, the Public Health Service established objectives and general substantive requirements for the survey. Arrangements were then made with the Bureau of the Census for assistance and co-operation in many phases of the survey design and administration; and thus it became possible to take advantage of the pioneering work and experience of the Census Bureau in practical methods of population sampling and surveying and to utilize the staff and resources of that agency's comprehensive statistical organization. In accordance with detailed specifications and requirements drawn by the Public Health Service, the Bureau of the Census designed and selected the sample, conducts the field interviewing, edits and codes the questionnaires, and prepares tabulations. Physically, most of this editing and tabulation is performed on the Bureau's electronic computers. Analysis and publication of the survey results remain the responsibility of the Public Health Service.

The sample is a highly stratified, multistage probability structure. The first stage consists of an area sample of 372 from among approximately 1,900 geographically defined primary sampling units (PSU's) into which the continental United States has been divided. A PSU is a county, a group of contiguous counties, or a Standard Metropolitan Area.

Second and subsequent stages consist of a series of steps whereby the chosen PSU's are successively subdivided into smaller and smaller units of land to be included in the sample. For purposes of discussion, these steps may be telescoped into the process of selecting ultimate stage units, called segments. The segment is a parcel of physical property, defined by mapping (sometimes supplemented by on-the-spot listing of structures), and intended to contain an expected 6 households. Sample selection at all steps except the last is by probability proportionate to 1950 population; selection of segments in the final step is by a systematic random procedure.

Interviewing takes place throughout the United States continually, but any given household falls into the sample only once. The sample is selected in such a fashion that each week's interviewing represents a random sample of the population. Samples for successive weeks can be combined into larger samples for, say, a quarter or a year. Thus the design permits both continuing measurement of characteristics of high incidence or prevalence in the population and, through larger consolidated samples, more detailed analysis of less common characteristics and smaller categories.

Size of the over-all sample during the initial year of operation of the survey is indicated below:

	1 year	1 quarter	1 week
Persons	115,000	29,000	2,200
Households	36,000	9,000	700
Segments	6,000	1,500	115
Primary sampling units	372	372	about 60

Statistics from the interviews are produced through 2 stages of ratio estimation. In the first of these the ratio factor is the count of population in the 1950 decennial Census divided by the estimated 1950 population for the first-stage sample PSU's (treated as though there were no subsampling). In the second stage, ratios of the official Census Bureau current population figure to sample-produced estimates of current populations for 76 age-sex-color classes are utilized.

Interviewing is conducted in the home, whenever possible with the individual person if over 18 years of age and otherwise with a responsible adult member of the family. A check at the end of the first 6 months of operation revealed that the noninterview rate was 6 percent—1 percent from refusals, and the remainder from all other causes, principally because of households in which no one was found at home after repeated calls.

The questionnaire carries items for identification of households and persons and sociodemographic description of respondents. It includes—for each member of the household—questions on the presence or absence of illnesses, impairments, or conditions; the occurrence of accidents; and the utilization of medical, dental, and hospital care. For each person for whom they are appropriate, there are additional questions on the details of illnesses, accidents, and impairments and on medical, dental, and hospital care. For most questions, the recall period is the 2 weeks prior to the week in which the interview is conducted. But for some items which are of low incidence and for which the memory loss is not excessive—items such as hospitalizations—recall extends over the 12-month period previous to interview. It is contemplated that a basic core of inquiries will remain on the questionnaire. This basic core will be supplemented from time to time by additional questions which will be carried temporarily for 1 or 2 calendar quarters.

The interviewing process is structured rigidly through a very detailed set of instructions in a 250-

page Interviewer's Manual. Further constraints on the interview are found in a series of interviewer training steps, including group sessions, supervisory observation of interviewing, and "home exercises"—written answers to centrally prepared problems and questions—given periodically to interviewers.

The health interviews have been planned with primary focus on national statistics. But weight has been given also to comparative data for 11 geographic sections of the country and for 4 different classes of population concentrations. The population concentration classes are: the urban territory in Standard Metropolitan areas as a group; the rural territory in Standard Metropolitan areas as a group; the urban territory in the non-Standard Metropolitan areas as a group; and the rural territory in the non-Standard Metropolitan areas as a group.

A number of procedures are directed to improving the methods in the household-interview survey, evaluating the results and appraising the reliability of the data. Three lines of activity are worth particular mention, although the program includes others.

Since the interviews follow a probability design, sampling variances can be and are computed for the principal published statistics. Furthermore, components of variance from the different sectors of the design are calculated, to permit analysis of the basic design and thus possible future increases in efficiency of design.

Interviewer variation and bias are important potential hazards to household interviewing on health conditions. Accordingly, the survey includes a reinterviewing program as an integral phase of operations. For about one-sixth of all households, and 5 percent of all persons about whom the regular interviewers secure information, there is a reinterview conducted by highly trained regional field supervisors. Information from this program becomes input for design considerations, as well as a guide to selecting, training, and supervising interviewers.

A third area of evaluation lies in a group of Methodological Studies which utilize alternative measures and sources to provide comparative data and which are the subject of more detailed comments in a later section of this report.

Special Surveys

As indicated earlier, the special survey aspect of the program is designed to collect a variety of health statistics by methods other than the household-interview technique. The initial special surveys described below do not indicate the full range of projects which might be undertaken in the future. These initial projects will be expanded, curtailed, or replaced by other surveys with different objectives or methods, in line with changing needs and methodology developments. By their nature or in consequence of the requirements of the Survey, some projects need to be carried on continuously, others just once in a span of years.

From the beginning, the Health Examination Survey has occupied a position of prime importance among the first Special Surveys—and indeed in the U. S. National Health Survey.

According to preliminary plans, the Health Examination Survey will collect health data on a small representative sample of the noninstitutional civilian population by means of a direct, single-visit examination of the individuals in the sample. Primarily, the diagnostic data will be limited to chronic diseases of high frequency for which:

1. standard diagnostic classifications and criteria exist and are well accepted by the medical profession;
2. simple, practical, sensitive, and valid procedures are available; and
3. diagnosis can be made from the findings obtainable on a single visit.

The cost of the examination procedure and the losses from dropouts on repeated examinations dictate that the examination be limited to a single visit. Some of the conditions on which attention will be centered are heart disease, hypertension, arthritis and rheumatism, diabetes, visual defects, impaired hearing, dental conditions, pulmonary tuberculosis and other chest conditions, and physical malformations and impairments. The lack of appropriate procedures and the limitations of the examination itself make it impractical, at least in the early phases of the Survey, to examine for many other conditions of great concern, such as mental illnesses, neurological diseases and impairments, cancer, and allergies.

The health examination survey is being designed to start with a small, clustered national sample of the population based upon a subsample of the primary sampling units which are used for the household-interview survey. The first step will be to give the prospective examinees and their families the regular NHS household interview. This furnishes the demographic characteristics of the population for the examined sample and permits comparison of household-interview data on morbidity with physical-examination data. The second step in the procedure is to arrange appointments for the designated individuals to be examined at the examining center. Bedridden persons and others who cannot appropriately be brought to the examining center are to be examined in their homes. The third step of the planned procedure is to examine, test, and measure by means of carefully standardized techniques.

The basic elements of the examination on adults, as planned at present, are:

1. medical history
2. measurement of height, weight, girth (arm and waist), and skinfolds

3. audiometric test
4. visual acuity test
5. blood pressure
6. X-ray of the chest (14 x 17 inches), hands, and feet
7. dental examination by a dentist
8. physical examination by an internist
9. electrocardiogram (12 lead)
10. venipuncture and collection of a urine specimen

Important features of the health examination are the results of tests and measurements which, because they are drawn from a representative sample of the noninstitutional general population, will provide baseline data for important physical and physiological variables. Thus it is planned to record selected physical measurements; to perform on a blood specimen a serologic test for syphilis, determinations of blood sugar, hematocrit, and serum cholesterol levels, and a bentonite flocculation test; and to test the urine for sugar, and, in the case of males, albumin.

Except for the tests that must be made at the time of the collection, specimens are to be shipped to a central laboratory to insure fully standardized tests and interpretation. Similarly, electrocardiograms and X-rays are to be read centrally to obtain uniformity in interpretation. Finally, the internists' findings on physical examination together with the medical history, and the laboratory, X-ray, and electrocardiographic results are to be brought together for evaluation and final diagnosis by a single professional panel. The entire procedure is designed to produce maximum uniformity in the examinations and their interpretation, as well as to measure the degree of precision attained in the examining process.

It might be emphasized that the sole purpose of the Health Examination Survey is to provide accurate and comparable national estimates, expressed in acceptable clinical terms. Screening or case finding preliminary to any proposed course of therapy is not one of the purposes of the survey.

Other types of studies are also a part of the Special Surveys program. For example, the universe of hospitalized illness and injury may be studied from a sampling of hospital discharges. Similarly, medically attended illness may be surveyed by appropriate samplings of doctors and their practices. Such surveys require extensive methodological study, however, before they can be put into effective operation. For this reason, they have not been included in the early stages of the National Health Survey, though they are definitely appropriate to the long-range development of the program.

Also, as the Special Surveys program develops, various additional types of surveys can be brought to bear on specific gaps in the data otherwise collected. For example, the household-interview technique may fail to elicit very reliable information on persons who have died during the period of recall for the interview. Accordingly, the interview seeks data on only the population living at the time of interview; but by excluding information on decedents, it fails to provide an estimate of total hospitalizations during the year. To fill this gap special investigation of the experience of those who died during the period is needed. For this, data may be developed through followbacks to hospitals and informants from a sample of deaths drawn from official death certificates. Studies of this character are scheduled from time to time as determined by the analytic needs of the household-interview or other surveys.

Methodological Studies

The primary purposes of the Methodological Studies are to appraise the effectiveness and efficiency with which various aspects of the Survey program are meeting their objectives, and to develop new and improved methods for attaining the goals of the Survey; to design studies and devise data-collection methods in connection with new types of morbidity measurement; and to conduct pilot projects wherein new methods and new undertakings are readied for full Survey use.

Some methodological studies are conducted entirely by the National Health Survey staff, but studies involving special field collection of data and extending over any long-time period are usually carried on jointly with the Bureau of the Census or other Government agencies, or are performed by nongovernmental research organizations chosen for their competence and interest in the particular areas of study.

In connection with the household interviewing, the Census Bureau takes a major responsibility for carrying out special methodological studies in cooperation with the Health Survey staff. These types of methodological investigations relate directly to the improvement and validation of interview-survey techniques as applied to health. Problems under study deal with the memory factor in interview response, the clarity of respondent understanding, the actual knowledge which respondents have about health, and better methods of eliciting reliable response.

