Designation of Health Manpower Shortage Areas for Use by Public Health Service Programs

RICHARD C. LEE

FEDERAL PROGRAMS AIMED AT ALLEVIATING geographic maldistribution of health manpower depend heavily upon the identification and designation of specific areas which are in need of health manpower. Lists of designated health manpower shortage areas have been developed for use in connection with three programs: (*a*) placement of National Health Service Corps (NHSC) personnel in such areas, (*b*) repayment or cancellation of educational loans to health professionals who practice in designated areas, and (*c*) scholarship support of health professional students who thereby become obligated to practice after graduation in areas designated by the Secretary of Health, Education, and Welfare.

The Health Professions Educational Assistance Act of 1976 (Public Law 94–484) required significant changes in the criteria and procedures for designation of shortage areas for health manpower programs. New criteria defining shortage areas were published in the Federal Register as Interim-Final Regulations on January 10, 1978, and the first list of areas meeting these criteria was published on July 17, 1978. The following sections discuss the previous shortage criteria and their shortcomings, describe the changes required by Public Law 94–484 and the development of the new criteria to implement those changes, and make some observations about how these changes are affecting shortage area programs. Also included are maps showing the areas designated to date.

Mr. Lee is Acting Chief, Distribution Studies Branch, Division of Manpower Analysis, in the Bureau of Health Manpower, Health Resources Administration. The paper is adapted from Mr. Lee's presentation to the Public Health Conference on Records and Statistics on June 5, 1978, in Washington, D.C.

Ann Lawlor, health manpower analyst, and Jack Reid, economist, both of the division, were responsible for much of the criteria development efforts described in the paper; Ms. Lawlor also directed the designation of areas under the new criteria, while Mr. Reid was instrumental in constructing the data base required to produce the actual lists of shortage areas.

Tearsheet requests to Richard C. Lee, Bureau of Health Manpower, 4–41 Center Bldg., 3700 East-West Highway, Hyattsville, Md. 20782.

Historical Background

Health professions loan cancellation and repayment. The earliest shortage area designations were mandated by 1965 legislation which provided for forgiveness or cancellation of portions of Federal loans obtained during their training by professionals in medicine or osteopathy, dentistry, or optometry, in return for their service in areas found to have shortages of physicians, dentists, or optometrists. Such areas were to be designated by State health authorities. This legislation was expanded in 1971 to cover Federal repayment of loans from any source used to finance the health professional's education and to encompass three additional professions: podiatry, pharmacy, and veterinary medicine.

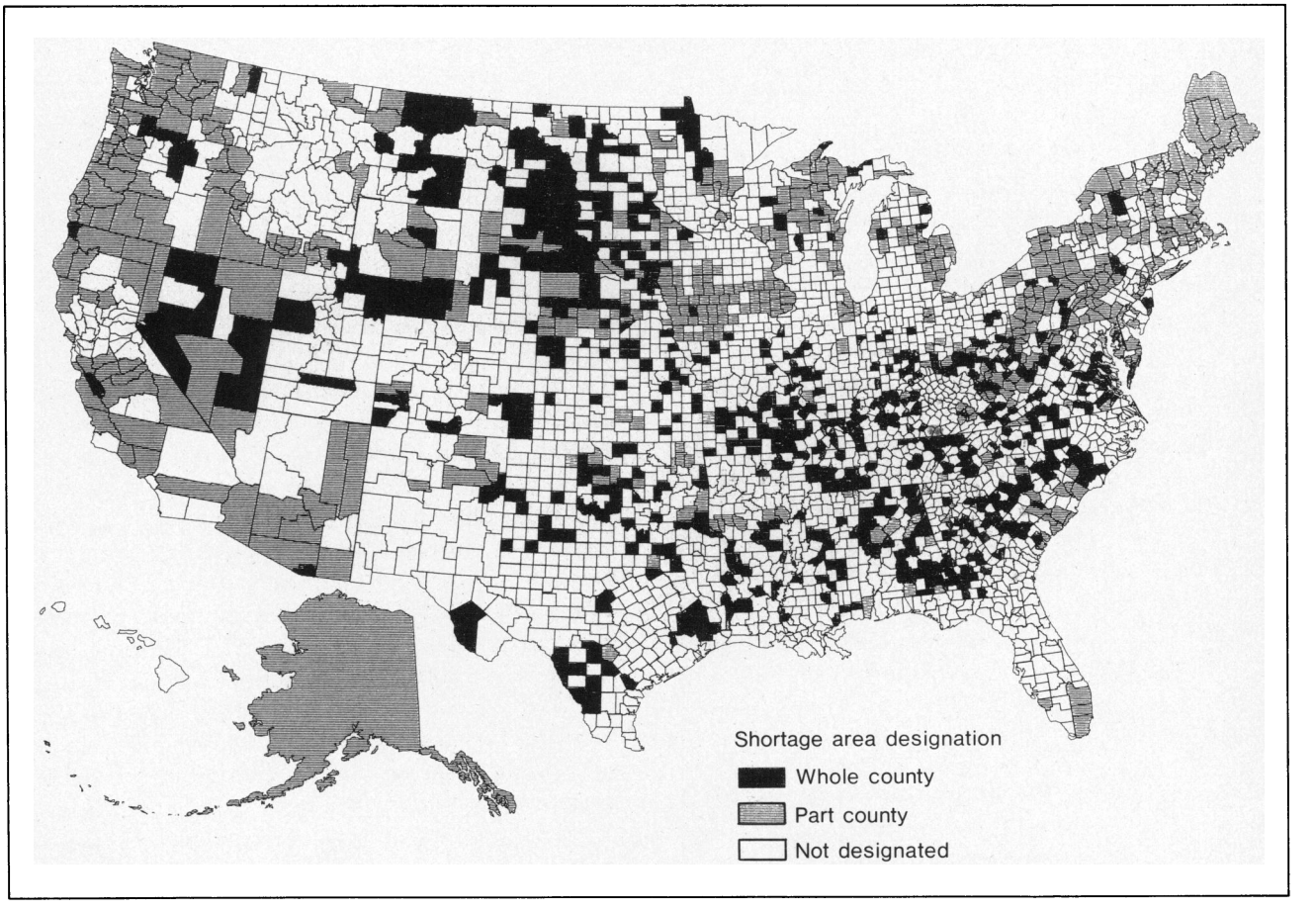
From this time on, shortage areas were to be designated by the Secretary after consultation with State health authorities.

