

tional exposure factors affecting immediate and long-term health conditions.

In acquiring the data, agencies must tap existing sources of information and coordinate with the Co-operative Health Statistics System (CHSS), as well as PSROs, State, county and city health departments, other planning bodies, etc. Clearly, those involved in health statistics, can play a key role in making certain that data are available to planners to meet their challenging responsibilities.

Planning agencies are being advised to develop a population-based approach to data acquisition and planning. They are expected to build their information resources in a manner in which they can link events (births, deaths, discharges, etc.) to a defined population, such as by using a geocode (census designation or zip code).

Vital statistics are especially important to planners. The number and rates of births and fertility rates are indicators of the age distribution of the population (which affects the need for health services), as well as significant direct indicators of need for specific health services.

Questions concerning environmental and occupational safety and health are of increasing interest to planners. There are few sources of data on risk factors, morbidity or injury, particularly from reliable sources which are linked to a defined population. However, studies of mortality cross-classified by area of residence and occupation and business or industry could help to identify these jobs and geographic areas which have disproportionately high rates of death especially among the younger workers.

It was generally agreed among round table participants that mortality data tend not to be the best measures of the "health" of a population, at least in an advanced industrial society. The most important untapped source of information from vital records for planning purposes is in-

formation on patient utilization patterns of health services, especially hospitals.

The CHSS will be a major means of meeting the needs of the HSAs. The CHSS will help mold the current fragmented data collection activities throughout the country into a cohesive system that will produce comparable data in the detail required for most users.

The National Center for Health Statistics (NCHS) has the responsibility for developing the CHSS. When CHSS is fully developed, each State will have the capability to ensure availability at the local level of the same types of data that have in the past been available only at the national level. The CHSS, administered by NCHS, and authorized through P.L. 93-353 is an effort to build a health data system which will serve as the basis for effective planning at all levels of government in all areas of the country.

The NCHS and Bureau of Health Planning Resources Development (BHPRD) have an agreement and workplan to develop the data activities to meet the needs of the planning enterprise. NCHS has developed a source book on current national data that provides information to guide staff as to where data on health status, health resources, and health utilization are currently available.

NCHS is also developing and distributing "Statistical Notes for Health Planners" that are providing the methodology to HSAs for use of existing data available from Federal programs in an easily accessible and easily updated format. These "notes" will add to the library of statistical information to each HSA.

NCHS has a firm commitment to combine the best efforts of health statisticians and health planners toward the development and uses of a coordinated statistical support capability which will allow the best possible planning and resource allocation to take place in the health care delivery system.

#### MEASUREMENT OF DISABILITY: ROUNDTABLE DISCUSSION

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The session focused on the measurement of work disability in the adult population by household surveys. The following definition of disability was used to assure a common frame of reference. Disability is the result of functional limitations arising from a mental or physical condition(s) interacting with a host of other factors such as age, work history, education, family situation, etc. to leave an individual incapable of adequately performing his/her generally accepted social role, e.g., working, keeping house, or going to school.

This definition, itself, highlights several significant difficulties of measurement. First, knowledge of the underlying disease or condition is not sufficient. More important are the residual physiological, anatomical or mental losses or abnormalities, i.e., impairments, that result.

Impairments contribute to disability through the nature and extent of the functional limitations they cause. For example, loss of muscle strength may lead to an inability to lift, while the loss of a limb may mean an inability to walk. Identification and quantification of such limitations are very important for measurement.

Second, not every impairment results in a disability. Identical impairments with the same degree of severity may even result in different levels of disability. Thus, muscle weakness is much more limiting to a laborer than to an accounting clerk, while the opposite is true for good eyesight or manual dexterity (fingering).

Third, disability is determined by the interaction of limitations in function with situational and environmental factors. In the case of

work disability, the latter factors include work requirements, employer attitudes and practices and general labor market conditions. So measurement of disability depends on the observation of many socioeconomic and attitudinal variables.

