

# **The Analytical Potential of NCHS Data for Health Care Systems**

**A Report of the United States National  
Committee on Vital and Health Statistics**

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# THE ANALYTICAL POTENTIAL OF NCHS DATA FOR HEALTH CARE SYSTEMS

## A REPORT OF THE UNITED STATES NATIONAL COMMITTEE ON VITAL AND HEALTH STATISTICS

### INTRODUCTION

At their October 19-20, 1972 meeting the U.S. National Committee on Vital and Health Statistics established a Technical Consulting Panel charged with investigating ways in which the analytical potential of data produced by the National Center for Health Statistics (NCHS) could be more fully realized. The Panel was organized in the spring of 1973 and held its first meeting September 17, 1973.

Following a brief account of background factors related to the charges given to this Panel, the report deals with four main topics—users, their information needs, specific recommendations, and conclusions.

### GENERAL RECOMMENDATIONS

The Technical Consulting Panel recommends that NCHS explore the possibilities of increasing the analytical potential of data related to health care subject matter issues and methodological problems concerned with:

1. The estimation of *costs* of alternative types of national health insurance. These estimates would be based on data showing the frequency distribution of medical care expenditures.
2. The *effect of nonfinancial barriers* on the accessibility of medical care.
3. The development of *measures of population health levels and change* over time.
4. The further development of "*synthetic estimates*" for local area health planning.

5. The development of *collaborative publications* (NCHS staff and other investigators) to be published in journals read by members of the medical community.
6. The development of *increased consultative capacity* within NCHS.

Specific recommendations developed by members of the Panel appear in Section III. A final recommendation is concerned with the need to provide NCHS with resources for implementing the subject matter and methodological recommendations made by this panel.

### BACKGROUND

"Unlike most other large organizations, bureaus are economically one-faced rather than two-faced. They face input markets where they buy the scarce resources they need to produce their outputs. But they face no economic markets whatever on the output side. Therefore, they have no direct way of evaluating their outputs in relation to the costs of the inputs used to make them."<sup>1</sup>

The National Center for Health Statistics, one of the several semi-independent governmental agencies producing general purpose statistics, is in the sense of Downs' comment economically one-faced. In its mission to:

"...develop and maintain systems capable of providing reliable, general purpose, national, descriptive health statistics...for the use of the health industry and related industries, both public and private."<sup>2</sup>

traditional performance measures have been related more to the technical quality of statistics produced than to the other face of the problem, that is, to an assessment of the extent to which the Center's product meets the consumer's needs.<sup>3</sup>

This does not imply, however, that efforts have not been made to evaluate the NCHS output. Several methods have been used. These include: user surveys conducted by NCHS, surveillance of legislative and health program proposals as they relate to NCHS activities, consultation with NCHS advisors representing a wide range of interests, representation on informal committees within government, input from State statistical offices through the Public Health Conference on Records and Statistics, and advice from the U.S. National Committee on Vital and Health Statistics. (See appendix I for illustrations of the type of input made by the U.S. National Committee on Vital and Health Statistics to the National Center for Health Statistics.) In addition, NCHS was recently reviewed by an expert committee whose report concerned itself with an assessment of present NCHS activity and with an overall evaluation of the "... extent to which the statistical output meets present and anticipated national health needs."<sup>4</sup>

Both the former and present director of NCHS are well aware of the one-faced dilemma of their organization. They spoke to this point at the WHO sponsored Second International Conference of National Committees on Vital and Health Statistics, and pointed out not only the elusive nature of the problem but also the perils of not being sufficiently concerned with user needs:

"Too often statistical systems are designed and operated by statisticians who have no established channel for *real communication* with the planners, policymakers, and program managers expected to use the statistical results. The table of results from the systems become an end in themselves. They may be timely; they may be reliable; but they are simply not fully providing the kinds of information the potential users need or, perhaps, the needed information is obtainable in the system but is not being presented properly at all.

"The most important need, we feel, is for the statistician to come out of his ivory tower and

study what is being done, or perhaps, what is not being done, with the statistics already produced.

"Statistical systems of this sort (not responsive to consumer's needs) are created and may operate year after year through the inertia of governmental process, until, perhaps, a serious fiscal situation arises. It is discovered that little use is being made of the tables turned out by the statistical system, and the budget office wields its axe."<sup>5</sup>

Limited resources, changing health service needs, and the competition for funds among important governmental programs have resulted in increased pressures for relevant and timely information that can be used in planning and allocating resources to national health programs.<sup>6</sup> It is reasonable to expect NCHS to provide a significant share of the quantitative information used by decision makers in establishing national health priorities and in the allocation of funds to implement or strengthen indicated programs. It is the responsibility of NCHS to meet these expectations by the timely production of relevant information in a format that enhances its use by decision makers.

It is also reasonable to recognize that these increased pressures for an improved information base cannot be met unless adequate budgetary support and sufficient staff are provided to NCHS. In working with NCHS staff in the exploration of numerous problems identified later in this report, it became obvious to Panel members that a large part of the problem was not the insensitivity to users' needs but rather the inability of NCHS, under severe fiscal constraints, to meet the rapidly increasing demand for health statistics.

With these considerations in mind, members of a Technical Consulting Panel (TCP), established in October 1972 by the U.S. National Committee on Vital and Health Statistics, responded to the request to explore ways of increasing the analytical potentialities of NCHS data.

### Charge to the Technical Consulting Panel

Specifically, the charge to the Panel was as follows:

"Most presentations and analyses of NCHS data are limited to statistics produced by a single data collection mechanism. Rarely, a particular health problem is examined in terms of all of the data from various sources pertaining to that problem. The analytic potential of NCHS data has been only partially realized.

"The Technical Consulting Panel will identify health and demographic statistical problems which warrant intensive analytical studies. These may be of two types:

- "a. Subject matter-oriented analyses, in which the focus is on the health or demographic problem;
- "b. Methodology-oriented analyses, in which the focus is on the statistical problem of relationships between sets of data collected by different mechanisms or on evaluation of the utility of the sets of data.

"The Panel's judgment as to priorities among the various problem-oriented analyses will be useful, along with identification of particular types of data required for the analyses but not presently available."

As the Panel began to consider its charge two problems soon became clear. First, the charge as stated was too broad to be dealt with adequately by the interests represented by members of the Panel. For this reason we have restricted ourselves to a consideration of ways to increase the analytical potential of NCHS data for health care and suggest that other TCP's should be formed to look into other important areas, such as the demographic and epidemiological uses of NCHS data.

Secondly, within the broad area of data for health care we observed that the subject matter and methodology issues had to be viewed from the perspective of both *present* and *potential* users of NCHS data. The Center is able in a limited way to appraise present user requirements through specific requests that it receives and more generally through formal and informal contacts with numerous agencies and individuals. In the short run this interorganizational assessment of present user

needs is supplemented by the Panel members who reflect an important, though not complete or necessarily representative, source of external insight. It is apparent that in the long run a more formal mechanism must be established for effective representative and continuing external input from both present and potential users of NCHS data. This is necessary if the Center is to move from its essentially one-faced orientation to serve its clientele more adequately.

Admitting the somewhat limited horizons of the Panel, it has been possible nevertheless to subdivide further the two basic elements of the Panel's charge (subject matter and methodology) and to list specific topics of concern (section III) within the expanded set of categories.

Within the subject matter area the Panel has found it useful to distinguish between problems which have broad policy implications and those which relate to more specific analytical questions. With respect to policy matters the Panel recognizes, for example, that NCHS data have the potential for analysis of the effects which alternative proposals for national health insurance might be expected to have on the utilization and cost of selected services for specified segments of the population. The question of how NCHS data might be utilized to determine the distribution of preventable, in contrast with currently nonpreventable, disease within particular subgroups is illustrative of more distinct problems.

In the methodological realm, the Panel has found it convenient to delineate four aspects of the problem. First, consideration must be given to existing data gaps which present obstacles to potential users of NCHS data. Several types of data gaps identified previously by working groups of the U.S. National Committee on Vital and Health Statistics are summarized in appendix I.