The regulations implementing the loan cancellation and repayment programs provided specific population-to-practitioner ratios for use in designating county or subcounty areas. Special consideration was allowed for areas having medical services that were inaccessible to their residents, aged or incapacitated practitioners, or particular local health problems. The population-to-practitioner ratios used were 1,500:1 for physicians (including all MDs and DOs active in patient care); 3,000:1 for dentists; 15,000:1 for optometrists; 25,000:1 for podiatrists; 4,500:1 for pharmacists; and 15,000:1 for veterinarians. These ratio values ranged from 1.0 to 2.4 times the ratio of total U.S. population to total number of active practitioners in the United States in 1970.

The first lists of health manpower shortage areas designated under the 1971 legislation were distributed in July 1973 and appeared in the Federal Register in February 1974 (*1*). Most areas designated were whole counties, as data were most readily available at the county level. The list of physician shortage areas accounted for roughly two-thirds of all U.S. counties; the dentist and podiatrist shortage area lists, for about one-half of all counties. Optometry shortage areas represented one-fourth of all counties, veterinarian shortage areas one-sixth, and pharmacist shortage areas less than one-tenth.

National Health Service Corps. Legislation enacted in 1971 authorized creation of the National Health Service Corps, and 1972 amendments required that NHSC personnel be placed only in areas designated as "critical health manpower shortage areas." Because this program was to operate only in areas with critical shortages, the criteria selected were more stringent than those used in the loan repayment designations. To identify areas with critical physician shortages, these criteria relied principally on a primary care physician-to-population ratio of 1:4,000, applied either to county data or to data on subcounty groups of census tracts or minor civil divisions. Primary care manpower was de-

Primary care health manpower shortage areas by county: United States, August 31, 1978



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

fined to include non-Federal physicians in general or family practice, pediatrics, internal medicine, obstetrics and gynecology and, in nonmetropolitan areas, general surgery. To identify areas with critical dental shortages, the criteria employed a dentist-to-population ratio of 1:5,000, counting all dentists.

The lists of critical health manpower shortage areas for Corps placements were developed from data provided by the comprehensive health planning agencies, generally on a case-by-case basis. The first list of these areas was published in the Federal Register in October 1974; revisions were published in February 1975 and July 1976. In the July 1976 publication (*2*) the criteria were expanded to allow consideration of mitigating circumstances in evaluating requests for designation of areas that might not quite meet the specific physician- and dentist-to-population ratios. As of September 30, 1977, both the list of critical medical and the list of critical dental manpower shortage areas contained roughly one-fourth of all U.S. counties, 400 subcounty medical shortage areas, and 100 subcounty dental shortage areas.

Nursing loan cancellation and repayment. This program, established in 1968, provided for cancellation of Federal loans to nursing students in return for their service in public or nonprofit hospitals determined by the Secretary to have substantial shortages of nurses. The first list of such hospitals was developed and issued in October 1969; it was reviewed in 1972 and 1975. Listed were all those hospitals in which the number of hours of service by registered nurses per patient day was lower than the national median for a hospital of the same category. The hospital categories used were general, psychiatric, tuberculosis, chronic, convalescent, and all others.

The Nurse Training Act of 1971 replaced the nursing loan cancellation program with a program analogous to the loan repayment program for other health professions mentioned previously. Lists of nursing shortage areas were to be developed by the Secretary in consultation with State health authorities. Following a decision not to use one list that had been developed based on a simple nurse-to-population ratio, a methodology for designating nursing shortage areas was selected in the summer of 1975. This approach involved a comparison of estimated aggregate nursing requirements for each county with the county's supply of nurses. Nursing requirements at the county level were first estimated separately for each health care setting (hospitals of various types, nursing homes, physicians' offices, and all others). The estimated nursing requirement in each setting was based on the average daily number of patients in hospitals, residents in nursing homes, or physicians in private practice. Each county's aggregate requirement for nurses was then compared with its total supply to determine if a shortage existed. The list, developed and published in June 1976 (*3*), contained 541 counties, 18 percent of all U.S. counties.

Medically underserved areas. The Health Maintenance Organization Act of 1973 required that funding priorities be given to HMOs serving "medically underserved populations." This was the first use of this term in legislation; it has since been used in various other authorities. The concept of medical underservice, in principle, is broader than that of health manpower shortage, since it pertains to populations not receiving adequate health care for whatever reason, while the health manpower shortage designation presumably is primarily aimed at identifying that portion of the underservice attributable to lack of health manpower.

The HMO Act further required that the Secretary define criteria for medically underserved areas. In response to this requirement, a study was undertaken with the help of an interdisciplinary group from the University of Wisconsin to develop a methodology which could take into account a number of factors thought to relate to the concept of medical underservice. The approach selected was to develop an index which would predict the judgment experts would make as to the degree of medical underservice if they were to make site visits to all possible areas. "Multi-attribute utility" models using various sets of variables were developed with the help of panels of experts. Each such model would generate a medical underservice score from the values of the variables included, using weights and utility curves provided by the experts. The scores generated by these various models were then correlated with scores assigned by local experts familiar with the sample areas used (*4*).