Other types of studies are based on the use of existing medical records in comparison with interview responses. For medically attended conditions, the larger problem appears to be one of underreporting rather than overreporting. Household interviews can be given in a sample of households containing persons known to have been medically attended, and the pertinent information elicited is checked against the medical records for these individuals. The reconciliation and evaluation thereof is made in terms of what the individuals could be expected to report on the basis of the information given them and their understanding of their own problems. Similar studies which are confined to

reconciling household-interview response on hospitalization experience can be conducted by checking against hospital records.

To study overreporting in household interview requires a somewhat more complicated and costly procedure, since checkbacks have to be made to scattered record sources of varying standards, and identification of the respondent with his record becomes difficult. As a result, only limited investigations in this direction have as yet been designed.

The proposed Health Examination Survey requires extensive methodological study and pretesting. At the outset, it was necessary to develop a new set of procedures and to test them. These developmental studies have included:

1. Testing of a single-visit cardiovascular examination using controlled and standardized techniques. In evaluating the health examination procedure, some studies have been required relating the findings in a single-visit special purpose examination to a complete medical work-up as performed in good medical practice. Also, in some instances, interobserver differences have been studied with respect to findings in the same group of examinees through dual examinations.
2. Structuring and testing medical history taking with respect to uniformity of response, productivity, and optimum type of history taker. In this study of medical history taking, comparative investigations of completely structured oral interviews as compared with open-ended interviews and self-administered questionnaires have been undertaken. Also, tests were conducted to determine the relative efficacy of lay interviewers and nurse interviewers.
3. Studying attitudes and the factors in acceptance or rejection of a health examination for survey purposes. The problem of obtaining co-operation from the general public in presenting and permitting themselves to be examined for survey purposes is a matter of continuing concern. Even though the social, demographic, and psychological factors in such co-operation and noncooperation may be identified in any one particular study, there is no guarantee that these factors persist in relation to each other or to the object in view. Additionally, being able to identify factors does not necessarily lead to effective arrangements for reducing the size of the nonexamined portion of the sample—the nonresponse. Since the degree of nonresponse to voluntary health examinations in almost any setting is substantial, it is essential to maintain continuing studies on this problem.

Continuing studies are necessary also in connection with the medical content of the health examination and the procedure for its administration. At the outset, attention has been confined to examining adults, for practical reasons. Additional careful methodological studies will be required before the examination can be extended to children. The ever-present problems of keeping any examination procedure uniform, measuring interobserver variance, and determining the validity of the examination generate repeated studies of these questions.

In like vein, additional study is needed before the health examination can be expanded to cover mental illness and other conditions of importance. In the expectation that such an expansion can eventually be effected, it is necessary to keep abreast of newer and better techniques for diagnoses. In addition, techniques for diagnosing conditions not initially covered in the health examinations must be field tested in the survey setting before they can be incorporated into the survey.

In its initial work, the U. S. National Health Survey has depended heavily on methodology used in other surveys or closely related activities. However, in order to develop data for many important areas of concern, the Survey faces the problem of opening up new avenues of investigation. Methodological studies for this purpose are difficult, costly, and time consuming, and necessarily develop slowly. To illustrate, the determination of the economic impact of illness and disability will require extensive methodological work. Similarly, the problem of measuring with any precision the amounts and types of services received for or because of illness and disability has no easy solution. Problems such as these provide an unending source of methodological inquiries. Decisions on priorities rest on the availability of investigative talent and resources, the immediacy of the problem, and the general status of knowledge in these areas.

REPORTING THE RESULTS

As indicated earlier, a basic premise governing the dissemination of the Survey results is that findings should be made available to interested persons as rapidly as possible. In line with this concept the publication plan contemplates the issuance of most of the Survey reports, topic by topic, as contrasted with the holding of tabulated material for a more comprehensive but necessarily delayed periodical publication such as an annual or semiannual volume.

A second major consideration is of course that reports should be in a form usable to the largest number of consumers of health statistics. It is this consideration that dictates the arrangement of reports in series, to the extent that this device is applicable, the reports within each series being related to each other in terms of the source from which the information is drawn, the uses of the data, or other appropriate criteria. Thus Series A

of the health statistics reports carries technical and methodological material and includes reports on such subjects as the organization and operation of the Survey program, the definitions and concepts used in the different surveys, and the design of the sample for the household-interview survey. Series B presents the substantive results of the household interviewing. Other series will be initiated as the need for them arises.

The time schedule for issuance of publications is of course dependent upon a number of circumstances, but in the early stages of the program it is contingent on the availability of sufficient material. For example, for most topics covered by the household-interview questionnaire, it is necessary to accumulate data from a year of interviewing in order to compile detailed national statistics; and a 1- or 2-year sample is needed also for publication of selected data by geographical regions. For a number of the topics, however, preliminary reports for the Nation as a whole can be based on 13 or 26 weeks of interviewing. The first of these appeared in the spring of 1958, some 9 months after the start of the nationwide household interviewing. At the same time, the early reporting of preliminary results is not intended to preclude a more intensive treatment of the same topics at a later date. The first of the Series B reports were based on a minimum of data. When more data have been assembled, it will be possible to amplify the reports on these topics, introduce more variables, add detail, etc.

Nor does the system of issuing reports in established series preclude the preparation of such additional reports as circumstances and feasibilities may warrant. In addition to the reports issued in series, special publications may be prepared from time to time. An example is the weekly Provisional Tabulation - Current Statistics on Respiratory Diseases. Partly because the household-interview sample is not large enough to yield current estimates for items of low incidence or prevalence, it had not been planned that any tabulations by week or month would be made. However, when it appeared that in the fall of 1957 cases of influenza-like diseases would have a higher than usual incidence, an investigation was made to see if in this instance the household-interview data would yield useful information by frequent time intervals. A special tabulation of questionnaires showing upper respiratory diseases severe enough to cause people to go to bed for a day or more indicated that the data were adequate for the basis of a series of new cases by week and another on average number of persons confined to bed each day; and these two indices were incorporated in a weekly publication beginning in November. A special publication such as this would be continued only through the period of its topical interest.

In addition to the Survey's own publications, Public Health Reports and professional journals, of course, serve as a means of circulating information from the program. These media are particularly appropriate for some of the research papers emanating from the Special Surveys and Methodological Studies. The contractors and cooperating agencies working on these aspects of the Survey are oftentimes in a position to contribute notably to the literature in specialized subject areas.

Finally, the Survey attaches importance to the obligation stated in the law to "Make available, to health officials, scientists, and appropriate public and other nonprofit institutions and organizations, technical advice and assistance on the application of statistical methods to experiments, studies, and surveys in health and medical fields." The consultation which this responsibility implies is an important part of the over-all plans for disseminating the knowledge the Survey produces.

POTENTIALITIES AND LIMITATIONS OF THE SURVEY PROGRAM

It is obvious that the Survey program, if effectively pursued over a continuing period of time, will provide a comprehensive picture of illness, both with respect to coverage of the population and to inclusion of the range of types of illness. However, recognition of the potential value of the Survey in defining more clearly the extent of illness and disability in the Nation should not obscure the fact that the program has definite limitations.

With regard to the Health Household-Interview Survey, the facts concerning the circumstances of illness or injury and the resulting action taken by the individual—such as going to bed or seeing a physician—can be obtained more accurately from household members than from any other source. The same is true of the demographic, economic, and social information with which it is useful to relate the morbidity information. However, there are limitations to the accuracy of the diagnostic information collected. The household respondent, at best, can pass on to the interviewer only the information the physician has given to the family, and he may not have been told about a condition or may have misunderstood or forgotten what the physician said. For conditions not medically attended, the diagnostic information supplied by a household respondent may be no more than a description of symptoms, and for nonmanifest disease the household interview will report no condition.

Thus, when clinical detail or specific diagnoses are required, the information procured by interview does not suffice. It must be supplemented by data such as the health examinations produce. However, the Health Examination Survey has its own limitations. Because of the high cost of performing the examinations and the difficult logistic problems, the sample must be relatively small. As a result, this survey cannot supply the volume of

materials on the demographic, social, and economic aspects of health which is available from the household interviewing. A disadvantage of the health examination given only once is that it cannot provide diagnoses of the many conditions which require repeated and continuing observation and tests before they can be identified. Also, the limited character of the examination precludes the use of differential diagnostic tests or complicated procedures. A further general limitation of the Health Examination Survey is the size of the nonresponse. However, it is hoped that appropriate use of the information elicited in the household interview for the health examination sample will minimize the impact of the nonresponse on final results.

The Health Examination Survey, despite its limitations, provides a particularly good basis for appraising important segments of the household-interview data to make them more understandable and more useful. The combination of the 2 types of survey devices permits application of the feed-back principle which sharpens and improves the image yielded by each device.

Together, the 2 types of surveys provide useful information on a wide range of variables. However, under the initial plans, the sample sizes are such as to give estimates for major geographical areas only. The size of even the household survey, which is many times greater than that possible for a survey by health examinations, is not sufficient to give reliable estimates for persons in small groups of the population or for diseases of low frequency.

The statistics from the program do not provide critical tests of clinical and epidemiological hypotheses. For example, the program could not test the hypotheses that a specific vaccine would prevent a certain disease. For this, an experimental design, a control group, and similar conditions would be required. The program may, however, suggest hypotheses that can be tested by other appropriate means.

Aside from limitations such as these, imposed by the methods being used and the resources available, the program is free to collect any statistics on the incidence, prevalence, or other measures of disease, injury, or impairment; the disability or other effects of this morbidity; and the medical care used in its treatment. The sole guide, within the technical and administrative possibilities, is the usefulness of the data.

APPENDIX I

(Reprinted below is the text of Public Health Service Publication No. 333. A list of the members of the U. S. National Committee on Vital and Health Statistics and of the Subcommittee on National Morbidity Survey appears on page 34. This Report was published in October 1953.)

Recommendations for the Collection of Data on the Distribution and Effects of Illness, Injuries, and Impairments in the United States

A Report of the Subcommittee on National Morbidity Survey

U. S. National Committee on Vital and Health Statistics

PART I

Summary

This report contains a review of the needs for statistics on illness in the general population, and the current and potential uses of morbidity statistics and related data. On the basis of this review and study of the present sources of morbidity and medical care utilization statistics, a proposal is made for a national morbidity survey to provide needed information on illness in the United States. The report describes the data collection mechanism with specifications as to the types of data to be secured, the geographic area to be covered, and accuracy of data.

Part II of this report provides background information and a general frame of reference for the parts which follow. Included are statements regarding the work of the two earlier ad hoc committees which did certain exploratory work in this general area, and the specific charge to this Subcommittee by the U. S. National Committee on Vital and Health Statistics.

Part III presents an outline of some of the more important current and potential uses of morbidity statistics and related data.

In Part IV there is discussion of the general types of data, the degree of detail and the frequency of collection which appear necessary to serve the purposes outlined in Part III.