Secondly, attention must be directed to limitations in the value of existing data due to the incompatibility of data from multiple sources. In part such incompatibility might arise from differences in units of measurement. (See appendix II for a summary of an NCHS staff study of "Inconsistencies of NCHS Data.") Data on the supply of health manpower, for example, might not be organized geographically to be compatible with the primary sampling units of the Health Interview Survey supplying morbidity information. The second

aspect of incompatibility concerns the dynamics of health and health care, for example, data do not relate episodes of illness to the care seeking patterns of individual patients.

The third aspect of methodology relates to the "packaging" of information in forms that are most meaningful to users. Such packaging includes the preparation of integrated basic data sets, descriptive compilations of summary statistics, publication of analyses of general interest, and the provision of consultative services to users with specialized analytical needs.

The fourth aspect is concerned with an exploration of new distribution channels for NCHS data. The existing channels, mainly published series, represent one mode. The further development of additional channels of distribution, e.g., tape transcripts, may be indicated in order to maximize the impact of methodological changes that could result from a consideration of data gaps, compatibility of data sets, and improved "packaging."

In addition to the classes of subject matter and methodological issues that were considered by the TCP in an effort to explore ways of increasing the analytical potential of NCHS data, there is another dimension of the problem that needs to be considered. This involves setting up review mechanisms that will assure that the needs of data users are known to information specialists within NCHS.

### Approach Used by the Technical Consulting Panel

Three factors have influenced the approach taken by the TCP in addressing its assignment. The first was "The Report of the Committee to Evaluate the National Center for Health Statistics"<sup>4</sup> and their view that:

"An effective system of health statistics must, then, provide those responsible for health services with necessary information to help understand the situation, identify problems, set priorities, define policy, plan programs, manage services efficiently, and evaluate effectiveness."

Second, were the implications of Downs' description of the problems of an economically one-faced organization in sensing the extent to which

the organization is maintaining a reasonable *quid pro quo* relationship with both those who control the agency's appropriations and budget (executive and legislative branches) and other users of NCHS output.

The third influencing factor is the recognition that NCHS, like many other nonprofit organizations, has a complex marketing mission to perform. Marketing in the nonprofit sector involves assessment of: (1) the marketing task, with emphasis on the identification of consumers and the importance of satisfying their needs; (2) the marketing mix, which includes the ideas of product policy and distribution channels; and (3) distinctive competence, which in this instance involves the unique characteristics and the mandate of the National Center for Health Statistics.<sup>8</sup>

The following approach evolved from the TCP's consideration of these factors:

Section I. Identification of users and potential users of NCHS data.

Section II. Assessment of the information needs of users and potential users and the relationship of these needs to data produced by NCHS.

Section III. Specific recommendations.

Section IV. Conclusions.

In pursuing this plan over the past 6 months the TCP formulated several specific recommendations for improving the analytical potential of NCHS data only to discover that NCHS staff members had already initiated plans to implement similar recommendations. This is important for at least three reasons. First, it is satisfying to discover that the TCP and NCHS staff independently arrived at similar conclusions. Second, it reinforces our belief that as an organization NCHS is aware of and is adapting to user needs. Third, the shared interest between TCP members and NCHS staff in problem areas provides a framework for continuing jointly a work program that enhances implementation of recommendations. With this as background we can now begin to focus on the first section of the TCP report.

## SECTION I. USERS AND POTENTIAL USERS

The National Center for Health Statistics has a variety of formal and informal methods of alerting itself to users' needs for data. These include: the U.S. National Committee on Vital and Health Statistics, the Advisory Committee for the Cooperative Health Statistics System (CHSS) (and its predecessor, the Standing Committee of the Public Health Conference on Records and Statistics, PHCRS), the Panel of NCHS advisors, relationships with officials in other parts of the U.S. Departments of Health, Education, and Welfare (DHEW), and other governmental agencies, participation in activities of professional organizations and academic institutions, and *ad hoc* surveys of user needs.

Formal reports of the U.S. National Committee and the Advisory Committee for CHSS<sup>9</sup> provide a record of the expert opinion and advice received.<sup>10-12</sup> These are usually specific with respect to types of data, methods of data collection, and purposes to be served. Information on users' needs which is received through other organizational relationships is not as well documented and has not been reviewed systematically.

Two types of *ad hoc* studies of users' needs have been made by NCHS. The first type was based on a sampling of requests made to NCHS for publications, other data, and other information. Such a survey throws light only on overly expressed needs, cannot measure unexpressed needs, provides little insight on the uses to which the data are put, and yields no knowledge of the kinds of changes in data systems and publications which users would favor.

A second type of survey is illustrated by a study conducted in 1968 in which NCHS attempted to get some of this additional information through a two-stage sample survey of present and potential users. The first stage consisted of building lists of potential users from NCHS mailing lists, directories of public and private health organizations, and authors of health and demographic literature. Interviews with small numbers of people in the 11 categories which were established for sampling purposes were used to construct a questionnaire, to identify users of health and vital statistics from other sources, to inquire about knowl-

edge and use of NCHS data, and to determine the individual users' occupational responsibilities. In this first stage the questionnaire was sent to 5,200 persons with an 80 percent response rate. All but 5 percent of those who had used any health statistical data had used data from NCHS.

Of the 2,400 respondents who had used NCHS data within the last 6 months 40 percent were from a university, a hospital, or a clinic; State and local governments including health departments comprised 17 percent; agencies of the Federal Government's executive branch made up 15 percent; and private industry, particularly insurance companies, 12 percent. These 2,400 recent users—58 percent of all stage 1 respondents—were in the universe of significant users from which a sample of 952 would receive an indepth questionnaire.

In this second stage 78 percent responded, but an early analysis based on 73 percent was allowed to stand when the late respondents were found to have characteristics similar to the earlier respondents.

Five classes of respondents were established for analytical purposes, and important differences were observed in types of uses made of NCHS data. The five classes are (1) Federal Government, (2) State and local government, (3) planning group and nonprofit agencies, (4) universities and hospitals, and (5) other private enterprises.

- More than one-third (36 percent) found it necessary to manipulate the data in some way rather than use them in the form in which they were received.
- Fifty-five percent found comparison of two or more figures more important than magnitude of a single figure (20 percent).
- Geographic, time, and other comparisons were made in descending order of frequency (32, 27, and 19 percent, respectively).
- More than half of the respondents used NCHS data along with data from other sources (55 percent) while one-fourth used NCHS data directly.

The users in this second stage felt that (1) *measures of health* was the subject matter area needing the greatest additional emphasis, followed by (2) *medical economic data* (costs of services,

insurance coverage, etc.), (3) *utilization services*, and (4) *demographic data*. Statistics on existing resources, *facilities* and *manpower*, were thought in least need of additional emphasis.

The respondents were also asked to rank their present and projected needs for the following items in order of importance:

- Demographic, social, and economic detail
- Longitudinal data (sequential observations on the same individual)
- Comparison of change over time
- Diagnostic detail
- Geographic detail

Given these choices, half (49 percent) of all users ranked demographic, social, and economic detail first. Time comparisons were ranked first by 16 percent. Geographic detail was ranked first by only 3 percent, but this may reflect the users' awareness that detailed geographic data are not available from surveys conducted by NCHS.

Three important limitations of this study are apparent and have implications for an assessment of the analytical potential of NCHS data. First, *this users survey was not designed to get information on the nature, impact, and relative importance of various uses*. The study does not distinguish, for example, between the value of a statistic on the average number of physician visits per person per year as used in a speech by a Federal official and an analysis of socioeconomic and geographic differences in those rates for the purpose of proposing or establishing national policy.

Second, *this type of study does not systematically explore potential user segments*. For example, although users in the executive branch of the Federal Government constituted 15 percent of significant users in the first-stage survey, there is not evidence of use by the legislative branch of the Federal Government. It is hardly likely that all 14 national health insurance bills now before Congress were developed without some use of NCHS data, but it is also significant that this important group is not identified as a user segment.