Ultimately, a four-variable model was selected; the variables included were the ratio of primary care physicians to population, infant mortality rate, percent of the population below the poverty level, and percent of the population over age 65. The score generated by this model was termed the "Index of Medical Underservice." The index was applied to all counties of the United States; counties or subcounty areas with values below the median were designated as Medically Underserved Areas (MUAs). The first list of such areas was published in the Federal Register in September 1975 together with a description of the methodology used (*5*). An updated list was published in October 1976. Subsequently, this list of areas was also adopted for use in grant funding of community health centers and related programs. In particular, the MUA list is now used, often in combination with the list of health man-

power shortage areas, to identify areas eligible for grant funding under the Urban Health Initiative and Rural Health Initiative/Health Underserved Rural Area Programs operated by the Bureau of Community Health Services, Public Health Service, as well as to determine priorities for such funding (*6*).

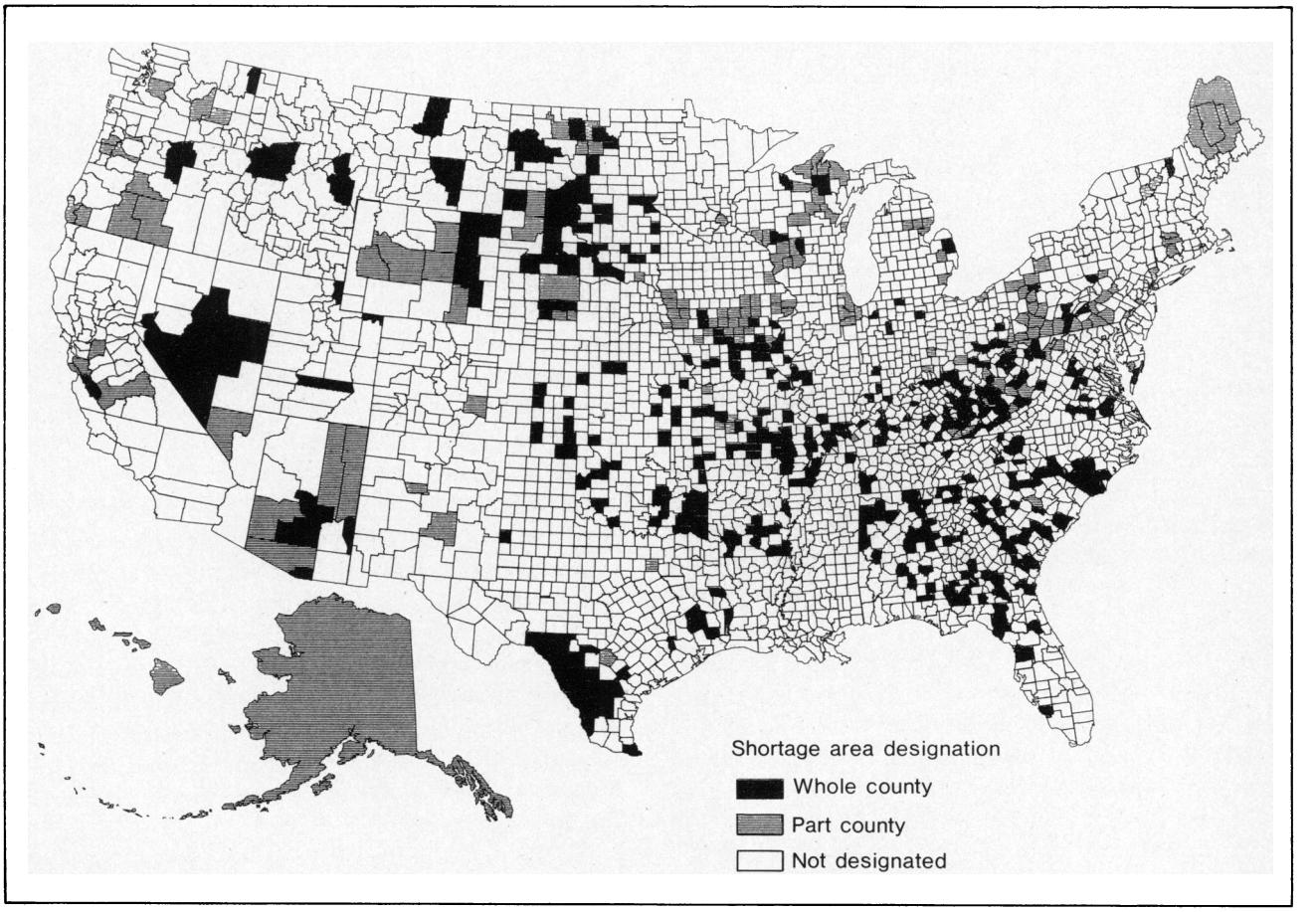
Shortcomings of Historically Used Approaches

The various approaches to shortage area designation just described had a variety of shortcomings. One was the fact that two separate lists of physician shortage areas and two separate lists of dental shortage areas existed, involving distinct sets of criteria. This resulted in confusion as to which list was to be used for which purposes. Another shortcoming was that the designation procedures for the different lists involved consultation with two different sets of agencies—the comprehensive Health Planning "A" and "B" agencies for NHSC-related designations (and for MUA designations) and the State health authorities for loan repayment designations.