Part V is largely devoted to consideration of the question of whether existing programs of data collection can serve to satisfy the needs for morbidity statistics which have been identified. First, there is discussion of recent improvements in the methodology of data collection in this field. Next, the present sources of morbidity and medical care

utilization statistics are reviewed and evaluated. Finally, the conclusion is reached that adequate current morbidity data on a national basis cannot be derived from any of the present sources.

Parts VI and VII contain the recommendation that a continuing national morbidity survey be conducted together with proposals regarding the types of data which should be collected and a proposed design for such a survey. The recommendations may be summarized as follows:

1. That a continuing national morbidity survey be conducted which is adequate to provide statistical estimates for 50 regions of the country at intervals of two years and estimates for the nation as a whole at quarterly intervals. The purpose of this survey would be to obtain data on the prevalence and incidence of disease, injuries, and impairments, on the nature and duration of the resulting disability, and on the amount and type of medical care received. The data should be obtained from a probability sample of households.

2. That a series of special studies be undertaken in addition to the continuing national survey. The principal purposes of these studies would be as follows:

(a) To obtain data on undiagnosed and nonmanifest disease, by means of laboratory screening, detection, and physical examinations of subsamples drawn from the general surveys.

(b) To provide other types of auxiliary data, and to study methodological problems relating to the measurement of morbidity.

PART II

The Work of Previous Committees and the Task of the Present Subcommittee

Since its establishment in January 1949, the United States National Committee on Vital and Health Statistics has given attention on several occasions to the need for more adequate national morbidity statistics. Two successive ad hoc committees were established by the Chairman of the National Committee "to frame the problems in morbidity statistics, including chronic diseases and medical care statistics, in order that morbidity data may be directly related to demographic factors."

In December 1949, the first of these committees made its report which was a review of the background of the problem. It also contained an outline of the major sources of morbidity and other vital and demographic statistics. The broad approach taken by this committee is indicated by the fact that recommendations were made in the following fields:

1. Study and revision of reporting system for notifiable diseases.
2. Adaptation of survey techniques for health purposes.
3. Chronic disease statistics.
4. Development of standards and definitions for hospital morbidity statistics.
5. Study of means of obtaining adequate current population data for small areas.
6. Longitudinal studies.
7. Place of case registers in morbidity statistics.
8. Development of mechanism for providing civilian casualty statistics in time of war.

The second ad hoc committee submitted its report in October 1950. This covered an almost equally broad area and recommendations were made for further study in each of the fields listed above except the last but with the addition of a recommendation regarding the development of standards and definitions for general morbidity statistics. Moreover, by this time the committee was able to take note of several new facts: (1) that a thorough overhauling of the notifiable disease reporting system had been initiated by the Public Health Service; and (2) that a special Subcommittee on Hospital Morbidity Statistics had been set up to which the problem of standards and definitions for hospital morbidity statistics could be referred.

Both committees had urged an investigation of the methodological problems in the collection of statistics on chronic illness and disability by means of surveys. The types of investigations needed were listed under three major headings:

A. Study of survey techniques.
B. Investigation of specialized health, hospital, and medical records for utilization on subsamples of the population.
C. Investigation of specialized respondents such as physicians for utilization on subsamples of the population.

Even as these recommendations were being made, moves were under way to study all three of these matters in conjunction with surveys in several parts of the country. As will be indicated in Part V of this report, answers to some of the

methodological questions will soon be available from studies in New York City; Hunterdon County, New Jersey; San Jose County, California; and Pittsburgh, Pennsylvania. Other experiments by the Public Health Service and new surveys now being planned will provide further information that should lead to improvements in techniques.

With the knowledge that the time was at hand for specific recommendations regarding the collection of national data on morbidity and medical care by means of surveys, the Chairman of the National Committee established the present Subcommittee in February 1951 and charged it with the task of drafting "a plan for a national morbidity survey keeping in view the interests of local areas." Because of ambiguity in the use of the term, the Subcommittee was also asked to consider a definition of "morbidity."

The Subcommittee has attempted to fulfill this task. It reviewed carefully the reports of the ad hoc committees and attempted to take up where these groups had left off. The Subcommittee has studied the needs for morbidity statistics, the present sources and their inadequacies, and the type of survey mechanism and special studies that would meet the apparent needs. The conclusions and recommendations are contained in the sections that follow.

To the matter of the definition of "morbidity" the Subcommittee gave careful attention. No precise limited definition of the term has been made for the following reasons:

1. The term "morbidity" is and should remain a general word to be used to designate illness (manifest and nonmanifest), injuries, and impairments.

2. The definition of the particular morbid conditions that one wishes to count or describe in studies and surveys must vary according to the objectives of the particular study or survey. Hence, no one definition of a "morbid condition" can easily be adhered to.

3. For any regular program of national morbidity surveys an operational definition of what is to be counted or described must be devised. This operational definition must be shaped to suit the particular purposes that the statistics are to serve and yet must be a definition that can actually be applied in the field.

4. The task of devising an operational definition will be left to those who will carry out the more detailed phases of planning for the program of national morbidity surveys.

PART III

Current and Potential Uses of Morbidity and Related Data

"Morbidity statistics," as used in this report, means quantitative data usable as measures of deviations from health in the general population or in specific population groups. The term does not denote any statistics regarding health or sickness which, while meaningful for other purposes, cannot be related to a particular population at risk.

The purpose of this section is to outline some of the practical questions relating to health and medical care which require accurate and detailed morbidity statistics for their solution. It is realized that an important element of the problem is the specification of the degree of accuracy and detail needed in morbidity statistics for each of the uses listed. However, discussion of these matters has not been attempted in this outline.

There will be found below a summary of the broad areas in which demands for morbidity data exist, as determined from the experience of the members of the Subcommittee, from the files of the Public Health Service, from the responses of a limited number of potential users of morbidity data who were questioned by members of the Subcommittee, and from other sources.[1] It must be emphasized that there is no implication intended that all of the data needed can feasibly be obtained, nor that collection of data on all the items outlined below would necessarily be warranted in a national morbidity survey.

The categories in the outline are not intended to be mutually exclusive in every instance.

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[1] It is believed that a more complete and representative survey of the needs of potential consumers for morbidity data should be made. To do this task thoroughly would require more time and resources than the Subcommittee has available. However, certain letters and other evidences of needs and uses of morbidity statistics on the general population collected by the Subcommittee are on file.

Broad Areas of Need for Morbidity Statistics and Related Data

A. Statistics for use as a guide to administrative planning and evaluation of official and voluntary programs in the field of health.

In this area morbidity statistics would be used directly for the purposes at hand.

Examples in this area are:

(1) Use of various measures of morbidity and disability for ranking of problems of public health in order of importance and, in general, for determining how resources should be divided among numerous programs.

(2) Checking on the adequacy of reporting of notifiable diseases and establishing baselines of endemic prevalence.

(3) Provision of quantitative data for planning new programs of control and for estimating probable maximum expenditures needed for such programs.

(4) Determination of trends in incidence and prevalence of specific diseases for evaluation of the effect of preventive and therapeutic innovations.

(5) Cohort-type studies for evaluation of preventive and therapeutic measures.

B. Statistics for the evaluation of the current morbidity experience in relation to the provision of medical and dental services, facilities and personnel for meeting the health needs of the nation or of a community.

(1) Provision of quantitative information on which to base sound estimates of needs for general, chronic, and other special hospital facilities, nursing home beds, and home care facilities, either in the nation or in particular localities.

(2) Estimation of the numbers of persons requiring particular rehabilitation services, to assist in planning for the provision of such services.

(3) Statistics on the frequency of chronic disease, injuries, and resulting disability, for use in considering the cost of extending the scope of medical care insurance or compensatory insurance of various types.

(4) Numbers of persons covered by various types of insurance plans, and amounts spent and methods of payment for medical care, so that study of the economics of medical care may reflect modern conditions.

(5) Statistics on the use of medical services and personnel in various income and occupation groups, for establishing the actuarial base of new insurance plans designed to cover the medical expenses of particular groups of the population, such as the members of a fraternal order.

(6) Statistics on the various categories of disease and on the receipt of medical care, to be used to guide the planning of medical and nursing education by indicating where emphasis in education can most usefully be placed.

C. Statistics for medical research. While morbidity statistics from surveys of the general population cannot usually be used to make conclusive tests of hypotheses in medical research, they can be useful in suggesting hypotheses for further testing and in providing other aids to research. Examples in this area of use are:

(1) The provision of rosters of cases for the intensive investigation of disease etiology.

(2) Information on the association between the incidence or prevalence of various diseases and demographic factors, such as age, sex, marital status, occupation, and economic status.

(3) Provision of data to help research workers in the field of preventive medicine select segments of the population having the greatest risk of developing specified morbid conditions, thereby permitting the selection of smaller groups for followup in tests of preventive measures.

(4) Statistics on the prevalence of certain diseases, for use in estimating gene frequencies in the population.

(5) Geographic distribution of diseases, such as allergic conditions, nutritional diseases, and nephritis, to provide clues as to etiology.

(6) Description of the natural history of diseases, both acute and chronic, in representative samples of the population to provide more quantitative knowledge of the preventive aspects of the disease as it occurs in nature.

D. Statistics relating to certain manpower problems and civilian defense. Both civilian and military agencies concerned with problems of manpower civil defense need information on the physical fitness of the population and the numbers of persons falling into various categories by type and degree of disability and occupation. Examples in this area are:

(1) Information on absenteeism resulting from disease and injury, for use in estimating economic loss to industry through various types of morbidity.

(2) Information on the numbers of persons with chronic diseases and handicapping conditions by type of disease or handicap, and the employment status of such persons, for use in estimating potential additions to the labor force.

(3) Similar information on young men of draft age, for estimates of numbers who might be drawn into the Armed Services in limited duty categories.

(4) Data on the morbidity rates of handicapped persons as compared with the nonhandicapped; data on the personnel and facilities required to correct handicaps that are subject to correction, for the use of industry and the Armed Services.

(5) Statistics to answer the following types of questions for civilian defense agencies: (a) What proportion of physicians and nurses are physically fit so as to be available for duty in the event of bombing attacks or for other types of disaster? (b) What proportion of the general population in an area would need special attention because of disability in making plans for evacuation of the population in anticipation of, or following, bombing attacks? (c) What proportion of the population could be considered suitable as a potential source for providing blood? (d) What proportion of the population would require special attention such as extra rations or vitamin supplies, in planning for the nutrition needs of a bombed area? (e) In the event that evacuation camps are established, what proportion of the population of these camps would require such drugs as insulin for diabetes or liver extract for pernicious anemia? (f) What are the endemic levels of the incidence of nonreportable acute diseases, such as gastroenteritis, in planning for defense against biological warfare?

(6) Incidence of chronic disease in older workers, for the use of industrial firms interested in knowing the risk in employing such workers.