The third limitation of this users study concerns *consumer attitudes about the balance between descriptive statistics and the analysis of*

*NCHS data*. For reasons related to maintenance of a reputation for objectivity, NCHS has avoided analytical studies related to policy decision areas. There are, however, options and user preferences in the direction of more analytical work that have not been explored fully by means of user surveys.<sup>a</sup> Implications from NCHS user studies along with an awareness of these three types of limitations will be reflected in following sections of this report.

## SECTION II. USER NEEDS AS ASSESSED BY THE TECHNICAL CONSULTING PANEL

The Technical Consulting Panel as constituted makes no claim of being representative of users and potential users of NCHS data. The Panel is mainly discipline oriented (an economist, sociologist, demographer, health planner, former State and local health statistician and ex officio, and a member of the NCHS staff). The limited view of the Panel has been offset somewhat by consultations with users and potential users from other fields. Even so there is good reason to introduce this section of the TCP report with a disclaimer with regard to the representativeness of our views.

In considering means for enhancing the analytic potential of NCHS data, certain issues arise which can be classified as essentially methodological in nature. In contrast, issues which are on the surface subject matter oriented (i.e., statements of important questions to be answered by NCHS data) frequently contain methodological implications and therefore cannot be uniquely classified. For example, questions concerning the

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<sup>a</sup>On the occasion of its 50th anniversary the Office of Business Economics (OBE), Department of Commerce presented in Part II of the Survey of Current Business, a series of invited papers written by a wide range of data users. In a review article, the Director of OBE, Jaszi, reacted to numerous points raised in the contributed papers. One point concerned user requests for increased analysis and interpretation of data. The position taken by the Director of OBE recognized the dangers of analytical involvement and stated OBE policy. The impression one gets from this sampling of OBE's user views and the Director's response is that there are mutually acceptable compromises on the balance of descriptive and analytical studies. A similar compromise might be found for the activities of NCHS. *Survey of Current Business*, OBE: Vol. 57, 7, Part II, July 1971.

costs of specified services provided to different population groups in varied organizational settings may be answered only through analysis of Medicare, Social Security Administration, American Hospital Association, and other data sets and may consequently raise major methodological questions concerning data compatibility.

The following list begins with subject matter issues related to methodological problems. The second group of issues is primarily methodological in nature. Specific recommendations related to selected problem areas are given in the next section of the TCP report.

### **Subject Matter Issues and Related Methodological Problems**

1. *Estimation of costs of alternative types of national health insurance plans.* In part these estimates would need to be based on data showing the frequency distribution of medical expenditures. Related methodological problems include:

- 1.1 Studies involving health insurance coverage and verification of medical expenditures linked to social and demographic characteristics.
- 1.2 Studies of distributional consequences of catastrophic health insurance coverage.
- 1.3 Expenditure studies using imputed value techniques.
- 1.4 Employer/employee sharing of health insurance premium coverage.

2. *Effect of nonfinancial barriers on accessibility of medical care.* Policy research on this key question is hampered by the absence of adequate data bringing together all facets of demand and supply determinants. Related methodological problems include:

- 2.1 Studies of the determinants of medical care utilization for geographic areas linked to the availability of medical service resources (medical manpower, facilities, modes of delivery of health services).
- 2.2 Comparisons of medical care utilization patterns among those eligible for

benefits provided by public programs with persons not covered by these programs.

- 2.3 Determinants of medical specialization and choice of geographic location (physicians and dentists).

### **Issues That Are Primarily Methodological in Nature**

1. Development of measures of population health levels and change over time. This issue generates the need for an integrated data base, a system of health accounts which would permit meaningful association to be made between the health needs of various population groups, the provision and utilization of services in response to these needs, and the outcome of such service utilization. This would require the organization and maintenance of a body of timely, reliable, computerized data relating to health status, services, facilities, and manpower acquired from multiple sources and accessible to a wide range of users. The emphasis here is on access of compatible sets of basic data rather than access to published analyses. Because some data sets are compiled from secondary sources, the degree of accuracy and completeness is variable. Moreover, the capability of linkage to a particular geographical area, population group, or time period is frequently inadequate. Finally, since the concern here is with the development of a repository of varied data subjected to minimal processing and interpretation, the elapsed time between data collection and accessibility should be minimized.

2. Further development of "synthetic estimates" for local area health planning. Local areas especially need help in developing utilization estimates. At present such estimates are frequently based upon data that are grossly inadequate if they exist at all.

3. Increased attention to the routine analysis and reporting of findings, conclusions, and recommendations of general interest to users possibly through a collaborative (NCHS staff and non-NCHS investigators) publication series. The emphasis here is on the analysis and dissemination of information in scientific journals rather than on "in-house" publications of general purpose descriptive statistics. Through joint efforts NCHS staff may

gain a better understanding of potential user data needs.

4. Provision for increased consultative capacity within NCHS. Recognizing that user requirements are varied and in many respects specialized, NCHS should increase its capacity to respond to these specialized needs. Through this consultative service users could gain a better appreciation of the range of existing NCHS data sources, their analytic potential, and their limitations.

5. The publication series of NCHS are well known to selected segments of the health sector. There are, however, other segments, possibly potential users, who are either not aware of the data available or not able to make use of it in the format in which it is presented. Other governmental agencies, e.g., SSA (examples include SSA's Health Insurance Series, Current Medicare Survey Series, and National Health Insurance Proposals publications) and the Census Bureau (see for example the series - "We the American People," Series 1-15, U.S. Department of Commerce, Bureau of the Census, 1972), face a similar packaging/distribution channel problem and have developed methods aimed at a broad range of data users. Their techniques for assembling and disseminating information through publications should be considered by NCHS.

6. The Census Bureau through its summary tape processing network has opened another distribution channel that may also be useful to NCHS. Efforts in this direction could be related to the consultative service mentioned in 4. above, to the evolving Cooperative Health Statistics System and to educational institutions where many potential users of NCHS data receive their professional training.

In the preceding listing of user needs as viewed by Panel members it is useful to distinguish between the high priority problem areas that can be met by new uses of existing NCHS data and those that imply a modification of NCHS data systems or methods.

The following classification was used by the TCP for stratifying identified subject matter and methodological issues with respect to present capabilities of NCHS data sets.

#### Class 1. Utilizing Existing NCHS Data

- From publications and unpublished data
- By manipulation of existing data
- Combination of NCHS data with other data sets.

#### Class 2. Within Current Survey Framework

- New questions on surveys
- Merger of existing data files, e.g., Health Interview Survey and Master Facility Inventory.

#### Class 3. New Survey Methods

- Cohort followed for a period of time
- Coordinated samples, e.g., Health Interview Survey, Health Examination Survey, and Hospital Discharge Survey
- Sample of above followed for a period of time.

#### Class 4. New Surveys, e.g., prepaid group practice enrollees.

In developing specific recommendations, the TCP made an effort to consider both the importance of identified issues and the implications of recommendations on the work program of NCHS. Thus, the issues highlighted in the next section represent a mix of those in which the importance of the issue and/or the feasibility of the recommendations is favorable to the objective of increasing the analytical potential of NCHS data.

### SECTION III. SPECIFIC RECOMMENDATIONS

Each member of the TCP was asked to develop more fully one or more of the issues he or she had identified, keeping in mind the capability of NCHS to respond. Several of these recommendations were developed jointly with NCHS staff.

## Subject Matter

1. General issue area: Estimation of costs of alternative types of national health insurance plans.

Specific issue: Frequency distribution of medical care expenditures.

The following recommendations are divided into those which might be carried out with data that are currently available (Class 1) and those which would require alteration in data collection methods (Classes 2, 3, and 4).

*Possible with current data (Class 1):* Of the data available from NCHS at the time of this study, those based on the annual Health Interview Study offer the greatest potential for analysis of estimation of costs of alternative types of health insurance plans.

The 1970 survey offers some fine opportunities to look at the relationships between health insurance coverage and utilization patterns and illness. Of particular interest would be use of hospitals and doctor visits for chronic conditions by the presence and type of health insurance coverage. This is the type of information being sought to estimate the impact of various national health insurance proposals on the population as a whole and on various subgroups within it.