A third weakness in the process for designating manpower shortage areas was the heavy dependence on county data, primarily because subcounty data were not generally available. The use of county data is appropriate in many rural areas, where the county may be a rational medical service area; but in western States, rural counties are apt to be entirely too large to represent reasonable service areas, and in southeastern States rural counties tend to be too small to be considered independently. For small counties, the presence or absence of resources in contiguous areas definitely needs to be taken into consideration.

In metropolitan areas, the use of county data is frequently inappropriate. The appropriate service area, particularly for primary care, may well be a group of census tracts in one portion of the city. In contrast, the metropolitan area as a whole could be the appropriate service area for those types of care where appointments are generally scheduled in advance, if travel within the metropolitan area does not constitute a serious barrier to care. The appropriate size of urban services

Dental health manpower shortage areas by county: United States, October 31, 1978



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

areas thus can vary significantly from city to city and from population group to population group, depending on whether the people involved have their own transportation or are dependent on public transportation, and to what degree the public transportation system is adequate.

In the NHSC area designations, an effort was made to define appropriate subcounty or multicounty service areas, and to consider contiguous area resources, but noncounty areas and contiguous area resources were generally not considered in the loan repayment designations. Few urban subcounty service areas were defined, even for Corps placements, prior to the passage of the Health Professions Educational Assistance Act of 1976.

A fourth and perhaps the major shortcoming of the manpower shortage designations was their excessive dependence on the simple practitioner-to-population ratio. Use of these ratios tended to obscure differences among areas caused by varying characteristics of the population, varying health needs, or varying levels of demand for care, and their use also tended to ignore productivity differences among practitioners and the presence of health care resources which augment the practitioners. In addition, possible barriers to access were neglected almost entirely. As a consequence, only a few urban shortage areas were designated, since urban practitioner-to-population ratios generally appear quite adequate, at least at the county level.

The medically underserved area designations avoid some pitfalls associated with dependence on ratios by including three indicators other than the primary care physician-to-population ratio. The infant mortality rate may be regarded as a measure of health status; the percent of population above age 65 as a measure of probably increased needs and demands for health care; and the percent of population below the poverty level as a measure of problems of economic access, often correlated with sociocultural access barriers and greater needs for health care as well. However, the appropriateness of these specific factors and the degree to which the index as developed actually discriminates between underserved areas and adequately served areas has been questioned by Wysong (*7*) and Kleinman and Wilson (*8*).

A perhaps more significant shortcoming of the MUA designation procedure is the fact that it does not generally involve the definition of rational service areas or take into account conditions in contiguous areas. Two of the MUA indicators (the poverty and aged indicators) are available nationally for census tracts or civil divisions, while the other two (physician-to-population ratio and infant mortality rate) are available only at the county level. A combination of county data for two indicators and tract or division data for the other two is therefore used to designate subcounty medically underserved areas. In metropolitan counties, this leads to designation as MUAs of scattered high percent poverty or high percent aged census tracts, but variations in the distribution of primary care physicians are not taken into account.

Changes in Criteria Required by P.L. 94–484

In the Health Professions Educational Assistance Act of 1976, enacted October 12, 1976, Congress moved toward resolution of these difficulties. A new section, 332, was added to the Public Health Service Act, entitled "Designation of Health Manpower Shortage Areas." This section required that the Secretary establish, by regulation, new criteria for the designation of health manpower shortage areas. Specific requirements for the criteria and for the process of designating shortage areas set down in the act represented significant departures from previously established procedures.

As expressed in the House and Senate reports and in the specific wording of the act, the major congressional objectives in enacting section 332 were the following: (*a*) To permit designation of urban areas as well as rural areas; (*b*) to "broaden the concept of shortage" by defining shortage less stringently and by "going beyond ratios alone"; and (*c*) to insure that "areas, population groups, and medical facilities with a more severe need for the assignment of Corps personnel be assigned personnel on a priority basis." The statute specifically stated that urban as well as rural areas were to be identified as shortage areas, and that an area need not conform to the geographic boundaries of a political subdivision but should be a rational area for the delivery of health services. It required that the new criteria to be developed should take into account not only practitioner-to-population ratios but also indicators of a need for health services, with special consideration to be given indicators of infant mortality, access to health services, and health status of the population. Section 741(f) of the Public Health Service Act, the authority for the health professions student loan repayment program, was changed to refer to areas designated under section 332, thus eliminating the authority for two sets of lists. Section 332 requires that recommendations of health systems agencies and Governors be considered in the process of designating areas and that State health planning and development agencies be involved where no health systems agency exists. Thus the question of which agencies are to be consulted is cleared up.

In addition, wording of the new statute permitted designation of specific population groups and facilities as health manpower shortage "areas" as well as geo-

graphic areas. This change opened the way for the designation of population groups that may have difficulties in gaining access to health manpower within larger areas that, in the aggregate, may appear to have sufficient numbers of practitioners.

Finally, section 333(c) of the Public Health Service Act as amended requires that the Secretary give priority to applications for placement of NHSC personnel in areas with the "greatest health manpower shortage," as determined using the criteria established under section 332. The criteria must therefore distinguish degrees of shortage among the areas designated.