E. Statistics for the use of drug firms and appliance manufacturers in estimating markets for particular preparations or appliances. This use requires not only the usual types of information on incidence and prevalence of diseases, injuries, and impairments, but also statistics on the current utilization of medical services of various types, for example, frequency of particular operations, and also frequency of prescriptions and of use of hearing aids, artificial limbs, and so forth. Incidence and prevalence of disabilities by part of the body affected are frequently needed.

F. Statistics for public health education programs. This is one of the most frequent of the types of request for statistical information received by health agencies. Examples in this area of use are:

(1) Estimates of the national incidence of accidental injuries by type and degree of disability caused, for accident prevention agencies; estimates of the prevalence of cerebral palsy, multiple sclerosis, blindness, deafness, and many other diseases and impairments, for voluntary health agencies concerned with these conditions.

(2) Similar information for use in advertising compaigns with a public health education objective.

PART IV

Types of Data, Detail, and Frequency of Collection Required

General Morbidity Data

A minimal adequate program to provide statistics for the uses listed in Part III would necessitate collection of data of national scope on incidence, prevalence and the duration of disability for the major categories of disease and impairment. The data should allow subclassification by sex, by several age groups, and by employment, educational, income and occupational status, and should have sufficient regional geographic detail to be usable by the Health Officers of States or cities.

The amount of diagnostic detail required varies greatly with the particular application. A classification by major diagnostic categories would probably be sufficient for a general appraisal of the principal health problems in an area, as mentioned under heading A of Part III. With some diseases, much more detail would be needed in order to provide background data for estimates of the professional services and facilities needed in a program of prevention and care. For many of the uses described in Part III, it appears that the data should include undiagnosed illness. Nonmanifest disease or heretofore unrecognized cases of disease should also be included, at least in so far as appropriate followup measures can be specified.

In order to be most useful, the general morbidity data must include more than simple incidence and prevalence rates. The data must describe:

1. Some of the facts about the natural history of morbid conditions, such as duration, type, and extent of incapacities (both primary and secondary).

2. Some of the facts about the social consequences of morbid conditions, such as: changes in employment status, source of support, housekeeping assistance and nursing service required.

3. Morbidity indices should be related to data concerning membership in prepaid health insurance plans, and the types and amounts of services received from such plans.

4. The data should include information on utilization of medical services and facilities. The following types are of interest:

(a) Physician's services (classified as to home visits of general practitioners, office visits to general practitioners, office visits to specialists, hospital visits of physicians of all types).

(b) Dental services (classified as to visits to general practitioners, visits to specialists).

(c) Nursing services (classified as to home visits, services in hospitals, services in other institutions).

(d) Hospital services (classified as to services in general, tuberculosis, mental, and other types of hospitals, and "near hospital" care, such as nursing home care and convalescent home care).

5. Another axis of classification of the medical services and facilities is also frequently needed:

(a) Preventive services (classified as primary - prevention of disease occurrence; and secondary - prevention of disease progression by periodic examinations, prevention of sequelae, and other preventive services).

(b) Diagnosis and treatment services (classified as to inpatient and outpatient services).

(c) Rehabilitation services (classified as to inpatient and outpatient services).

Frequency of Collection

The requests for data citied in Part III do not specifically mention any particular frequency of collection that would be desired. It is to be noted, however, that practically all the data requested are for the purpose of future planning of some kind. Thus, the requests are predicated on the assumption that the data would be current, or at least sufficiently up to date so that plans for the future could safely be based upon them. How up to date the data need be in practice depends, of course, on the rapidity with which changes in morbidity or in the major health problems occur. This will vary from item to item.

An efficient program of data collection to meet the requests in Part III should have the following features. It should permit the publication of basic data on the prevalence and incidence of disease, injuries, and impairments, on the nature and duration of the resulting disability, and on the amount and type of medical care received, at intervals of two years. The program should also have considerable flexibility for the following reasons:

1. For some data, publication at less frequent intervals than two years will be adequate. The program should permit such data to be obtained at relatively little extra expense.

2. Although it is possible to rank the various requests for data, at least roughly, in their order of importance at the present time, this ranking will change as time proceeds. The program should make it possible to obtain, at relatively short notice, data which become of paramount importance.

3. In the event of an intensification of the international crisis, there may be a sudden demand for data at more frequent intervals or for certain specific data at very short notice.

As will be discussed in Part VI, these considerations point toward a continuous program of data collection, rather than toward a rigid, intermittent schedule of surveys any two or five years apart.

Geographical Detail

Most of the needs for morbidity data, of which the examples in Part III are illustrative, are encountered on national, regional, and local levels; therefore data are necessary that will have sufficient geographic specificity to be useful at all of these levels. The designation of the degree of geographic detail in which statistics are required for the purposes of, let us say, the Health Officer of a city is, of course, a function of the accuracy demands of the particular job. However, the specification of desirable geographic detail is further complicated by a lack of data on the geographical variation of the common indices of morbidity. If a particular index is relatively stable from one area to another, then obviously the Health Officer's needs may be adequately served by population rates for all cities of the size of his own in the broad geographic region of the country in which the city lies. On the other hand, if geographic variation is very great, perhaps nothing will serve the Health Officer but data specifically relating to his own city. For the time being this matter must be settled on the basis of the judgment of experts unsupported by evidence. Such judgment will seek

to find a reasonable compromise between the ideal of great geographic detail and the practical dictates of cost. As is well known, the cost of obtaining the data increases rapidly with the geographic detail required.

Individual Studies

Several of the examples cited in Part III would require specialized studies which have little relation to one another or to a national program of data collection. Examples are: the provision of rosters of cases for investigation of disease etiology [C(1)], and statistics to indicate the proportion of physically fit physicians and nurses [D 5(a)]. Such studies would be best conducted individually by the interested bodies.

Interest has also been expressed in studies showing: (1) the modifications brought about in the usual course of chronic diseases by adequate professional care; and (2) the manner in which some of the social consequences of prolonged illness may be avoided and economic savings brought about by adequate medical, social, and rehabilitation services. However, the Subcommittee felt that these were beyond the scope of its assignment. Such investigations should be made by means of independent studies.

The use of the indices of morbidity and medical care produced by this survey to estimate the personnel, facilities and services required in meeting the health needs of the nation or of a community presents difficult problems. No single approach to such estimation is ideal but several methods may be considered. These are discussed in the Appendix.

PART V

Review of Present Sources of National Morbidity Statistics

Those unfamiliar with sources of morbidity statistics relating to the general population sometimes have the impression that there is no dearth of estimates of the prevalence of various diseases and impairments. Speeches by public officials, testimony before Congressional committees, reports of conferences and statistical "fact" books are full of estimates that might seem to satisfy the needs for such statistics. If the genealogy of these estimates is traced back (and their lineage is often complex), a remarkably high proportion of them are found to have descended from the findings of the National Health Survey of 1935-1936.

The National Health Survey

This survey was an attempt on the part of the Public Health Service to find out the number, age, sex, income level, and occupation of people in the urban population of the United States who had experienced disabling illness within the 12 months prior to the visit of an interviewer or who at the time of the interview were believed to have a specified chronic illness or impairment (whether disabling or not). The Survey, despite its magnitude (737,000 households) and complexity was a very well-planned project. The staff included many competent statisticians and, because of the prevailing labor market and the cooperation of the U. S. Employment Service and the W. P. A., it was possible to obtain a relatively high grade of workers for interviewing, coding, and so forth. Though critics have lately pointed to a number of shortcomings of the survey plan, the knowledge of survey design upon which these criticisms are based was, for the most part, not available to those who did the planning. The period, 1935-1950, was one of very rapid development in all phases of the science of data collection in population surveys.

There is no question but that the data from the National Health Survey have been put to very wide use. Owing to the lack of really appropriate statistics, the information has been made to serve purposes for which it was not well suited. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, in testimony before the Subcommittee on Health of the Senate Committee on Labor and Public Welfare (August 23, 1951), stated as follows: "In the past 15 years, findings from the National Health Survey of 1935-1936 have formed the basis for about two hundred reports, articles, and comparative studies. The survey data have been used to project estimates for more recent years and for individual communities in an attempt to measure needs for hospital and other facilities and community services. Many of the National Health Survey figures are of somewhat doubtful applicability to present-day conditions."

The extensive use of that material right up to the present time, even by people who were aware of the risks involved in using it, is of itself a strong indication that morbidity statistics are in great demand.

Advances in Sampling and Survey Techniques

No survey of national scope undertaking to obtain more than a few very limited items on illness and its consequences has been made since the National Health Survey. However, public health and sampling statisticians are now in a much better position to say how a comprehensive survey or surveys should be planned in order to produce useful and accurate data. The following areas of advance are illustrative:

1. From the uses to which the results of the National Health Survey and other studies have been put we have learned more about the types of data it is necessary to have in a well-rounded program of collection.

2. Much has been learned from research done in Census work and in non-Governmental fields about better methods of eliciting accurate data by means of questionnaires and interviews. In the design of schedules there have been some marked improvements.

3. The developments in mass X-ray surveys and the use of multiphasic screening techniques have taught us a great deal about the problems of detecting nonmanifest disease. Experiments with the use of symptom schedules have had some success in picking out persons who are in need of medical care but who for one reason or another have not sought medical assistance.

4. Longitudinal and cohort-type studies have provided new information about the characteristics of illness, particularly chronic illness, the frequency of disabling attacks, the clustering within households, and similar data. The experience in these intensive studies will prove useful in designing the more extensive type of survey.

5. The very rapid advances that have been made in the development of applied sampling theory have showed how it is possible to design probability samples of human populations that provide much greater sampling precision per dollar expended, and during this development of theory there has been a wholesome emphasis on making the theory and the field application coincide. The growing realization that all sources of error, and not alone that which is due to sampling, must be considered in planning and kept under control is particularly important for illness surveys.

Other Recent Studies

Several studies recently completed, in planning, or under way will add some rather specific methodological results in the field of the measurement of illness. Among these studies are:

1. The Baltimore Eastern Health District Study in which the white population of a sample of 35 blocks in the health district was studied for periods up to 5 years (1938-1943). Actually 17 of the blocks were included in the study for 5 years, another 17 were included for 3 years, and one block was dropped early in the third year of study. A small corps of well-trained interviewers made monthly visits to all families residing in the blocks at the time of the visits. Information was obtained on illnesses or injuries that had occurred since the previous visit and on all medical care including preventive services received in the interval. Any responsible member of the family who happened to be present was accepted as the respondent. Diagnostic information on cases of illness that had been attended by a physician was checked with the physician or with hospital or clinic records. The study, which was jointly financed by the Public Health Service and the Milbank Memorial Fund, has provided data for a large number of special statistical investigations among which are several which will contribute to our knowledge of how to make more accurate surveys of the less intensive type in the future. It was found, for example, that many of the chronic diseases present in the population at the time of the first visit were not brought to the attention of the interviewer until the family had been visited six or more times. It was probably the occurrence of a disabling attack that led to the first reporting of many of these diseases, but because of the length of time that the families were followed it is likely that nearly all serious chronic diseases present were eventually picked up. To mention only one other of the numerous varieties of investigation that has been made, it has been possible to study the course of chronic illness in terms of frequency and distribution of disabling attacks. New studies of these Eastern Health District data will continue to appear for many years.

