THE APPLICATION OF QUANTITATIVE INDICES FOR HEALTH PLANNING TO REGIONAL HEALTH SERVICE AREAS IN VERMONT

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ABSTRACT. Health System Agencies (HSAs) are expected to collect and analyze data on the health care delivery systems in their respective geographic areas for the purpose of preventing unnecessary duplication of health resources and promoting the development of manpower and facilities which meet identified needs and reduce documented inefficiencies. The purpose of this paper is to present the results of a feasibility study of health services in Vermont using a profile system of individual manpower and facility types and summary indices of adequacy and efficiency. The profile system and indices make use of data already available in most health service areas.

Profile and the values of summary indices are presented for each of the service areas of Vermont, using state provider/population and facility/population ratios as norms. Profiles and indices based on national norms are also presented for certain types of health professionals. Caveats are given in the interpretation of the results of applying the profile system and indices by health planners.

1. BACKGROUND

The National Health Planning and Resources Development Act of 1974, Public Law 93-641, requires the designation of Health Systems Agencies (HSAs) in all the health service areas of the United States. Each HSA is charged with performing the health planning and resources development functions listed in sections 1512 and 1513 of the 1974 amendment of the Public Health Service Act, which include the preparation of a health system plan and an annual implementation plan. More specifically, HSAs are expected to collect and analyze data on the health care delivery systems in their respective geographic areas for the purpose of “preventing unnecessary duplication of health resources and promoting the development of manpower and facilities which meet identified needs and reduce documented inefficiencies” (U.S. Congress, 1975).

The law, however, lacks perspicuity with respect to the procedures HSAs are to follow in identifying needs and documenting inefficiencies. For the purpose of assisting the HSAs in assessing the manpower and facility needs of services areas, Chen (1977) has developed a profile system of individual manpower and facility types and aggregated indices of adequacy and efficiency.
The profile system and indices make use of data already available in many health service areas and do not require the collection of new data, which would be beyond the means and technical capability of most HSAs as they are presently constituted. Chen's profile system and aggregated indices are predicated on the thesis that if there is such a thing as an ideal situation in which the health care needs of a community are exactly met by the available mix of different types of health providers and facilities in that community, then that community can serve as the ideal norm for other communities that are demographically similar to it. In reality, of course, this community may or may not exist, and the ideal norm may have to be determined by panels of health care specialists knowledgeable about the kinds of health services that a community with certain population characteristics should have for optimal health. In any event, the ideal norm is used in the study of the adequacy or efficiency in the use of certain manpower or facility types in other communities or service areas.

Where ideal norms are not available, state or national norms may be used in the study of the health services situation in particular regions. In such cases, the results of the study are not to be interpreted as the degrees of adequacy or efficiency; rather, the results reflect the equity or inequity of distributions of health service resources among the regions studied.

In practice, a population is stratified into age-sex groups which require particular types of services, as, for instance, children ages 1 to 15 require the services of pediatricians. Then the ideal norm for each age-sex group is determined, empirically or theoretically. This norm, in the form of a provider/population or facility/population ratio, is used in computing the theoretical or expected number of the provider or facility type that would be required by a community in the study sample if the ideal norm prevailed. The differences between the theoretical number and the extant number reflect shortages or inadequacy of the provider or facility type if they are positive, and surpluses or inefficiencies in the use of the provider or facility type if they are negative.

In the profile system, the shortages or surpluses of selected types of health providers or facilities are displayed in tabular or graphic form to facilitate visual inspection. The indices are simply weighted averages of the shortages or surpluses, the weights being derivable by regression or discriminant analysis if objective criteria are available and by psychological scaling procedures if objective criteria are not available. Specifically, the index of adequacy is