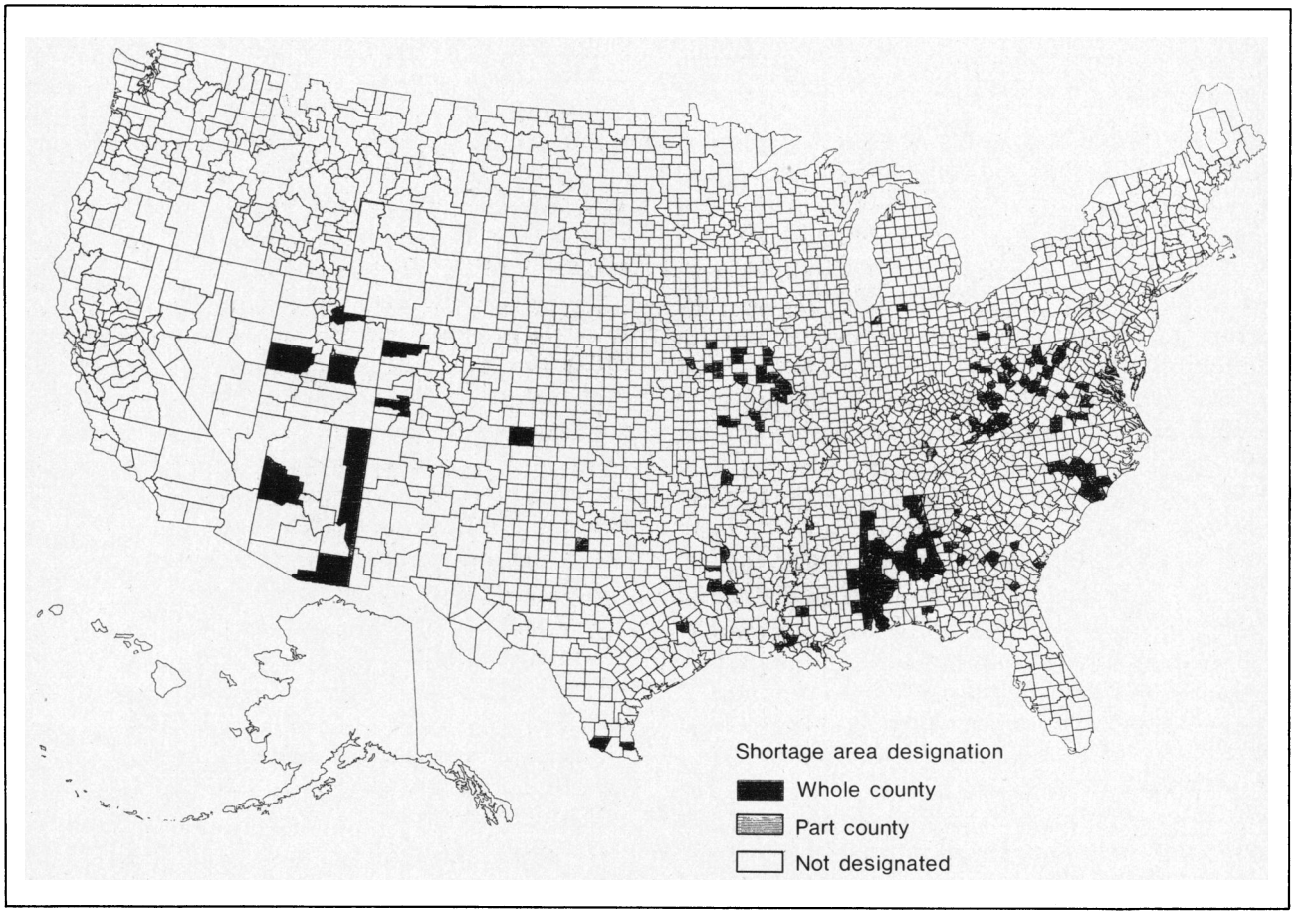
New Shortage Area Criteria

Reflecting both the congressional objectives and the specific requirements mentioned within the law itself, new criteria were developed and published (as Interim-Final Regulations) on January 10, 1978. Some of the basic characteristics of the approach used to meet the legislative requirements are described in this section.

The new criteria for health manpower shortage areas are stated separately for each of seven manpower types: (*a*) primary medical care manpower (including primary care physicians, nurse practitioners, and physicians' assistants); (*b*) dental manpower (including dentists and dental auxiliaries); (*c*) psychiatric manpower (including psychiatrists and related practitioners providing mental health, alcohol or drug abuse services); (*d*) vision care manpower (including optometrists and ophthalmologists); (*e*) podiatric manpower; (*f*) pharmacy manpower; and (*g*) veterinary manpower (with separate criteria for shortages of food animal and companion animal veterinarians). Nursing manpower shortage areas at present remain covered under a separate authority, section 836(h) of the Public Health Service Act, but future revisions of the nursing criteria will most likely be included under section 332.

For each manpower type, there are three basic criteria: (*a*) the geographic area under consideration must be a rational one for delivery of the type of care, (*b*) certain ratios or other types of criteria (or both) must be met by the area itself, and (*c*) manpower in contiguous areas providing the same care must be identified as overutilized, excessively distant, or in-

Vision care health manpower shortage areas by county: United States, July 17, 1978



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

accessible to the population of the area under consideration.

Rational service areas. For each type of manpower the criteria relate the definition of appropriate service areas, in general, to an appropriate travel time to care. This travel time has been set at 30 minutes for primary care and 40 minutes for dental care, based in each case on existing studies suggesting that utilization of medical and dental services are seriously affected by travel times greater than these. Appropriate travel time and rational service areas for pharmacy services were assumed to be the same as those for medical care, because available and quickly accessible prescription drugs are needed to carry out prescribed medical treatments. Appropriate travel times and rational service areas for psychiatric, optometric, and podiatric care were assumed to be the same as those for dental care, since they normally involve advance appointments and nonemergency care.

Because indiscriminate use of a 30- or 40-minute travel time in urban areas would result in service areas with enormous populations, and because patients of particular socioeconomic, ethnic, or racial groups are often unlikely to cross certain neighborhood lines to obtain care, the criteria also allow for use of established neighborhoods or communities as service areas within urbanized areas.