2. The California Morbidity Research Project is being conducted by the State Health Department with the assistance of the Bureau of the Census and under a grant from the Public Health Service. The objectives of the project are the study of: (a) methods of obtaining data on illness and disability from population surveys based on objective sampling methods, and (b) methods of using data arising from administrative programs, in conjunction with population sample surveys, for special pur-

pose studies or statistics. In San Jose, California, an intensive pilot study has been carried out in which the interview method and the diary method of collecting illness data have been compared, a number of aspects of diary-keeping have been investigated, and the effects of the interviewer and the respondent upon the data have been evaluated. Making use of the findings of the San Jose study a statewide survey is soon to be undertaken, both as a demonstration of the methods and also for the purpose of making further methodological tests.

3. The Special Research Project of the Health Insurance Plan of Greater New York will provide as a by-product some useful comparisons of illness data from an interview and from the records of a broad-coverage medical care plan. This project is financed by grants from the Commonwealth Fund and from the Rockefeller Foundation. It includes: (a) a household interview with each of a sample of 5,000 families insured under the plan; (b) an identical household interview with each of a sample of 5,000 households representing a cross-section of the city of New York; and (c) an analysis of accumulated experience of individuals and families with utilization of medical services as revealed by the records of the plan. Diagnostic information obtained in the interview can be compared with records of the plan, and a similar comparison can be made for rates of utilization of medical services, thus providing a basis for calibration of the results obtained in household surveys. Variation among interviewers can be studied, and also the effect of memory failure of the respondent can be measured for illnesses attended by a physician. Furthermore, since the cost of the service has been removed as a determining factor, the utilization rates for persons covered by the plan will be of great value in helping to determine what medical care is required for persons with specific conditions.

4. Surveys sponsored by the Commission on Chronic Illness will make use of all methods of measuring chronic illness in the population. In Hunterdon County, New Jersey, a symptom questionnaire was provided for each adult to be filled out by himself, a sample of families has been interviewed, and subsamples of those with and without manifest chronic disease will be screened by means of diagnostic tests. Thorough physical examinations will also be given and histories taken. These should supply some particularly useful experience on the measurement of needs for medical care. A similar study to be conducted in Baltimore, Maryland, is now getting under way.

5. The Pittsburgh Arsenal Health District Studies, being carried on by the Graduate School of Public Health of the University of Pittsburgh, will concentrate upon the familial aspects of illness but will also investigate methodological problems in household illness surveys. The field work for the first of these surveys, involving a sample of several thousand households from a section of the Arsenal Health District and a one-percent sample of the remainder of the city of Pittsburgh, has now been completed and analysis of some of the results have begun to appear.

6. Other studies that contribute to the methodology of morbidity surveys are: (a) the series of small experiments being conducted by the Division of Public Health Methods on memory for illness, respondent bias, interviewer variation, accuracy of household report of diagnosis, and existence or nonexistence of records carrying a diagnosis in the offices of general practitioners; (b) the very intensive study of home injuries carried out by the School of Public Health of the University of Michigan in Washtenaw County; (c) the interesting trial of collection of national data on the incidence of attended illness from a country-wide sample of physicians, which is being undertaken by the Research Department of Modern Medicine Publications, Inc.; and (d) the surveys of unmet medical care needs in rural areas of Michigan, Ohio, and other areas, making use of the symptom schedule developed by Hoffer, Schuler, and others.

When the results of the above-mentioned studies and projects become available we should know a great deal more than we do now about the relative value of various procedures for the measurement of illness.

Morbidity Statistics Applicable to Large Segments of the Population

Before considering the types of additional data that should be collected to meet the needs for national statistics described in Part III of this report, it is essential to review the present sources and to determine the extent to which these sources are capable of filling the needs. The National Health Survey of 1935-1936 has already been mentioned. It has a number of inadequacies for current use. In the first place, the survey was based almost entirely on urban populations. Hence, national estimates may be quite far in error because of the failure to take into account differences between urban and rural morbidity. In the second place, many important changes have taken place in the distribution and characteristics of the population since 1936, and there have been alterations in the patterns of provision of medical care and in methods of prevention and treatment of illness. These alone would be sufficient to make the results of the National Health Survey out of date, but in addition a world war has intervened leaving in its wake not only a large number of service-connected disabilities but also other less obvious scars which may not even be detected for a number of years. Finally, current needs for statistics are different and data from the National Health Survey are not available

in the proper form to answer today's questions. To suggest that the country continue to base important decisions on statistics that are over 15 years old would be a poor recommendation, even if the statistics were well suited in other respects to the problems at hand.

One other source of national statistics has also been mentioned briefly—the Modern Medicine Physicians Panel on Medical Treatment (see "Other Studies" above). This must be considered for the time being a completely unproven mechanism which may turn out to be capable of providing national estimates (and possibly some regional estimates as well) of the incidence of attended illness by diagnosis in some detail. It may also supply useful information on the types of attending physician, and the types of drugs and other treatment prescribed. Whether it will show rates for population characteristics other than age and sex is not yet known. The statistics are based upon a report of the practice of a national sample of physicians for one full week in each three-month period.

Despite their vintage, mention should be made of the studies conducted by the Committee on the Costs of Medical Care in 1928-1931. The detailed information on morbidity and utilization of medical services from the survey of 9,000 families, and the estimates of medical care needs made by Lee and Jones were not duplicated in the later and larger National Health Survey. Consequently, the studies of the Committee on the Costs of Medical Care continue to provide the only source of certain very useful types of statistics. The 23 papers by S. D. Collins on morbidity and medical care utilization rates from the household survey have been widely used. The Lee-Jones estimates are still consulted although their inapplicability to present conditions is obvious.

Other significant sources or potential sources of morbidity statistics may be classified as follows:

A. The notifiable disease reporting system (including industrial diseases, cancer, rheumatic fever, and other diseases in some States).

B. Data accumulated as a by-product of insurance and prepaid medical care plans.

1. Sick benefit associations, group health and accident insurance.
2. Prepayment medical care plans (Health Insurance Plan of Greater New York, Permanente Health Plan, industrial plans, union plans, and others).
3. State disability insurance plans (Rhode Island, California, New Jersey, New York, and Washington).
4. Life insurance companies (results of physical examinations).
5. Hospitalization insurance plans (Blue Cross, etc.).
6. Railroad Retirement Board plan.

C. Tax-financed public assistance and medical care plans.

1. Programs providing all or a part of the medical services required by recipients of: old-age assistance, aid to dependent children, aid to the blind, aid to the permanently and totally disabled, and general public assistance (whether by capitation or fee-for-service).
2. Armed Services sickness and medical care statistics.
3. Admission or discharge or other hospital statistics for Veterans Administration, Public Health Service, and Indian Service hospitals.

D. Other hospital and clinic admission and discharge records (New York City Hospital Morbidity Reporting Project).

E. Absenteeism records

1. In industry
2. In schools

F. Routine physical examinations

1. In industry
2. In schools

G. Records of physical examinations of Selective Service registrants.

H. Case-finding programs, multitest screening programs, case registers.

I. National surveys using the schedule of the Census Bureau's Current Population Survey.

J. Local surveys.

K. Miscellaneous sources (data on the back of birth certificates, motor-vehicle accident reports, industrial injury reports).

This list may not be complete, but it does include the major sources now producing records that are or might be usable for statistical purposes. It would be impossible to discuss each one of them here, but certain characteristics of these sources can be considered from the standpoint of their usefulness for serving national needs.

The nature and scope of the data supplied by the notifiable disease reporting system are well known; hence, this source may be passed over here with the comment that, though the reporting system is indispensable, the diseases reported constitute only a small fraction of the total illness experienced by the general population, no matter which of the common units of measurement is used for the comparison.

Turning to the sources in Category B, it must first be stated that, with the possible exception of State disability insurance plans, all of these have a common limitation. This is the factor of self selection in the coverage. In some of the plans, by virtue of the fact that coverage is automatic for large groups, this factor is less important, but one still cannot use the data to make probability estimates for the general population.

In the State disability insurance plans, coverage is complete for certain legally defined classes of the population.

Another more serious limitation of the sources

in Category B arises from the restrictions in the type of illness covered by the insurance and the termination of benefits under the plans after a certain number of weeks have elapsed or a certain number of dollars have been paid. Only the broad-coverage prepayment plans, of which the Health Insurance Plan of Greater New York and Permanente Health Plan are given as examples, do not suffer from this limitation.

For the most part, data from these insurance plans relate to attended illness. Despite the limitations, however, some sources in this category have proved very valuable. As an example we may cite the Public Health Service statistics on industrial sickness absenteeism in a group of reporting organizations made up of mutual sick benefit associations, group health insurance plans, and company relief departments. The data are limited to sickness and nonindustrial injuries causing absence from work for 8 consecutive calendar days or longer. With the exception of the reports of illness in the armed services, these represent the longest series of comparable illness statistics published in the United States, going back as they do to 1920.

The value of the records of broad-coverage prepayment plans for special studies of attended illness and the utilization of medical care has been referred to previously.

Sources in Category C are limited to special groups of the population which are entitled to financial assistance or free medical care because of special legislation. The Army and Navy sickness and medical care statistics are the most comprehensive statistics of the sort available on any group in the United States. Many special studies of importance have originated from these sources, but, in general, the lack of representativeness of the groups included in Category C is a major limitation to their use for most of the purposes we have listed in Part III.

When hospital admission or discharge records are collected for all of the hospitals in a large city (as was done in New York City by the Welfare Council in 1933) so that it is possible to relate hospitalization to a population-at-risk, the statistics can be useful in indicating differentials in frequency of hospitalization in different segments of the population. While hospitalized illness represents only a small fraction of all illness receiving medical care and there is undoubtedly great variation from one economic or social stratum to another in the types and severity of cases that are hospitalized, nevertheless, hospitalization rates by diagnosis, age, sex, and other characteristics of the population are much in demand for use in planning for facilities, services, and personnel.

It should be remembered, however, that hospital admission or discharge rates reflect only usage of hospital facilities and must be supplemented by some kind of independent estimates of demand in order to be helpful in planning.