Fourth, the difficulty is increased because disability represents a continuum where the demarcation between disability and no disability is unstable. In other words, disability is a changing state dependent on shifts in the many precipitating factors. Even when functional limitations are stable, a changing labor market can still change the state of work disability.

In this context, the basic measurement problem identified by the discussants was distinguishing inability to work as a result of some impairment from inability to work for other reasons. The concomitant practical problem was seen to be the kind of proxy measure, that can be developed by household survey, to substitute for the "ideal"--medical examinations and clinical and vocational assessments by teams of experts.

Next came a review of the current state of the art as revealed by four (4) major sources of recent survey data on the extent and nature of disability in the U. S. Discussion emphasized the fact that all of the surveys reviewed measure disability based on respondents' self-assessments of their own situations. Generally, respondents are asked a series of direct questions about how their health or physical condition affects their work activities. They are also asked if they have any of a specified list of chronic conditions or impairments, and which of them is primarily responsible for their work limitation.

Other measures based on functional capacity limitations were also described. Scales have been constructed to measure performance in activities of daily living (feeding, grooming, etc.), in use of public transportation, in ability to move about the community, and in work activities (lifting, stooping, reaching, etc.). Composite measures of the severity of functional limitation using these scales have been constructed. Such indexes provide a scale of functional level ranging from no limitations through dependency.

Figures from the 1972 Social Security Survey of Health and Work Characteristics and other SSA records were used to illustrate the lack of precision of present survey measures. According to the 1972 survey, there were 15.6 million adults aged 20-64 with some work disability in 1972, including 7.7 million who could not work at all. At the same time, only about 2 million persons were receiving social security disability insurance benefits (SSDI). Persons who apply for SSDI benefits can be presumed to consider themselves disabled. Yet, between 40 and 50 percent of such claims are disallowed for lack of severity.

Results are similar with the functional limitation index. About one-third of severely disabled respondents in the 1972 SSA survey had either no loss of function or a minor loss. At the other extreme, more than a third of those with dependency problems did not consider themselves severely disabled. Using regression

analysis, functional limitations alone explained only 13 percent of the variance in severe disability among males and 8 percent among women.

Other investigators have reported similar findings. Nagl at Ohio State used figures from another survey of the disabled in 1972. Eight independent variables--including scaled assessments of physical and emotional performance, two health indices, plus age, sex, race and education--were regressed against work disability as the dependent variable. These regressions explained only 38 percent of the variance in work disability.

Several reasons were advanced for these results. Functional limitations used in the various indices may be inaccurate since they are also based on self-reporting. The nature and effect of disabling conditions, of functional limitations, and of relevant socioeconomic variables may not be specified completely or precisely enough. For example, indices might provide better measures if limitations were specified so that they could be matched against the requirements of various jobs. Finally, it was suggested that the form of the model used--an additive linear function--was wrong. It fails to take into account the fact that some functional limitations are cumulative while others may duplicate each other.

The Roundtable concluded with a brief look at some possible future directions for improved measurement. These included--

1. Improving the specification of functional limitations, including matching them to job requirements.
2. Refining survey instruments to provide better attitudinal and motivational information as well as more information about dimensions of chronic disease besides those that result in limitations in physical movement.
3. Constructing a disability index by measuring the "distance" between nonbeneficiary disabled persons in the population and SSDI beneficiaries with regard to a profile of characteristics.
4. Applying methodology being developed by Moshe Nordheim in Israel and Gerda Fillenbum at Duke University. In the former, teams of expert raters interview a sample of the population and assign an overall disability rating. A disability index,  $y = f(x_1, \dots, x_p)$  is constructed statistically. The survey data are used to estimate the parameters of the function. In the latter a panel of experts takes a set of characteristics, in the abstract, and maps alternative profiles of these characteristics to a set of numbers which represent degree of disability. Survey data are used to suggest meaningful profiles for mapping.