Criteria to be applied within areas. A variety of factors have been incorporated in the new criteria for manpower shortage within geographic areas. For most types of care, a modified population-to-practitioner ratio is still the basic indicator used. However, for those types of care where the available data support such adjustments, the criteria permit population adjustment as appropriate to reflect the varying care needs or utilization habits of different age and sex components of the population, and adjustment of the number of practitioners to reflect their differing productivity based on age, type of practice, hours of work, and the effect of auxiliaries.

Data available indicated that adjustments of the population figures for varying needs and utilization of different age-sex cohorts were particularly appropriate for primary care, vision care, and podiatric care, while productivity adjustments based on age of practitioners appeared appropriate for dental care, vision care, and podiatric care. These adjustments were therefore explicitly included in the criteria.

The shortage levels of the ratios were chosen differently for the various disciplines. Examination of the literature, together with calculations based on average visits per year supplied by full-time practitioners and average visits per year per person where care is available, suggest that levels such as 2,000:1 for primary medical care and 3,500:1 for dental care might represent adequacy levels. However, it was felt that Federal intervention could only be justified if manpower levels were significantly worse than adequate, indicating that the needs of these areas are not being met through free market mechanisms or reimbursement programs. The distribution of population-to-practitioner ratios by county for the United States was therefore examined to identify appropriate levels. The designation levels selected, 3,500:1 for primary care and 5,000:1 for dental care, represent roughly 150 percent of the median U.S. county ratios, and these ratios prevail for approximately one-fourth of all U.S. counties at this time (*9*).

To take into account other indicators of need which cannot be included by modifying the population-to-practitioner ratio, it was decided to define a lower shortage level of that ratio (3,000:1 for medical and 4,000:1 for dental) for areas where indicators of high need are present or where there are indications that existing resources have insufficient capacity to meet demand. In choosing indicators of high need, we emphasized indicators that were pertinent to urban shortage areas, since these areas are particularly difficult to pinpoint with manpower ratios.

High infant mortality rates, large percentages of the population below the poverty level, and high fertility rates were identified as indicators that are associated with poor health status, higher incidence of health problems, and greater needs for care. The availability of data on these particular indicators was a major consideration in their selection. The specific values chosen for percent of the population below the poverty level (30 percent) and fertility rates (more than 100 births per 1,000 women aged 15-44, or more than 40 births per 1,000 women aged 13-17) were selected from analyses of values observed in sample areas in U.S. cities (*9*). The infant mortality criterion was chosen for consistency with the standard under consideration for use in the National Guidelines for Health Planning, which was approximately the U.S. county median according to 5-year-average data for 1966–70.

Indicators of insufficient capacity of the existing health care resources have been defined in terms of excessive numbers of visits per year to each full-time primary care physician, excessive waiting times, limited acceptance of new patients, and so forth. The approach used to select the shortage levels for these indicators is contained in a Bureau of Health Manpower report (*9*).

The criteria for podiatric shortages are the result of a separate study which the Bureau supported. In addition to age adjustments for both the population and

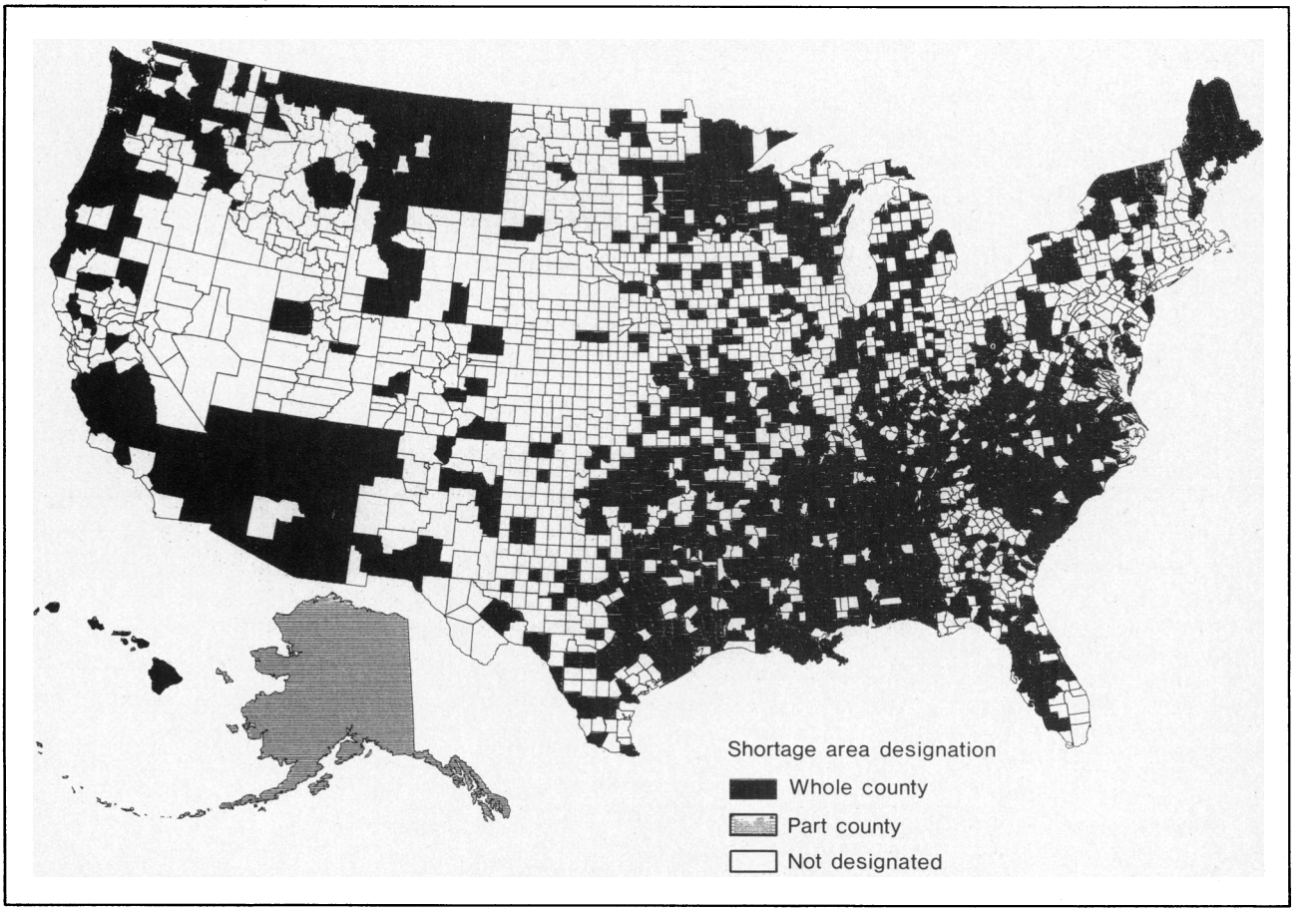
the number of podiatrists, the criteria for podiatric shortage areas include contributions to foot care by orthopedic surgeons and general family practitioners (*10*).