Mental hospital statistics are currently providing our only national data on the magnitude of the problem of mental illness. Strenuous efforts are now being made by hospital administrators and statisticians under the leadership of the National Institute of Mental Health to improve the statistics. Only a greater number of beds and more medical personnel will remove one basic limitation which is that the rates are largely determined by the availability or lack of availability of hospital care.

Another use of hospitalization statistics related to a known population base is for obtaining rough rates of incidence for diseases that are rare and severe. Recent interest in aplastic anemia, for example, has led to a search for hospitalized case data in a known population.

Absenteeism records and routine physical examinations vary greatly in quality and usefulness. Only a few studies of school absenteeism could be said to have contributed to the kinds of needs for statistics mentioned in this report. The pitfalls are: inaccurate diagnostic information, lack of complete seasonal coverage, difficulty in distinguishing between absence for illness and absence for other reasons, peculiar distributions by days of the week, and the interruptions caused by week ends and holidays. It should be possible, however, to use absenteeism on a day-to-day basis as an early index of epidemics, though the necessary degree of cooperation has in the past proven difficult to maintain. (The cause of the epidemic would probably have to be determined by independent investigation.)

School physical examinations are usually a poor source of information on the health of children. Here and there one hears of communities that have improved the examination procedure and made real use of the results, but recent efforts to use the records from the routine examinations for statistical purposes are rare.

Physical examinations in some industries and also in other programs, such as that of the Farm Security Administration, have been the basis of a large number of special studies. When the examinations are uniformly and thoroughly carried out, and when there is not too great a factor of selectivity determining which individuals come for examination, the compilation of statistics from the results is very worthwhile. With a few exceptions, however, the programs of physical examinations are restricted to the employees of a particular plant or industry, and there is no basis for generalization of the results. Furthermore, the type of information that is obtained from the usual physical examination is not particularly valuable for the uses listed above. This is because the examination identifies various conditions that may be indicative of the existence of disease, conditions such as hypertension, anemia, overweight, refractive errors, and so forth, but the results of

followup to determine diagnoses are only rarely available. Nor is it usually possible to determine from the records what medical care has been received for the conditions discovered.

The same can be said for the Selective Service examination records. The interpretation of the voluminous data from this source has been a subject of controversy. To what extent do they reflect poor health in the age groups of the registrants? What is the effect of changing standards for admission on the recorded information? What is the effect of differing practice from one induction center to another? The consensus of statisticians seems to be that only the most limited generalizations are possible.

Category H is intended to cover the programs which have case-finding and case-following as their objective. Some of these, such as the mass chest X-ray screening, have reached millions of people. In all of them the use of the results for purposes of measurement is plagued by one great question: What about the people who chose not to be examined? Recently there have been several studies aimed at determining the characteristics of those who did not appear for screening. There had not been any instance prior to 1952 of an integration for measurement purposes of multitest screening with other measuring techniques. Before long, however, we shall have the results of the surveys of the Commission of Chronic Illness. (See above.) It seems likely that the combination in one survey or series of surveys of multitest screening with physical examinations and interviewing (i. e., disease detection examinations) offer the greatest promise for providing morbidity data of the breadth required to meet the national needs. Such studies as are now under way are local in nature, but they will teach us a great deal about the feasibility of applying the same methods in more extensive surveys.

The number of diseases for which there exists a screening test that can be carried out on a mass scale is still small, and the efficiency of the screening tests now in use (their ability to pick up a large proportion of existing cases without too many false positives and false negatives) is not accurately known. Much work is yet to be done in this field, but the technique of mass screening, devised for case-finding, may eventually extend greatly the usefulness of morbidity statistics.

Surveys remain the most useful, flexible, and in many ways the most reliable source of statistics on morbidity and utilization of medical services. They are also, unfortunately, the most expensive source in cost per case of illness discovered. Nevertheless, there is one survey based on an accurately representative national sample which can provide estimates for a limited number of items at a very reasonable cost. This is the Census Bureau's Current Population Survey (C.P.S.). The monthly visiting of a sample of approximately 25,000 households, carried on by the Bureau, is primarily for the purpose of collecting economic and demographic data on the labor force, such as unemployment, movement in and out of the labor force, hours of work, and so forth. It is possible to add to the schedule of this interview, by arrangement with the Census Bureau, a maximum of, perhaps, six to ten questions on any subject of importance to the Government, providing, of course, that the questions only require information that the household respondent, usually the housewife, can supply. On several occasions this means has been employed to obtain some limited data on morbidity. Over a period of time the C.P.S. could be used to accumulate a fair volume of morbidity statistics relating to the noninstitutional population of the United States. The source has, however, the following drawbacks: (1) the sample was designed to produce only national estimates whereas morbidity statistics are needed at least on a regional basis; (2) the amount of information that can be collected in any one survey is very small and the calls upon the C.P.S. by various agencies of the Government are so numerous that the monthly survey is usually booked up well in advance; (3) the population of resident institutions is not covered in the surveys, but it should be possible to sample such institutions separately; (4) the Census Bureau would have difficulty training and maintaining a staff of the specialized coders who code causes of illness and, consequently, the studies conducted so far have had to be designed to avoid this coding. (If a regular program of surveys were conducted, this last difficulty could probably be overcome by detailing coders to the Census Bureau.)

The outstanding advantage of the morbidity estimates supplied by the C. P. S. is that an estimate of sampling error can also be provided, owing to the fact that the 25,000 households constitute a probability sample. Furthermore, interviewers are carefully trained, and the Census field offices provide good supervision. Results are available relatively promptly.

In conclusion, one opinion sometimes heard is that it should be possible to combine data from these many existing sources, including the notifiable disease reports, to make a comprehensive body of statistics on disease incidence and prevalence in the United States. A little study indicates that this cannot be done. Not only are there serious gaps (particularly in information for rural populations), but also the difficulties in putting together statistics from such a wide variety of sources with differing definitions, completeness of coverage, systems of classification, and so forth, are overwhelming.

Nevertheless, if the fragmentary sources listed above are looked upon as supplementary information to be used for improving the accuracy and scope of data obtained from national surveys, they offer

many possibilities. Some of the potentialities of the use of existing records as auxiliary to a survey are being explored in the California Morbidity Research Project. (See above.)

We must conclude, however, that it is not possible to fill the urgent needs for national statistics on the incidence and prevalence of diseases, injuries, and impairments and on the utilization of medical services by relying solely upon records now being collected or data currently available.

How Other Countries Have Met This Problem

Three other countries are now engaged in the collection of national morbidity data by means of surveys. These countries are: Canada, Denmark, and Great Britain. In the case of the first two countries the surveys have a limited duration while the survey of Sickness in England and Wales is a continuing program.

The Canadian Sickness Survey, for which the field work is now complete, involved the visiting at intervals of a month of some 10,000 households scattered throughout Canada. The survey lasted a full year and was expected to cost in the neighborhood of $500,000. The following quotations from an article in the bulletin of the Canadian Department of Health and Welfare (December 1950) describe the type of data to be obtained and the general objectives of the survey:

> "Some of the important information that is expected to emerge from the survey will include the amount and distribution of acute illness for the survey year in various sections of our population—how much time is lost and how much it costs. Much information on the extent and nature of chronic illness such as arthritis, diabetes, and cancer will also be determined along with the amount of disability and cost involved in treating and caring for such conditions.
>
> "As well as learning much about various communicable diseases (measles, influenza, etc.) and noncommunicable diseases such as arthritis, cancer, and high blood pressure, the groundwork will be laid for more detailed research projects into various aspects of the diseases . . . .
>
> "Public health authorities have realized for many years the shortcomings of our current knowledge of acute and chronic sickness and disability, so that a need for such a survey has existed for some time. Some statistics on illness have been available for years in the form of communicable disease reports, industrial sickness reports, and hospital records, but these figures have often been far from complete. They have not, in any case, represented an accurate total of Canadian illness. Health authorities feel that a more accurate knowledge of the health and sickness of Canadians is indispensable for mapping public health plans both for present and for future needs. The present survey is designed to produce this knowledge. It is also realized that the present project is not a survey to end all surveys and that other applications of similar methods may be used in the future to provide health indices in provinces and communities."

The objectives of the 3-year survey being conducted by the National Health Service of Denmark are very similar to those stated for the Canadian survey. The Danish project began in June 1951 and it, too, involves monthly visits to a sample of households. A translation of a statement by the National Health Service gives the following types of data that will be produced for the population of the country:

1. Diseases not treated by a doctor with the patient's own unverified diagnoses.
2. Diseases treated by a doctor with diagnoses verified by the doctors themselves.
3. Hospitalized diseases reported not only according to the usual extracts from hospital records, but specified in regard to sex, age, duration, personal and social conditions, etc.
4. The relation between patient's diagnoses and doctor's diagnoses in cases treated and verified by doctors."

During the course of the survey, information on the illnesses of approximately 100,000 different persons over 15 years of age will be obtained. In addition to this survey there will be a special study of hospitalized cases in Denmark for one year beginning in 1952.

In Great Britain periodic surveys of illness among persons over 16 years of age are being made by a government social survey organization on behalf of the Ministry of Health. They were initiated in October 1943 and with a few interruptions have provided statistics for every month since that time. Although the Sickness Survey was originally set up to meet the emergency needs of a country in the depths of total war, it was found to be so useful that it was not abandoned at the end of the war. So far as can be ascertained it is a permanent fixture.

The questions on the schedule relate to all illness and injuries experienced during a two-month period whether a doctor was consulted or not, the amount of time the person was confined to bed and unable to go to work, the number of visits of or visits to the doctor or dentist, and the length of stay in the hospital. The cause of illness is coded in some detail.

In reply to a letter from a member of this Subcommittee regarding possible gaps in the data now being collected in the survey of Sickness, Dr.

Percy Stocks, Medical Statistician, in the General Register Office of England and Wales, referred to his paper, "Measurement of the Public Health" (British Medical Bulletin, 1951, Vol. 7, No. 4, pp. 312-316) and stated as follows:

> "The major gaps, and how they can be filled, are mentioned in the paper. The diagnostic detail is of course inadequate for many purposes such as studies of neoplasms, but for large fields of sickness which cannot be assessed better at present in any other way it is adequate. Geographic detail can be obtained by aggregating records of one or more years; it would be useful of course if that could be done more quickly for short periods, but that would involve a sample size which would be too costly; and in England and Wales it may be possible to meet that need partly by National Insurance certifications of unfitness for work. I do not know of any items which could be profitably added to the schedule for regular use, but from time to time special questions are appended over a limited period for research purposes as the occasion arises (e. g. concerning deafness to assess the need for provision of hearing aids).
>
> "The only need for earlier diagnosis and medical attention which I think to be important with the present arrangements for medical care relates to malignant neoplasms, but I am not of the opinion that a Survey of Sickness should be used to attempt to improve that position."