One problem in cross-classifying the expense information collected in 1971 with other variables is that the expense information is the only data which applies explicitly to calendar year 1970. However, one could examine the relative burden for those with activity and mobility limitation since in most cases these conditions would be retrospective and, thus, would be present in 1970 as well. Also, since the main import of out-of-pocket expenditures is to measure the financial burden of health services, a measure of family outlay relative to family income would be an interesting dependent variable to examine according to the demographic data collected. Finally, it might be possible to do some analyses on an aggregate basis using both 1970 and 1971 data. For example, if an analyst wanted to know something about the

financial burden of illness relative to the amount of disability experienced for different income groups, the data would be available as long as information on the demographic variable (income) is collected in both years. The process would be to compare the ratios of aggregate disability days from the 1970 survey to the 1970 expenditure information collected in 1971 for each income group.

With the health insurance data collected in 1972, analyses similar to those suggested for the 1970 study might be performed. Perhaps of special interest, given the Health Maintenance Organization (HMO) legislation, would be the behavior of people covered under prepaid group practice, although sample size will be a problem. The 1972 data also allows for the direct examination of the relationship between hospital and physician utilization and type of health insurance coverage. The more detailed nature of the questions provide more opportunity than was true for the 1970 data.

Analyses of drug expenditures and utilization by source of payment using the 1973 data will be particularly relevant to the debate as to whether drugs should be included under Medicare and possibly under national health insurance. One problem here is, how are payments under major medical coverage to be treated since the question has only a 2-week recall period on the HIS questionnaire.

More analyses might be attempted linking manpower and facilities data by area to individual observations. The availability of information on the supply factors might considerably enhance analysis of the determinants of utilization and expenditure behavior.

*Design changes necessary (Classes 2-4):* Given the concern about validity of respondent reporting of out-of-pocket costs and insurance coverage, one suggestion would be to do verification studies through providers and carriers. Such verifications on national samples have proven feasible (Ronald Andersen and Odin W. Anderson, *A Decade of Health Services*, University of Chicago Press, 1967; and Ronald Andersen, *et al.*, *Health Services Use*, DHEW Publication No. (HSM) 73-3004, October 1973). One problem is that the National Health Survey sample is much bigger than the samples in the above studies. If total verification were attempted, the demands made on a particular provider or carrier would be much greater. It might be possible to verify only a proportion of

the total sample and adjust the estimates on the basis of the partial verification (Class 2).

Verifications might also be used to estimate total expenditures for services received in addition to improving the estimates for out-of-pocket costs. Analyses of total expenditures emphasize total costs to the system rather than financial burden to the individual. While other sources such as the Social Security Administration (SSA) provide aggregate data on the total costs of health services, there would still seem to be some value for NCHS to provide such estimates from time to time. For one thing the data sources are different, SSA stresses producer data while NCHS estimates would originate from the consumer. The possibility of the different sources validating each other would be useful. Probably of more importance would be the ability of NCHS to monitor total expenditures for various subgroups in the population defined by various demographic variables, illness variables, and utilization variables not available from aggregate sources. For example, analyses of total expenditures might be done for groups of different income, education, or disability levels (Classes 3 and 4).

Another approach for getting at total medical care expenditures for a sample of consumers is to estimate expenditures according to the units for service consumed. The advantage of this approach is that independent information collected from providers and third-party payers is not necessary. Assuming that enough detail is collected on the units, (i.e., number of hospital days, number of doctor visits, type of hospital, and doctor) health service estimates on the cost of these services might be made on the basis of cost information available from such sources as the AMA Periodic Survey, the AHA records on per diem charges from individual hospitals, and the California Relative Value Scale. An initial attempt using this approach on a national survey has been done and is briefly described in Ronald Andersen, et al., *Expenditures for Personal Health Services*, DHEW Publication No. (HRA) 74-3105.

Preliminary analyses comparing these estimates with verified information show relatively small discrepancies for mean estimates of hospital expenditures. The variability for individual estimates has not yet been examined. More detailed information of the procedure and methodological

analyses of this approach will be provided in later publications. One major drawback of this approach currently is the necessity for intensive involvement of a relatively, highly trained coding staff and the probable difficulty of replicating some of the estimates by independent coders. Hopefully, the magnitude of these problems might be reduced by more refined and sophisticated decisionmaking procedures with a greater proportion of the decisions being made by computer rather than individual coders (Class 1).

A special problem, particularly for estimating hospital and some physician expenditures, results from high expenditure individuals. The highly skewed nature of some expenditure distributions results in inordinately high standard errors. One solution is to rely more heavily on analyses of distributional and median estimates than has been done in the past. Increasing the sample size is another option which may be open to NCHS. Another possible way to deal with the problem is to use a screening procedure to enrich the sample with high expenditure families and individuals. The latter procedure has been employed in one national survey (Patricia Collette, Odin W. Anderson, and Jacob J. Feldman, *Changes in Family Medical Care Expenditures and Voluntary Health Insurance*, Cambridge, Harvard University Press, 1963), (Class 3).

A study of the feasibility of another approach for obtaining information on medical care expenditures is now being carried out by the Division of Health Interview Statistics (HIS) of the Center in response to persistent demands for medical economic data regarding the relationship between health care expenditures, utilization of health services,<sup>7</sup> and health insurance coverage. The Medical Economics Research Study is being implemented through a contract with Johns Hopkins Medical Institution. Johns Hopkins has in turn subcontracted the data collection and data processing activities associated with this study to a consulting firm, Westat, Inc.

The contractors are working with the Division of Health Interview Statistics in developing and field testing procedures for a panel survey. The plan calls for interviewers to conduct a series of interviews at each sample household either in person or via the telephone to obtain the required information. To aid the respondents to recall and

report the event accurately, they will be asked to record the health services received and the associated expenditures in diaries. This information, regarding health services and health expenditures obtained in the household interviews, will be supplemented by data obtained from record sources such as health care providers and health insurance organizations. Through the linkage of the household interview data and the record source information, it is anticipated that the most accurate estimates can be derived.

If the tested procedures prove to be feasible, they will be used in a national data collection effort as soon as the resources are available.<sup>b</sup>

In conclusion, the TCP member feels that the current analyses of NCHS with respect to health insurance and expenditures are most useful. In addition, the data being collected lend themselves to important additional analyses. Finally, there are numerous opportunities to increase the scope of the data which are collected and the type of analyses which are done on them.

2. General issue area: Effect of supply factors on accessibility of medical care.

Specific issues: Utilization and availability of medical service resources (manpower, facilities, mode of delivery).

Utilization and health status of Medicaid beneficiaries.

As part of an effort to curtail Federal expenditures, the administration has proposed phasing out Federal support for many health programs which provide direct medical care services (such as community mental health centers) or which subsidize the creation of health resources (Hill-Burton, training fellowships). The major new initiative proposed is national health insurance.

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<sup>b</sup>Personal communication from Mr. Garrie J. Losee, Acting Deputy Associate Director for Data Systems, NCHS, November 25, 1974.

This switch in emphasis away from programs which intervene directly on the supply side of the medical care market raises one crucial question: are financing programs sufficient to assure adequate access to medical care for all individuals? Or are supplementary programs necessary to overcome nonfinancial barriers to medical care?

Research on this key question is hampered by the absence of adequate data bringing together all facets of demand and supply determinants. There are a number of data tasks that NCHS could undertake which would permit substantial research programs on this issue:

- Merger of facilities data from the Master Facility Inventory with the Health Interview Survey.
- Additional questions on the Health Interview Survey relating to the availability of Health Maintenance Organizations, prepaid group practices, neighborhood health centers, and other free clinics.
- Additional questions on the closest available medical resources.
- Design of enrollment based surveys to determine how various modes of health service delivery affect utilization of services.

Merger of facilities data from the Master Facility Inventory with the Health Interview Survey is fairly straightforward. For each sample person questionnaire in HIS survey, the medical resources in his area should be added to his person record. For persons residing in standard metropolitan statistical areas (SMSA), resources would be measured relative to the population in the SMSA. For other persons the county would be an appropriate geographical unit.