The vision care and pharmacy criteria take a slightly different form from those for medicine, dentistry, and podiatry. For these manpower types, the requirements for and the supply of services were estimated and compared. The shortfall (if any) in optometric visits or in number of pharmacists needed was then used to determine whether an area has a shortage. For veterinarians, shortages of food animal veterinarians and of companion animal veterinarians were determined separately, with the former involving a ratio of livestock to veterinarians, while the latter, in essence, uses human population as a proxy for the pet population. For four professions—veterinary medicine, optometry, podiatry, and pharmacy—the computation of need must show that at least one practitioner is needed to bring the area's ratio below the shortage level; the shortage areas for these professions are defined primarily because private practitioners seek Federal repayment of educational loans.

Contiguous area considerations. Resources in contiguous areas that might relieve possible shortages must also be considered before designating a shortage area. Three factors are examined to determine if manpower in a contiguous area should affect the potential designation: (*a*) whether the contiguous area's manpower resources are beyond the "excessive" travel time specified for that type of manpower; (*b*) whether the area's population-to-practitioner ratio is greater than a certain level, indicating that its health manpower has no excess capacity to alleviate shortages elsewhere (this level was chosen as 2,500:1 for primary care and 3,000:1 for dental care); and (*c*) whether access barriers prevent the population of the area being considered for designation from obtaining care in the contiguous area.

Particular population groups may be designated as "shortage areas." Indian tribes are identified in the criteria as designated population groups because the Federal Government has special responsibilities for

Podiatric health manpower shortage areas by county: United States, July 17, 1978



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

them, and they generally have special health care and access problems. Migrant and other population groups that have special access problems caused by language, culture, or economic barriers can also be identified as being short of care, although they may be located in geographic areas with sufficient health manpower resources for the population as a whole.

Facilities short of manpower can also be designated under certain circumstances. Special criteria define shortages of health manpower to serve prisons and other correctional institutions and shortages of manpower to serve State mental hospitals. In addition, under the general provisions of the criteria, other facilities with health manpower shortages can be designated if it can be shown that these facilities provide services to a designated shortage area or to a designated shortage population and have insufficient capacity to meet needs for care.

The criteria specify certain factors to determine which areas have the greatest shortages of health manpower for purposes of determining priorities for placement. The specified degree-of-shortage groups reflect the level of the practitioner-to-population ratio and whether or not unusually high needs, as defined in the criteria, are present.

The review and comment procedures used in the designation process involve the health systems agencies (HSAs), State health planning and development agencies (SHPDAs), Governors, and others. Annually, the criteria are to be applied to the best and most recent national data available concerning the various factors that the criteria cover. The resulting list is sent to the HSAs for review, comment, and recommendations. Copies of all individual requests for designation of particular areas are also sent to the HSAs, State health planning and development agencies, and the State Governors for comment and recommendations.

Status of current area designation efforts. Immediately after publication of the new shortage criteria as Interim-Final Regulations on January 10, 1978, copies of the criteria were sent to all health systems agencies, State health planning and development agencies, and State Governors together with listings showing relevant data then in our files for each county and each previously designated service area within the State. The agencies were asked to review this material and recommend areas within their jurisdiction that should be designated. Responses to this mailing have since been received from approximately 138 of the HSAs and 19 of the SHPDAs. In addition, more than 823 requests for designation of specific areas have been received.

After each such response or specific request has been reviewed and the comments of the State agency or Governor, or both, considered, the requesting individual or agency, other affected agencies, and interested parties are informed by letter of the results of the review. Periodically, a list of the designated shortage areas is published in the Federal Register; the first such list appeared July 17, 1978, and a later update of primary care manpower shortage areas appeared on September 28, 1978. The table shows the numbers of areas of various types designated up to September 30, 1978, and accompanying maps show the geographic distribution of these areas.

Observations on the New Criteria

A couple of observations from our experience to date in applying the criteria seem worth mentioning.

In urban areas, almost all of the designations made involve access problems rather than a complete absence

Health manpower shortage area designations, January 10–September 30, 1978

Type of designation	Primary medical care	Dentistry	Psychiatry [1]	Optometry	Pharmacy	Podiatry	Veterinary medicine	
							Companion animal	Large animal
Geographic area:								
Inner urban	101	29	1	[2]14	[2]3	[2]334	[2]12	[2]34
Other metropolitan	202	8						
Nonmetropolitan	858	455	61	201	138	747	96	604
Population group	22	6	...	...	...	....	...	...
Facility	5	1	...	...	...	....	...	...
Total	1,188	499	62	215	141	1,081	108	638

[1] For psychiatric manpower shortage areas, this category is defined as containing some metropolitan areas.