Statistics on sickness and injury claims under the National Insurance Acts are also being obtained in Great Britain. "The Ministry of National Insurance have arranged for a 10-percent random sample to be taken of all claims to a sickness benefit, a 20-percent random sample of industrial injury benefit claims, and a 100-percent analysis to be made of the industrial disease claims. In the sample for sickness benefit the diagnosis is associated with age, sex, marital status, duration of incapacity, industry, occupation, locality, and other relevant factors; for injury benefit cases the circumstances in which the accident or disease arose is also associated." ("Note on Morbidity Statistics in England and Wales," World Health Organization Morbidity Conference, WHO/HS/Morb. Conf./3, 3 October 1951.)

To provide a population-at-risk for these statistics from claims there will also be a 3-percent sampling of the records on all persons registered under the National Insurance Acts.

Other developments in Great Britain include: (1) a pilot study for what may become a national sample of discharge or death records for hospital inpatients; and (2) a pilot study to explore the possibility of collecting information about patients and illnesses treated by general practitioners, based on records maintained by these practitioners.

PART VI

Recommendations: Types of Data to be Collected in Order to Meet U. S. Needs

As the discussion in Part V indicates, there exists a multiplicity of possible sources of data, each dealing more or less adequately with some segment of the population and with some diseases. For the reasons stated, however, these sources cannot be brought together to provide the material for an objective picture of the amount of disease, disability, or medical needs at the national, regional, or local level.

Function of National Morbidity Surveys

We recommend that a continuing national survey be conducted, adequate to provide regional estimates at intervals of two years and estimates for the nation as a whole at quarterly intervals. Its purpose would be to obtain data on the prevalence and incidence of disease, injuries, and impairments, on the nature and duration of the resulting disability, and on the amount and type of medical care received. The data would be obtained from a probability sample of households (with special provision for the sampling of institutions including hotels).

The suggested maximum interval of 2 years between publications of results from the continuing national survey seems adequate to us at the present time to serve the major needs outlined in Part III. However, we recommend that the field work be organized in such a way that more frequent summarizations may be made for the nation as a whole if the need should arise. We further recommend the use of a relatively small corps of interviewers for the field work with interviewing conducted during a part of each month, rather than a larger corps of interviewers working at less fre-

quent intervals. This will have the advantage of permitting more intensive training of interviewers at no extra cost. It also should make possible closer supervision of the field work. Furthermore, the special studies will require the establishment of a permanent government unit for effective planning and administration. Instead of expanding and contracting this staff before and after large intermittent national surveys, it would be better to have continuous field work under the charge of a small staff of fixed size and high competency.

Current interests center in chronic diseases rather than in acute diseases with a marked seasonal pattern. Nevertheless, seasonal changes make it desirable to have survey results which apply to a whole calendar year, or calendar years. Field work conducted during a part of each month can be planned in such a way that results may be summarized at the end of a year or two years. With slight modifications quarterly changes may also be watched if necessary. Experience indicates that two visits to each household will improve the completeness of reporting of chronic diseases present. The panel of households can be changed several times during a year in order to give a better sample coverage for annual or biennial averages.

In a survey of national scope, it will presumably be necessary to employ part-time lay interviewers for the most part. For diagnosed illnesses, experience in previous morbidity surveys indicates that lay interviewers, if competently trained, can obtain data which permit a classification into meaningful diagnostic categories in the International Statistical Classification of Diseases, Injuries, and Causes of Death (6th revision). Diagnoses reported by the household respondent will be checked with the medical practitioner if tests now in progress show that this method is practical and useful.

The importance of providing data that are usable at the local level has been noted earlier in this report. From the existing knowledge about differentials in morbidity rates and in availability of medical care in different parts of the country, it is our opinion that satisfactory data for use at local levels will be obtained from a survey large enough so that data can be published separately for each of some 50 regions into which the country can be divided. Several methods of making this subdivision have been examined by this Subcommittee. It is suggested that 10 of these regions be the 10 largest metropolitan areas. For the remaining 40 regions, one of the following alternatives is suggested:

1. A geographic subdivision into 10 areas, and within each area, a stratification by city size into 4 strata.
2. A geographic subdivision into 13 areas, and within each area, a stratification by city size into 3 strata.
3. A geographic subdivision into 20 areas, and within each area, a stratification into 2 strata--urban and rural.

The best choice depends on the relative magnitude of geographic differentials in morbidity and medical care, as compared with differentials that are associated with size of city. By the use of one of these plans, or some combination of them, we believe that each region will be sufficiently homogeneous so that a local area can safely utilize for its purposes the survey data for the region in which the area lies.

Function of Special Studies

Although the general surveys will furnish basic data not at present available, there will remain numerous important gaps. Not only will diagnostic detail be insufficient for many purposes but no information will be obtained from these general surveys about nonmanifest illnesses. Furthermore, accurate data will be obtained only for diseases of relatively high prevalence and incidence.

Undiagnosed disease will appear in the schedules either as symptoms, or as diagnoses not accompanied by evidence that they were made by a physician. It would be desirable to follow through on cases of this type by a diagnostic appraisal. Probably, only a subsample of such cases would need to be studied.

The identification of nonmanifest diseases, i.e., diseases which can be identified by diagnostic measures but which has not yet caused symptoms recognized by the patient as such, is an important part of modern preventive medicine. This can be done either by the complete examination method, by prior application of screening tests, followed by more definitive diagnostic examinations in those with positive tests, or by a combination of these methods, with a short physical examination serving, in effect, as one of the screening tests. There is already sufficient experience at hand (notably in the five pilot studies which were sponsored by health departments in cooperation with the Public Health Service[2]) to indicate that such methods of finding nonmanifest disease are practicable and fruitful. However, up to the present, it has not been possible to apply these methods to a representative sample of the adult population. (School health examinations, in areas where they are adequately performed, represent, in part, case-finding of nonmanifest disease in the school population, but not of the total population of school age.) The services required to provide treatment for the conditions found cannot be estimated until the prevalence of

[2]The studies were conducted in: Richmond, Virginia; Atlanta, Ga.; 22 counties in Alabama; Boston, Mass.; and Indianapolis, Ind. This is by no means a complete list of the screening studies that have contributed to the development of the technique.

nonmanifest disease in the general population is known. If a study of nonmanifest disease is made, a study of undiagnosed disease should also be included.

Consequently, it is recommended that a series of special studies be conducted in addition to the general surveys. The principal functions of these special studies will be as follows:

1. To obtain data on undiagnosed and nonmanifest disease, by means of laboratory screening, detection and physical examinations of subsamples drawn from the general surveys.

2. To obtain necessary data, where it is lacking, on the natural course of a disease or on the effectiveness of medical care or rehabilitation programs.

3. To collect statistics on the methods of payment and costs of medical care and to test the accuracy of these by making use of outside sources.

4. To assemble any data from the existing studies and sources described in Part V as may be useful for supplementing the findings of the national survey.

5. To attack methodological problems relating to the measurement of morbidity and the relationship of such measurements to the provision of medical care.

6. To evaluate existing medical care programs and local studies such as the various multitest programs, the Framingham Project, etc., in cases where such evaluations will contribute to knowledge of techniques for obtaining desired data.

Requests for Data That are not Feasible to Meet

Needless to say, a combined program of general and special studies will fail to meet numerous requests for data by particular bodies. In general, the methods proposed are not suitable where great diagnostic detail is demanded or where diseases or conditions that are rare are to be studied.

Investigations to determine the extent of mental illness, alcoholism, narcotic addiction, use of habit-forming drugs, and special disease entities of rare frequency could not feasibly be included in the general morbidity survey or any of the special studies that would be a part of the general program. Accordingly, it is recommended that such investigations be undertaken independently by those groups and agencies which are primarily concerned with each specific problem.

PART VII

Recommendations on Survey Design

Major Specifications of Accuracy and Detail

The national survey will be conducted on a continuous basis providing quarter-yearly morbidity statistics for each of 11 metropolitan areas and 3 population-size classes in 13 regions. The specifications would provide for two interviews (3 months apart) with each of the sample households and, when the sample results are cumulated over a two-year period, they should permit of estimates (for each of the 50 areas) such that the relative sampling error would be less than 50 percent for characteristics that occur in more than 1 percent of the population. For characteristics of greater frequency, the coefficients of variation of estimates in each of the metropolitan areas and population-size classes within each geographic region should be less than X percent for characteristics that occur in more than Y percent of the national population as shown in the following table:

X	Y
50	1
15	10
12	15
9	25
5	50
3	75
2	90

Separate estimates are needed for these 11 metropolitan areas: (1) New York, (2) Chicago, (3) Los Angeles, (4) Philadelphia, (5) Detroit, (6) Boston, (7) San Francisco, (8) Pittsburgh, (9) St. Louis, (10) Cleveland, and (11) Washington, D. C. Separate estimates are needed also for the following geographic regions: (1) New England, (2) New York, Pennsylvania, and New Jersey, (3) Maryland, Virginia, North Carolina, and Delaware, (4) Georgia, Florida, and South Carolina, (5) Alabama, Mississippi, and Louisiana, (6)

Illinois, Indiana, and Ohio, (7) Wisconsin and Michigan, (8) North and South Dakota, Nebraska, Kansas, Minnesota, and Iowa, (9) Kentucky, Tennessee, and West Virginia, (10) Missouri and Arkansas, (11) Oklahoma, Texas, New Mexico, and Arizona, (12) Montana, Idaho, Wyoming, Nevada, Utah, and Colorado, (13) Washington, Oregon, and California. And within each of the geographic regions, estimates are needed for these three population groups: (1) rural, including places under 2,500, (2) cities of from 2,500 up to 50,000, and (3) cities of 50,000 or over.

Major Specifications of the Survey Design

1. General. During a two-year period, 45,000 dwelling units will be selected for the sample, and each sample dwelling unit will be enumerated in two consecutuve quarters resulting in a total of 90,000 enumerations. On the average, three sample dwelling units will be subsampled from the expected 9 dwelling units within each of the 15,000 sample segments. The sample segments will be located within 500 primary sampling units selected from the approximately 2,000 such primary sampling units in the United States. Within the sample dwelling unit any responsible adult 18 years of age or older will serve as respondent for himself and all related persons in the household. Assuming a questionnaire similar to the one used in the San Jose Health Survey and the HIP Survey, a household enumeration would require about one hour to complete.

2. Metropolitan areas. The 11 metropolitan areas are primary sampling units selected for the sample with certainty. About 9,000 separate dwelling units, one fifth the sample dwelling units, will be enumerated in metropolitan areas. The enumerations will be approximately equally divided among the 11 areas so that within a two-year period about 820 separate dwelling units or 1,640 enumerations will be made in each area. Since the enumerations will be taken monthly, there will be about 65-70 enumerations per month in each area. However, it is specified that during the first 3 enumeration months only one half that number be made, and that each month thereafter dwelling units that were enumerated 3 months earlier for the first time be reinterviewed, and an equal number of new sample dwelling units be enumerated for the first time.