Another geographic stratification of analytical interest would be the Professional Standards Review Organization (PSRO) areas. Measures of medical resources which should be included at a minimum are: patient care physicians per capita, general practitioners per capita, primary care physicians per capita (general practitioners, pediatricians, and internists), hospital-based physicians per capita, surgical specialist physicians per capita, beds in short-term hospitals per capita, beds in extended-care facilities per capita (or per person aged 65 and over in the area), and

beds in other nursing home facilities. Other measures such as physician extenders, nurses, allied health workers, pharmacists, etc., might be added over time. Other dimensions that might be added eventually include State and local government hospital beds, hospital beds for training purposes, home health agencies, independent laboratories, organized outpatient departments, etc. These data on availability of medical resources should be added directly to the HIS data base and be distributed via standardized tapes to researchers. (Class 1.)

While merging availability of medical resources data with the Health Interview Survey is a fairly simple extension which should provide some valuable insights, supplementary questions added to HIS would be of even greater value. Families could be asked if they received any services from such organizations as health maintenance organizations, neighborhood health centers, prepaid group practices, maternal and infant clinics, child and youth clinics, or other clinics. In addition to knowing whether services were obtained from such organizations, it would be desirable to know whether the *option* of care in such organizations was available. To determine this the interviewer might enter data on the existence of such organizations in the Primary Sampling Unit or surrounding area in collecting the data. A determination would have to be made of the maximum distance a facility could be within to be considered "available." (Class 2.)

A related tactic would be to inquire of the individual as to the closest available medical resources. This would include not only organizations but also individual physicians. Questions to be pursued could include: how far is the nearest doctor; why don't you go there instead of to — (He's too expensive, he doesn't take new patients, the waiting time is too long, etc.); why don't you go to a nearby private hospital? This would permit an examination of what alternatives were available to the individual and why closer alternatives weren't pursued. (Class 2.)

While the above suggestions could be incorporated within the framework of existing NCHS surveys, thorough examination of the effect of supply on utilization of medical services is impeded without the more detailed type of data which would be forthcoming from specially designed sur-

veys. Of particular interest would be two surveys concentrating on the importance of supply availability in rural areas and in central city areas. To illustrate, several delivery models have been proposed for rural areas. These include (1) integrated service strategy (combining medical care, nutrition, counseling, sanitation, improved housing, and other social services); (2) medical care service organization strategy (neighborhood health centers, rural clinics, hospital outpatient outreach programs, and HMO's); (3) medical manpower strategy (National Health Services Corps, loan forgiveness, recruitment of medical students from rural areas, and rural preceptorships); (4) paramedical personnel strategy (physician extenders, nurse practitioners, and allied health personnel); (5) technology (telecommunications, use of computers, and greater dispersal of laboratory and X-ray equipment to physicians); and (6) transportation (emergency transportation systems, mobile vans, etc.). A carefully designed survey might make it possible to compare utilization of medical services and perhaps impact on health status for rural areas according to the availability of these alternative delivery programs. A similar type survey for strategies that have been pursued in central city areas should also be designed. (Class 4.)

*Impact of Medicaid on the poor:* Existing data with which to analyze the impact of public medical care financing programs are limited because some programs, such as Medicaid, have not developed adequate statistical reporting systems, and because program data inherently do not permit comparisons of those covered and those ineligible for benefits. Surveys of NCHS could help remedy both of these deficiencies, in part through expansion of questions on current surveys but also, perhaps, through the development of new survey populations. The HIS and HANES (Health and Nutrition Examination Survey) provide excellent opportunities for comparing medical care utilization with health status patterns of persons not covered by such programs. By systematically including questions on Medicaid eligibility, important gaps in information about this program could be eliminated.

For example, it is currently difficult to obtain counts of poor persons who are not covered by Medicaid, counts of the proportion of Medicaid recipients falling below the poverty line, counts of

poor persons who are not covered by either Medicaid or private insurance, etc. These very basic data could be estimated if care were taken to obtain accurate information on Medicaid eligibility. Estimates from the U.S. Budget indicate that approximately 27 million persons received Medicaid benefits in 1974. This is sizable enough that it should be possible to pick up some essential program information by simply adding questions on Medicaid eligibility. (Class 2.)

In addition to supplying much needed information on counts of poor persons eligible or ineligible for Medicaid, HIS could be used to compare whether Medicaid beneficiaries are sicker than other poor persons, whether they use more hospital care, or whether they see physicians more frequently than other poor persons. If the sample of persons covered by Medicaid were sufficiently large, some investigation of sociodemographic characteristics of recipients of Medicaid services could also be made. Currently no one knows how many persons are eligible for Medicaid, or how eligibles or enrollees are distributed by income, race, or residence. This type of information is essential in determining whether all groups have adequate access to medical care services under extensive financing programs.

While systematically including questions on Medicaid enrollment and indicators of possible eligibility for Medicaid on such surveys as HIS and HANES could help remedy important deficiencies in knowledge about the effectiveness of the program, a more detailed survey restricted to the poor would undoubtedly be an even superior instrument for pursuing further such questions as State variations in Medicaid benefits. Such a special survey might also concentrate on the effect of physicians and hospitals participating in Medicaid on the utilization of medical services. (Class 4.)

## Methodological

1. General issue area: Measures of population health levels and change over time.

Specific issue: The need for an integrated data base for health care system appraisal.

Apart from information of varying detail obtained relative to the many individual elements of the health care system (manpower, facilities, financing mechanisms, health status, utilization, etc.) it seems desirable to develop an integrated data base which would permit an overview of the system in operation as a whole. While some of the aspects and purposes of the systems approach are outlined below, the single overriding concern is to gain insight into the general question: *Who contributes to the health care of whom at what cost in response to what health needs?*

The "who" part of the question relates to manpower, facilities, and technology utilization and organization. The "whom" part relates to population characteristics and location. The "cost" factor includes both the economic costs of providing services and payment mechanisms reflecting the burden of such costs on the various sectors of the economy. Finally, the assessment of health needs requires a determination of the services appropriate for and utilized in relation to the care of illness as well as the protection and promotion of health.

A functional framework, as outlined in table A, appears to afford the best basis for such an assessment of the health care system. Each of the functional areas could be separately analyzed as a subsystem, and in addition, interrelationships could be conveniently appraised. For example, one could clearly ascertain the balance between ambulatory and inpatient care. Similarly, the role of preventive services could be examined relative to the potential for reducing the curative load for care.

Within the functional categories a rough determination could be made of levels of need in relation to services actually provided. Thus, critical areas of imbalance could be highlighted. Along with the measure of services provided, it would be possible to ascertain the mix of providers (by institution and by staff category) and the cost of providing such services.

While some of the existing national data could be useful in the functional analysis, it would also be necessary to obtain interrelated elements of information from a sample of local areas. Thus, for example, health needs in a community would be related to the availability of manpower and services and to patterns of care within the same

Table A Conceptual format of functional information system

Function	Need	Units of service	Effort by inst. and personnel type	Cost
Ambulatory care of acute illness and accidents Ambulatory care of chronic illness Acute hospital care Chronic hospital care Community mental health care Care for drug abuse Care for alcoholism Institutional mental health care Maternal and child health Family planning Adult preventive care Communicable disease control Etc.				

community. It would also be desirable to obtain cohort information on a longitudinal basis in order to establish, among other things, the incidence and impact of catastrophic illness and existing profiles of care received in the course of an entire episode of illness.

An illustrative, though not exhaustive, list of benefits of the proposed information system follows. First, the functional breakdown would facilitate the analysis of cost and resource utilization implications of discreet service packages contemplated in various health insurance programs and in various patterns of organization of services.

Secondly, classification of illnesses by diagnosis, duration, and severity would permit quantification of the need for medical care relative to utilization and the preventability of the illness relative to the amount of money and effort expended on prevention.

Finally, a better understanding could be acquired concerning the cost-effectiveness of various service programs. In particular, by means of the Kessner tracer approach, attention could be focused upon the analysis of selected health problems for which care is known to be potentially effective.

The overall objective of such a "system of health accounts" is to identify and describe the

inputs of health services, the output in terms of changed health status, and the relationships between inputs and outputs. The last is the most difficult to achieve both because of the detailed data requirements and because of the need to demonstrate a cause and effect relationship or have reasonable assurance that a particular effect is not clearly due to some cause other than the input of services. In controlled experiments this is accomplished through formulation of specific hypotheses, selection of suitable subjects, their allocation to treatment and control groups, administration of treatment, and observation of outcomes for the various groups.

Experimental conditions cannot be established in health care programs for the general population but some aspects can be incorporated in a system of health accounts. Inputs of health services should be classified according to age groups or other population subgroups to which they are directed. Outcomes in terms of change in health status can be classified in the same way so that changes in health of target groups can be related to levels of input for the same groups.

The development of an integrated data base generally implies the need for new statistical components or systems (Class 2-4) and for the coordination of this effort with the evolving Cooperative Health Statistics System. There are, how-

ever, some input/output relationships that can be studied with existing data.

Using available data (Class 1) it should be possible to determine the expected effect on health status of at least certain types of inputs of health services. To the extent that some services have no effect, the ability to detect changes associated with those that do is limited if the two types are not identified and accounted for separately. Two axes on which it is important to classify inputs are (1) whether the service is expected to prevent ill health, by type of event (occurrence of disease, disability, mortality); and (2) the time interval after which the effect on health status should become evident. Outcomes should be classified in the same ways (type of event, and time) so that relationships between inputs and outputs can be observed.

It may be advisable to begin by identifying those diseases that are currently preventable, and observing whether levels of input for various geographic or other demographic subgroups are related to outcomes. If they are, low levels of inputs should be increased. If they are not, it could be concluded that extraneous factors were intervening, that services were not being applied with equal effectiveness, or that the assumption of preventability was in error.

2. General issue area: Methods to increase accessibility of NCHS data through modification of distribution channels.

*Publications:* The publications of NCHS are made available to the public in several ways: Mailing List Request (see appendix IV), Catalogue of Publications<sup>13</sup>; Current Listing and Topical Index to the Vital and Health Statistics<sup>14</sup>; Monthly Vital Statistics Report: Vital and Health Statistics Publication Series (the Rainbow Series); and Vital Statistics of the U.S. This distribution network is effective for those who know about NCHS. The problem is one of getting to potential users more effectively.

Murnaghan's<sup>15</sup> description of health-services information systems is an example of how to acquaint potential users with the product of NCHS. Her emphasis on alerting newcomers to informa-

tion sources should be followed up aggressively by NCHS.

There are several ways by which this could be accomplished, some of which necessitate structuring the message in a way that will convey more explicit ideas of information utility than presently exists in the traditional announcements of publications. Other methods could be attuned to the levels of statistical sophistication of potential users.

The Department of Commerce through its National Technical Information Service (NTIS) is attempting to develop new distribution channels by using market segmentation techniques based on:

- (1) Areas of interest (by using an information request card that allows the respondent to identify specific interest areas, e.g., administrators, biomedical technology and engineering, business economics, environmental pollution and control, and library and information sciences) and
- (2) by economic status (making credit card purchase of government funded reports available through NTIS).

Although a listing of some NCHS publications now appear in NTIS announcements it is recommended that a working group explore with NCHS the possibility of promoting more aggressively the availability of NCHS publications and developing new formats aimed at the particular needs of potential users, e.g., Health Maintenance Organizations, foundations for medical care, and Professional Standards Review Organizations.

*Tapes:* For users familiar with the system and its constraints, certain NCHS data tapes are available<sup>7</sup> (figure 1). The problems involved in increasing the availability of tapes, e.g., confidentiality,<sup>16</sup> control of use, requests for consultation on tape use, etc., need to be weighed against the possible benefits of increasing the analytical potential of NCHS data.

The restriction on identification of geographic location for data files from localities having less than 250,000 population may impose a barrier to the utilization of tape file data for comprehensive health planning and for studies based on the newly designated Professional Standards Review Organi-

This page may be used for ordering data sets. Simply detach from publication (or copy), indicate those data sets you want, put your name and address at bottom of page, enclose payment and sent to the following address.

Scientific and Technical Information Branch  
National Center for Health Statistics  
5600 Fishers Lane  
Parklawn Building, Room 8-20  
Rockville, Maryland 20852

**ORDER FORM - 1975**

<i>No.</i>	<i>Data Sets available from NCHS in 1975</i>	<i>Cost of Data Set</i>	<i>No.</i>	<i>Data Sets available from NCHS in 1975</i>	<i>Cost of Data Set</i>
1a	Master Facility Inventory Data, hospital, 1971-73, (Specify year) .....	\$200.00	7a	Vital Statistics Divorce, detail, 1968-73, (Specify year).....	70.00
1b	Master Facility Inventory Data, nursing home, 1971 .....	200.00	8a	Followback Survey, Natality, 1964-66 .....	60.00
1c	Master Facility Inventory Data, other health facilities, 1971 ...	200.00	9a	Followback Survey, Natality, 1967-69, (Specify year).....	60.00
1d	Master Facility Inventory Data, nursing homes and other health facilities, 1973 .....	200.00	10a	Followback Survey, Infant Mortality, 1964-66 .....	60.00
2a	Data on Family Planning Service Sites, 1973 .....	200.00	11a	Followback Survey, Mortality 1966-68 .....	60.00
2b	National Reporting System for Family Planning Services Data, 1971-73, (Specify year).....	450.00	12a	Health Interview Survey, 1969-71, (Specify year) .....	600.00
3a	Hospital Discharge Survey Data, 1969-72, (Specify year).....	200.00	13a	Health Examination Survey, Cycle I, demography .....	100.00
4a	Vital Statistics Natality, detail, 1968-73, (Specify year) .....	395.00	14a	Health Examination Survey, Cycle I, psychological .....	150.00
4b	Vital Statistics Natality, local area summary, 1968-73, (Specify year) .....	70.00	15a	Health Examination Survey, Cycle I, physical .....	150.00
4c	Vital Statistics Natality, State summary, 1968-73, (Specify year) .....	70.00	16a	Health Examination Survey, Cycle I, cardiovascular .....	150.00
5a	Vital Statistics Mortality, detail, 1968-73, (Specify year) .....	395.00	17a	Health Examination Survey, Cycle I, arthritis .....	150.00
5b	Vital Statistics Mortality, local area summary, 1968-73, (Specify year) .....	70.00	18a	Health Examination Survey, Cycle I, dental .....	150.00
5c	Vital Statistics Mortality, cause-of-death summary, 1968-73, (Specify year) .....	115.00	19a	Health Examination Survey, Cycle II (all) .....	300.00
6a	Vital Statistics Marriage, detail, 1968-73, (Specify year) .....	70.00			

Density desired:     800 bpi                       1600 bpi

Send indicated data sets to:

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**Figure 1**

TO RETURN ORDER FORM CUT ALONG DOTTED LINE

zation (PSRO). A study of the methods used by the U.S. Bureau of Census summary tapes and data profile packets designed specifically for user segments<sup>17</sup> may help resolve some of the constraints now imposed to safeguard the confidentiality of data.

Exploration of NCHS summary tape centers located at schools of public health and at university business schools which are showing an increasing interest in the health sector offer a twofold benefit. First, for those who are likely to become producers of data, the access to NCHS data files would provide an opportunity to gain proficiency with the computer as it is applied to large data files and possibly the development of analytical skills. Second, for those who are likely to become users, the data centers could be used as a method of introducing potential users during their educational experience, to the range of data available through NCHS.

An alternative model might be to establish summary tape centers at each of the PHS regional offices in a manner consistent with the current effort to regionalize some of the NCHS activity. Staff detailed to the regional offices, supported when necessary by central office staff, could make the product of NCHS available to a wider range of users, e.g., States participating in the evolving Cooperative Health Statistics System.

It is recommended that a working group explore with NCHS the possibility of establishing tape processing centers that would increase accessibility and the analytic use of NCHS data.