3. Geographic regions, exclusive of metropolitan areas. There will be 489 primary sampling units in the 13 geographic regions. The 200 odd primary sampling units in the Current Population Survey will be supplemented by the necessary number of new primary sampling units. To reduce the scatter between enumeration units, it is planned that a given primary sampling unit will be visited only once a quarter. This will be accomplished by assigning one third the number of primary sampling units in each region to sets A, B, and C, respectively. The enumeration of dwelling units in primary sampling units in set A will be made during the first, fourth, and seventh months and every third month thereafter. The enumeration of dwelling units in primary sampling units in set B will be made during the second, fifth, and eighth months and every third month thereafter. And, likewise, the dwelling units in primary sampling units in set C will be enumerated during the third, sixth, and ninth months and every third month thereafter.

During a two-year period about 72,000 enumerations will be made in the 36,000 sample dwelling units in the geographic regions. Therefore, on the average, about 3,000 enumerations will be made in each month in 163 primary sampling units -- or about 18-20 enumerations per primary sampling unit per quarter. However, it is specified that during the initial enumeration in a primary sampling unit only one half the regular number of monthly enumerations be made, and that each quarter thereafter, the dwelling units enumerated for the first time a quarter earlier be reinterviewed, and an equal number of new sample dwelling units be enumerated for the first time.

Special Studies

The national survey would not meet all of the most pressing needs for morbidity statistics unless it is supplemented by special studies. The most important special studies are those designed to obtain data on undiagnosed and nonmanifest diseases by means of physical examinations of a sample of the U. S. population.

The surveys of undiagnosed and nonmanifest diseases discussed in Part VI, can best be undertaken as part of the national survey but on a subsample. Such a survey would involve actual physical examinations for a random subsample of the U. S. national sample. The examinations would require a medical "crew" and equipment, and it would be necessary to "bring together" the sample cases and the examining facilities. This may mean either bringing the facilities to the subjects (i.e. by means of completely mobile examining units) or bringing the subject to the facilities. In the past, screening tests have run into a high selectivity factor. Even in screening programs confined to a single industrial or governmental establishment, it has not been possible to get 100 percent of the group to come in for examination. The success of a program calling for the examination of a representative sample of the U. S. population depends upon the ability to get practically all (at least 90 percent) of the population to come in for examination.

Experience with methods for achieving this goal is not yet available and extensive experimentation is necessary with mobile examining units, publicity campaigns, special transportation for examinees, etc.

APPENDIX

Suggested Methods for Obtaining Data on Need for Medical Care

The need for well-founded estimates of the facilities and services required to furnish good medical care is generally recognized. Such estimates are indispensable for formulating policy with regard to questions such as the desirable number of physicians, nurses, dentists, technicians, and related personnel to be trained; the number of general and special hospital beds to be built; the number and type of other institutions for the care of the sick to be established, and so forth. For some purposes interest centers primarily in the total services and facilities required to provide medical and preventive care to a specified group of people; for others, separate estimates are wanted for people known to have a particular disease or impairment.

The estimation of the amount of medical care needed in a given situation presents difficult problems. No single method of measurement is ideal.

> Needed medical care may be described as that care (in the broadest sense) which a person would seek, if it were available, if he knew it was available, if he were well-informed as to what was considered desirable medical care, and if there were no important economic or other barriers to his obtaining it.

The following three methods for obtaining estimates of need for medical care, as distinguished from ordinarily obtained medical care, may be considered:

1. By expert appraisal of the needs either of (a) persons with one or another disease or group of diseases,[1] or of (b) a sample of persons, both well and sick, from the general population. In the former procedure the total picture of needs for medical care would be obtained by studying diseases, group by group, and adding the estimated needs for these groups, including separate estimates for preventive services and for care required by persons with latent or nonmanifest disease, usually chronic. Data from morbidity surveys would also be required, to provide a basis for combining estimates in the different groups. The validity would depend in part upon the representativeness of the samples of persons with the various diseases.

   In the latter procedure representative samples from the general population would be studied by experts to determine all services needed, including diagnostic. Summarization might be in terms of categories of services rather than diagnoses.

   In both procedures the validity would depend upon the consistency among experts in their appraisal of needs, and also upon the extent to which people with medical needs would actually use facilities provided for those needs.
2. By study of the services actually obtained by groups under the most favorable conditions now existing. (a) Insurance covered groups (such as the Health Insurance Plan of Greater New York). To this would have to be added an estimate for the services not covered by the insurance plan and an adjustment for selection of the insured group (employed, age, etc.). (b) Physicians' families. (c) Highest income group. Study of services could be secured either from the recipients by the journal method or by periodic visits, or by studying a record of services from vendors of such services, e.g., physicians, hospitals, outpatient clinics, etc., classified by economic status of the recipient. The last named method requires, of course, that the population served by the vendors be known and that all sources of medical service to that population be included.
3. By collection of evidence regarding claimed or apparent shortages of services and facilities. Examples of probable shortages for

[1] This would be similar to the method used in the so-called Lee-Jones estimates from the studies of the Committee on the Costs of Medical Care. See "The Fundamentals of Good Medical Care" by Roger I. Lee and Lewis Webster Jones, assisted by Barbara Jones; Publication No. 22 of the Committee on the Costs of Medical Care. The University of Chicago Press, Chicago, Illinois, 1933.

which fairly good evidence could be obtained are (a) psychiatrists; (b) public health physicians; (c) nurses; (d) hospital beds (general and chronic); (e) dentists.

It should be noted that these three methods differ in their assumptions. Method 1 is dependent upon expert opinion as to what care is needed. Method 2 assumes that the best care now obtained by favored groups is a reasonable approximation of the care which would actually be sought and needed by all groups, if economic and other barriers were minimized. Method 3 would probably yield the most conservative estimates of unmet needs, since it would be based for the most part on those unmet needs already manifest as a result of existing demand, rather than on demand that would exist if economic and other barriers were at a minimum.

A combination of a morbidity survey with method 1 would seem to be the most convincing and feasible method. From the standpoint of methodology, however, it would seem desirable that all three methods be studied. It may very well appear that each method would supply information not obtainable from any of the others.

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APPENDIX II

NATIONAL HEALTH SURVEY ACT
Public Law 652 - 84th Congress
Chapter 510 - 2d Session-S. 3076

AN ACT

To provide for a continuing survey and special studies of sickness and disability in the United States, and for periodic reports of the results thereof, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Health Survey Act".

Sec. 2. (a) The Congress hereby finds and declares—

(1) that the latest information on the number and relevant characteristics of persons in the country suffering from heart disease, cancer, diabetes, arthritis and rheumatism, and other diseases, injuries, and handicapping conditions is now seriously out of date; and

(2) that periodic inventories providing reasonably current information on these matters are urgently needed for purposes such as (A) appraisal of the true state of health of our population (including both adults and children), (B) adequate planning of any programs to improve their health, (C) research in the field of chronic diseases, and (D) measurement of the numbers of persons in the working ages so disabled as to be unable to perform gainful work.

(b) It is, therefore, the purpose of this Act to provide (1) for a continuing survey and special studies to secure on a non-compulsory basis accurate and current statistical information on the amount, distribution, and effects of illness and disability in the United States and the services received for or because of such conditions; and (2) for studying methods and survey techniques for securing such statistical information, with a view toward their continuing improvement.

Sec. 3. Part A of title III of the Public Health Service Act (42 U. S. C. ch. 6A) is amended by adding after section 304 the following new section:

"NATIONAL HEALTH SURVEYS AND STUDIES

Sec. 305. (a) The Surgeon General is authorized (1) to make, by sampling or other appropriate means, surveys and special studies of the population of the United States to determine the extent of illness and disability and related information such as: (A) the number, age, sex, ability to work or engage in other activities, and occupation or activities of persons afflicted with chronic or other disease or injury or handicapping condition; (B) the type of disease or injury or handicapping condition of each person so afflicted; (C) the length of time that each such person has been prevented from carrying on his occupation or activities; (D) the amounts and types of services received for or because of such conditions; and (E) the economic and other impacts of such conditions; and (2) in connection therewith, to develop and test new or improved methods for obtaining current data on illness and disability and related information.

"(b) The Surgeon General is authorized, at appropriate intervals, to make available, through publications and otherwise, to any interested governmental or

other public or private agencies, organizations, or groups, or to the public, the results of surveys or studies made pursuant to subsection (a).

"(c) For each fiscal year beginning after June 30, 1956, there are authorized to be appropriated such sums as the Congress may determine for carrying out the provisions of this section.

"(d) To assist in carrying out the provisions of this section the Surgeon General is authorized and directed to cooperate and consult with the Departments of Commerce and Labor and any other interested Federal Departments or agencies and with State health departments. For such purpose he shall utilize insofar as possible the services or facilities of any agency of the Federal Government and, without regard to section 3709 of the Revised Statutes, as amended, of any appropriate State or other public agency, and may, without regard to section 3709 of the Revised Statutes, as amended, utilize the services or facilities of any private agency, organization, group, or individual, in accordance with written agreements between the head of such agency, organization, or group, or such individual, and the Secretary of Health, Education, and Welfare. Payment, if any, for such services or facilities shall be made in such amounts as may be provided in such agreement."

Sec. 4. Section 301 of the Public Health Service Act (42 U. S. C. 241) is amended by striking out the word "and" at the end of paragraph (f), redesignating paragraph (g) as paragraph (h), and inserting immediately following paragraph (f) the following new paragraph:

"(g) Make available, to health officials, scientists, and appropriate public and other nonprofit institutions and organizations, technical advice and assistance on the application of statistical methods to experiments, studies, and surveys in health and medical fields: and".

Approved July 3, 1956.

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REPORTS FROM THE U. S. NATIONAL HEALTH SURVEY

Series A

1. Origin and Program of the U. S. National Health Survey. Public Health Service Publication No. 584–A1.

Series B

1. Preliminary Report on Volume of Physician Visits, United States, July–September 1957. Public Health Service Publication No. 584–B1. Price 25 cents.
2. Preliminary Report on Volume of Dental Care, United States, July–September 1957. Public Health Service Publication No. 584–B2. Price 25 cents.
3. Preliminary Report on Number of Persons Injured, United States, July–December 1957. Public Health Service Publication No. 584–B3. In press.

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U. S. *National Health Survey.*

Origin and program of the U. S. National Health Survey; a description of the developments leading to enactment of the National health survey act, and a statement of the policies and initial program of the Survey. Washington, U. S. Dept. of Health, Education, and Welfare, Public Health Service, Division of Public Health Methods, 1958.

36 p. 26 cm. (*Its* Health statistics, ser. A–1)

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"National health survey act": p. 35–36.

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