#### **Additional Resources Needed**

In this study Panel members have identified a number of approaches that may be useful in increasing the analytical potential of NCHS data in one important data use area—Health Care. Some of the recommended approaches can be implemented within the present structure of information collected by NCHS, others will require the development of new information system components. Some recommendations are addressed to the need for increasing the availability of the information specialists from NCHS to work with Federal, regional, State, and local officials and with the educational institutions that train both producers and

users of information. These recommendations cannot be implemented without making additional resources available to NCHS.

The TCP has identified important subject matter issues and methodological problems. It has recommended further development of information and consultative capacity for Federal, regional, State, and local health planning. It has proposed new communication channels to existing and potential users along with the development of data access techniques designed to increase the effectiveness of linkages between NCHS and educational institutions. All of these activities will require additional funds and personnel. The specification of the nature, magnitude, and timing of requests for additional resources is a task for NCHS. The Panel's responsibility, however, is to point out that in our opinion there is little likelihood that significant progress will be made toward increasing analytical potential of NCHS data unless this support is forthcoming.

## **SECTION IV. CONCLUSIONS**

The nature of the activities carried out by NCHS and the rapidly changing information needs generated by a health care delivery system characterized by some to be in a period of crises, makes it necessary to monitor the effectiveness of the Center's role in the national health intelligence system. The work of the TCP during the past 6 months and earlier studies initiated by the U.S. National Committee on Vital and Health Statistics constitute efforts in this direction. In-house evaluation by the Center staff constitutes another approach. Collectively these efforts make a case for developing a continuing assessment procedure that assures user input.

The current study, based on a nonrepresentative set of NCHS data users brought together as a Technical Consulting Panel identified subject matter and methodological problem areas considered to be important in increasing the analytical potential of NCHS data. These are shown in table B according to a classification that indicates existing or new data systems.

Related to these recommendations are two additional conditions. First, in order to implement

**Table B Summary of selected recommendations**

	Class 1	Class 2	Class 3	Class 4
	Utilizing existing NCHS data	Within current survey framework	New survey methods needed	New surveys, e.g., special groups
<b>Subject matter</b>				
Medical care	Illness, income, health insurance, and utilization patterns	Health expenditure verification studies		
			catastrophic illness expenditures using enriched samples	
Demand and supply determinants	Utilization data merged with manpower and facility data for geographic areas	Determinants for selection of health providers		Supply availability in selected geographic areas, e.g., rural and central city areas
<b>Methodological problems</b>				
Data gaps	synthetic estimates			
Data compilations	← Integrated data base for health care system appraisal →			
Distribution channels	Publication series promotion Regional Summary Tape Centers			

these efforts to increase the analytical potential of data, NCHS will need additional funds and staff. Second, more emphasis needs to be given to efforts

to secure continuity in assessing the extent to which the information systems of NCHS are in fact meeting user needs.

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- <sup>14</sup>National Center for Health Statistics: *Current Listing and Topical Index to the Vital and Health Statistics Series, 1962-1972*. DHEW Pub. No. (HSM) 73-1301 (Revised). Public Health Service, Washington. U.S. Government Printing Office, May 1973.
- <sup>15</sup>Murnaghan, J. H.: *Health-Services Information Systems in the United States Today*. *NEJM* 290:11, Mar. 14, 1974.
- <sup>16</sup>National Center for Health Statistics: *Policy Statement on Release of Data for Individual Elementary Units and Related Matters*. DHEW Pub. No. (HSM) 73-1212. Washington. U.S. Government Printing Office, July 1972.
- <sup>17</sup>U.S. Department of Commerce, Bureau of Census: *Data Profile Packets for Community Health Centers in Small Area Data Notes*. Vol. 5, No. 9, Sept. 1970.

## APPENDIX I

### EXCERPTS

Excerpts from minutes of the U.S. National Committee on Vital and Health Statistics related to statistical needs of the future.

Meeting of March 7-8, 1968.

#### "Demography

"There are increasing requirements for vital and health statistics because of the marked fall in the birth rate, continuing urbanization, continuing depopulation of rural areas, and intensification of health problems of Negroes and other minority groups. Small area data are needed for study of and planning to solve these problems. Basic problems of under enumeration of the population and incomplete reporting of some vital events (especially marriages and births) remain. Data which cannot be supplied by vital records alone include information on illegitimacy and conception before marriage; on dissolution of cohorts of marriages; and on minority groups such as Mexican-American, Puerto Rican, and migrant worker families.

"Some progress has been made on needs listed at the fifteenth Anniversary Conference, including study of internal migration, plans for quinquennial censuses, an increasing role for private research groups in the statistical activities of government, and studies of family planning. Additional data are needed on child spacing, the relationship of socioeconomic status to age at marriage and to fertility, concentration of aged persons in some geographic areas, disability of the aged, and gross as opposed to net migration.

#### "Public health

"Many of the statistical needs in public health are shared with the fields of demography and economics. Planning must be carried on both in small areas and for minority groups as well as for the whole population and at long range. General indices of health are needed as well as measurements of the effectiveness of specific health programs and methods of relating benefits to costs.

"Comprehensive statistics on health hazards in the environment (air pollution, radiation, noise, chemicals) are lacking. Gaps between knowledge and its application are wide though there is little descriptive information available on care being provided through private practice and in hospitals and clinics. International comparisons are essentially limited to mortality. There is need to introduce order into the rapid and diverse development of hospital data systems; to improve manpower statistics, to modernize the roles of the Federal, State and local statistics programs. Critical needs in methodology include ways of measuring the extent of mental illness, alcoholism and drug use; and ways of dealing with the 'long-range effects' which pervade the epidemiology of chronic diseases.

"The several phases of health care and the organization necessary to provide them being merged. Prevention, detection, care, and rehabilitation may be carried on under the same auspices. Nevertheless, the 'service gap' is increasing, due in part to shortages of personnel. Provisions for financing are changing rapidly. Data are needed on the cost and effectiveness of service provided under various arrangements.

"Health resources and services and health economics

"There have been major improvements in economic and manpower statistics during the past decade. Data on expenditures are now available on object of expenditure by source of funds. Better data on prices of health care will be available from the Bureau of Labor Statistics this year. Information on manpower in 35 categories of health professions has been published by the National Center for Health Statistics and the time series on supply of physicians reported by the American Medical Association covers a number of years.

"Problems in definitions include the point at which an individual enters the profession (e.g., before or

after graduation; house staff as students or providers of service). The loss of physicians to the practice of medicine suggests that their training may not be suited to their functions. Measurement of nurse manpower is difficult. Trend data on professions other than physicians are needed.

"Because income of an individual or family is affected by illness expenditure data would reflect socioeconomic status more accurately. Survey sample sizes adequate to permit cross-classification of income and education with health variables would be useful. Subdivisions of the age category 65 and over is essential in health statistics. Many problems in availability and classifications of expenditure and price data remain to be solved. No useful subnational data are available.

"Judgments on levels of hospital costs cannot be made without measures of quality of care. More generally, estimates of economic benefits are dependent on measures of effect of programs on survival and health. Too frequently the practicing physician does not know whether a patient follows a prescribed regimen, let alone its effect on his health. The economist should deal with marginal costs (the cost of an additional unit), whereas only average cost data are usually available."

Meeting of November 3-4, 1969.

#### "Health services statistics

"There are many gaps and deficiencies in available data. Remedies will not come easily, and some may require expensive field studies. The obligation to plan health services may be helpful as a framework for organizing data needs, particularly if conceptualization of problems is emphasized..."

The minutes highlighted the need for solid baseline financial data of all types for a single year. This data base would include financial data in the areas of expenditures, sources of funds, price indexes, and data obtained from respondents in household surveys.

#### "Demographic status

"Another high priority need is for continuing study of family growth...and a fuller exploitation of data presently available; examples are systematic analyses of data from various sources which bear on a particular question such as racial differences in health; and cohort measures which can be constructed for fertility, mortality, etc., through reorganization or retabulation of data..."

#### "Health statistics

"Gaps in the array of national statistics on health status include: (1) identification of certain groups with special problems such as alcoholism and drug abuse; and (2) data which relate health status to receipt of health care. As a means of identifying health statistical needs of the future, it may be useful to classify health-related phenomena according to different axes and judge whether the statistical system provides the necessary data. Two axes of classification were proposed:

##### A. Problem axis

1. Population
2. Environment
3. Iatrogenic disease
4. Manpower
5. Urbanization

##### B. Functional axis

1. Warning system
2. Protection
3. Service (action)
4. Training
5. Planning
6. Legislation"

Several of these comments formed the basis for the establishment of other technical consulting panels which are working toward more detailed recommendations.

## APPENDIX II

### INCONSISTENCIES OF NCHS DATA

In response to a request made January 24, 1972 an NCHS staff study was made for the purpose of identifying inconsistencies in NCHS statistics. The results indicate:

1. Data from the Health Interview Survey (HIS) and the Health Examination Survey (HES) have produced more apparent inconsistent estimates of the same or similar parameters than any other pair of data collection systems. These inconsistencies can largely be attributed to differences in universes, operational definitions, measuring devices, and observers.
2. Apparent discrepancies between the Health Interview Survey and the Hospital Discharge Survey (HDS) apply to estimates of discharges, surgical operations, and the average length of stay in short-stay hospitals. In part these differences can be attributed to the inclusion of the experience of deceased persons in the HDS, technical admissions, and other inclusions in HDS estimates that were excluded from HIS estimates.
3. Inconsistencies in vital statistics reports occurred as a result of different classifications of fetal deaths (20 weeks or more gestation in the NCHS Series 20 reports *vs.* 28 weeks or more in Series 3 reports) or to the use of provisional data in one series *vs.* final data in another series.

## APPENDIX III

### PREVIOUS AND PLANNED ACTIVITIES OF THE HEALTH INTERVIEW SURVEY

#### Year Collected

1970: Information was collected on insurance coverage for hospital, surgical, and doctor visit services. Coverage has been analyzed with respect to age, sex, income, region, and race (*Monthly Vital Statistics Report*, Vol. 21, No. 9, Supplement 2, December 18, 1972).

1971: Information was collected on out-of-pocket expenditures for the year 1970. Included were expenditures for health insurance premiums, nonfamily members, dentists, doctors, hospitals, prescribed medicines, and eye care. This information has been analyzed according to age, sex, race, income, and region (*Monthly Vital Statistics Report*, Vol. 22, No. 1, Supplement, April 2, 1973). Further analyses emphasizing the family as the unit of analysis and type of expense are forthcoming.

1972: Data were collected on all health insurance items collected in 1970 and in addition on coverage under supplementary extra cash indemnity plans and under prepaid group practice. These data will be presented in a report about to be published which will largely parallel NCHS Series 10, No. 66, "Hospital and Surgical Insurance

Coverage in the United States-1968," January 1972. In addition, questions were included on sources of payment for hospital bills, fraction of the bill paid by insurance, and out-of-pocket payments by the family. For doctor visits, the source of payment was also determined.

1973: Information was collected on the sources of payment for prescribed medicine, and the out-of-pocket and total costs for these medicines.

1974: Health insurance coverage information is currently being collected but not in the same detail as in 1972.

1975: Out-of-pocket information similar to that collected in 1971 will again be collected from one-fourth of the national sample. In addition, for hospital admissions and physician visits third-party payers and out-of-pocket costs will be elicited. Also, a methodological study concerning how to design a panel study to collect consumer expenditure data will be conducted.

1976: Preliminary plans are to begin a panel study on consumer expenditures which will include a minimum of 5,000 households.

## APPENDIX IV

### Vital and Health Statistics Publications Series

- Series 1. Programs and collection procedures.*—Reports which describe the general programs of the National Center for Health Statistics and its offices and divisions, data collection methods used, definitions, and other material necessary for understanding the data.
- Series 2. Data evaluation and methods research.*—Studies of new statistical methodology including: experimental tests of new survey methods, studies of vital statistics collection methods, new analytical techniques, objective evaluations of reliability of collected data, contributions to statistical theory.
- Series 3. Analytical studies.*—Reports presenting analytical or interpretive studies based on vital and health statistics, carrying the analysis further than the expository types of reports in the other series.
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- Series 11. Data from the Health Examination Survey.*—Data from direct examination, testing, and measurement of national samples of the civilian, noninstitutional population provide the basis for two types of reports: (1) estimates of the medically defined prevalence of specific diseases in the United States and the distributions of the population with respect to physical, physiological, and psychological characteristics; and (2) analysis of relationships among the various measurements without reference to an explicit finite universe of persons.
- Series 12. Data from the Institutional Population Surveys.*—Statistics relating to the health characteristics of persons in institutions, and their medical, nursing, and personal care received, based on national samples of establishments providing these services and samples of the residents or patients.
- Series 13. Data from the Hospital Discharge Survey.*—Statistics relating to discharged patients in short-stay hospitals, based on a sample of patient records in a national sample of hospitals.
- Series 14. Data on health resources: manpower and facilities.*—Statistics on the numbers, geographic distribution, and characteristics of health resources including physicians, dentists, nurses, other health occupations, hospitals, nursing homes, and outpatient facilities.
- Series 20. Data on mortality.*—Various statistics on mortality other than as included in regular annual or monthly reports—special analyses by cause of death, age, and other demographic variables, also geographic and time series analyses.
- Series 21. Data on natality, marriage, and divorce.*—Various statistics on natality, marriage, and divorce other than as included in regular annual or monthly reports—special analyses by demographic variables, also geographic and time series analyses, studies of fertility.
- Series 22. Data from the National Natality and Mortality Surveys.*—Statistics on characteristics of births and deaths not available from the vital records, based on sample surveys stemming from these records, including such topics as mortality by socioeconomic class, hospital experience in the last year of life, medical care during pregnancy, health insurance coverage, etc.

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Series 4. Documents and committee reports

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Disability

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Use of health services

Series 11. Data from the Health Examination Survey

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Cycle I. Adults, aged 18-79 years (No additional reports from this cycle are planned. For available reports, see Current Listing of the VITAL AND HEALTH STATISTICS SERIES)

Cycle II. Children, aged 6-11 years

Vision and hearing

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Psychometric

Dental

Other

Cycle III. Youth, aged 12-17 years

Vision and hearing

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Psychometric

Dental

Other

Series 12. Data from the Institutional Population Surveys

In nursing homes

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In physicians' offices

In family planning clinics

In outpatient facilities, NES

Series 13. Data from the Hospital Discharge Survey

Nonmedical characteristics

Diagnoses and surgical procedures

Charges and sources of payment for care

Series 14. Data on health resources manpower and facilities

Selected health occupations

Short-range forecasts of the supply of selected health occupations

Staffing of health facilities

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Natality

Marriage

Divorce

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Natality followback surveys

Mortality followback surveys

Data from the National Ambulatory Medical Care Survey

Data from the National Survey of Family Growth

**Periodicals**

Listings and announcements of publications.

Life Tables

Data on life expectancy in the United States, by sex, color, and age. Issued annually.

Monthly Vital Statistics Report

Contains monthly and cumulative provisional data on births, natural increase, marriages (or marriage licenses issued), deaths, and infant deaths for States, certain cities, Puerto Rico and Virgin Islands (U.S.); and on divorces for specified States and Virgin Islands (U.S.) with brief analysis of these vital statistics. It also presents death rates by cause, age, color, and sex, estimated from the returns of a 10-percent sample of death certificates filed in State and independent city vital statistics offices.

Nosology Guidelines

Issued periodically, discusses causes-of-death coding problems and related matters. It supplements the *Eighth Revision, International Classification of Diseases, Adapted for Use in the United States*, PHS Pub. No. 1693, and *Vital Statistics Instruction Manual Part 2; Cause of Death Coding*, issued by the National Center for Health Statistics.

News of the Cooperative Health Statistics System

Issued bi-monthly, presents short articles and news on the development of the Cooperative Health Statistics System and on related activities in NCHS.

Print name, organizational affiliation, and address below and return to:

**National Center for Health Statistics  
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