[2] Metropolitan area.

of primary care physicians. Most of these access problems are economic, although these are often aggravated by racial, cultural, or language differences. In some cases, too few practitioners are willing to accept Medicaid eligibles, which in turn may be related to the Medicaid fee schedule, the red tape involved in getting reimbursement, or the income-generating potential of practices devoted to privately financed patients. Or, a shortage area may have a significant population of working poor, not eligible for Medicaid but having insufficient income to pay for adequate medical care.

The result is that we wind up fostering use of the National Health Service Corps, originally conceived as a program to place physicians in areas where there were no (or almost no) physicians, to place physicians within portions of apparently physician-rich metropolitan areas in order to meet the needs of underserved populations within those areas. It would appear that better reimbursement methods or some form of national health insurance might be a more appropriate way of meeting such needs.

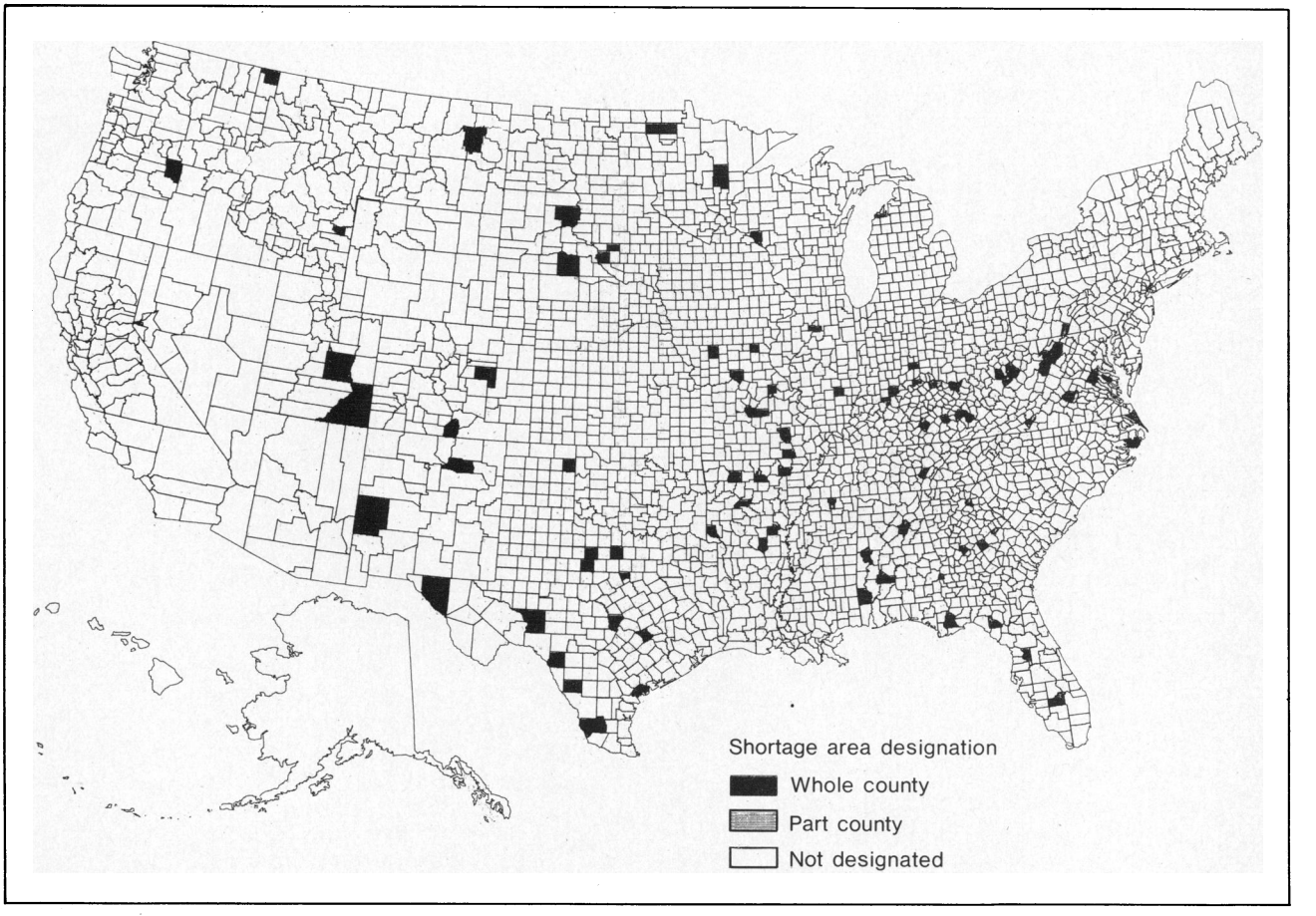
In rural areas, the criteria seem to work fairly well, but we are receiving complaints that they do not identify some legitimate needs in the lowest density areas. In such areas, as one State health director put it, "it is difficult to round up enough people to meet the criteria," but a single physician may be on call day and night to serve people spread out over a large area.

Methodological Improvements

Improvements still needed in the shortage area designation methodology fall into three general areas: service area delineation, the data base, and the criteria themselves.

Techniques to identify rational health service areas leave much to be desired. Some research has already been undertaken to find better ways of identifying servive areas, using such factors as commuting patterns and natality and mortality data. Efforts are needed to develop, with HSA cooperation, comprehensive pro-

Pharmacy health manpower shortage areas by county: United States, July 17, 1978



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

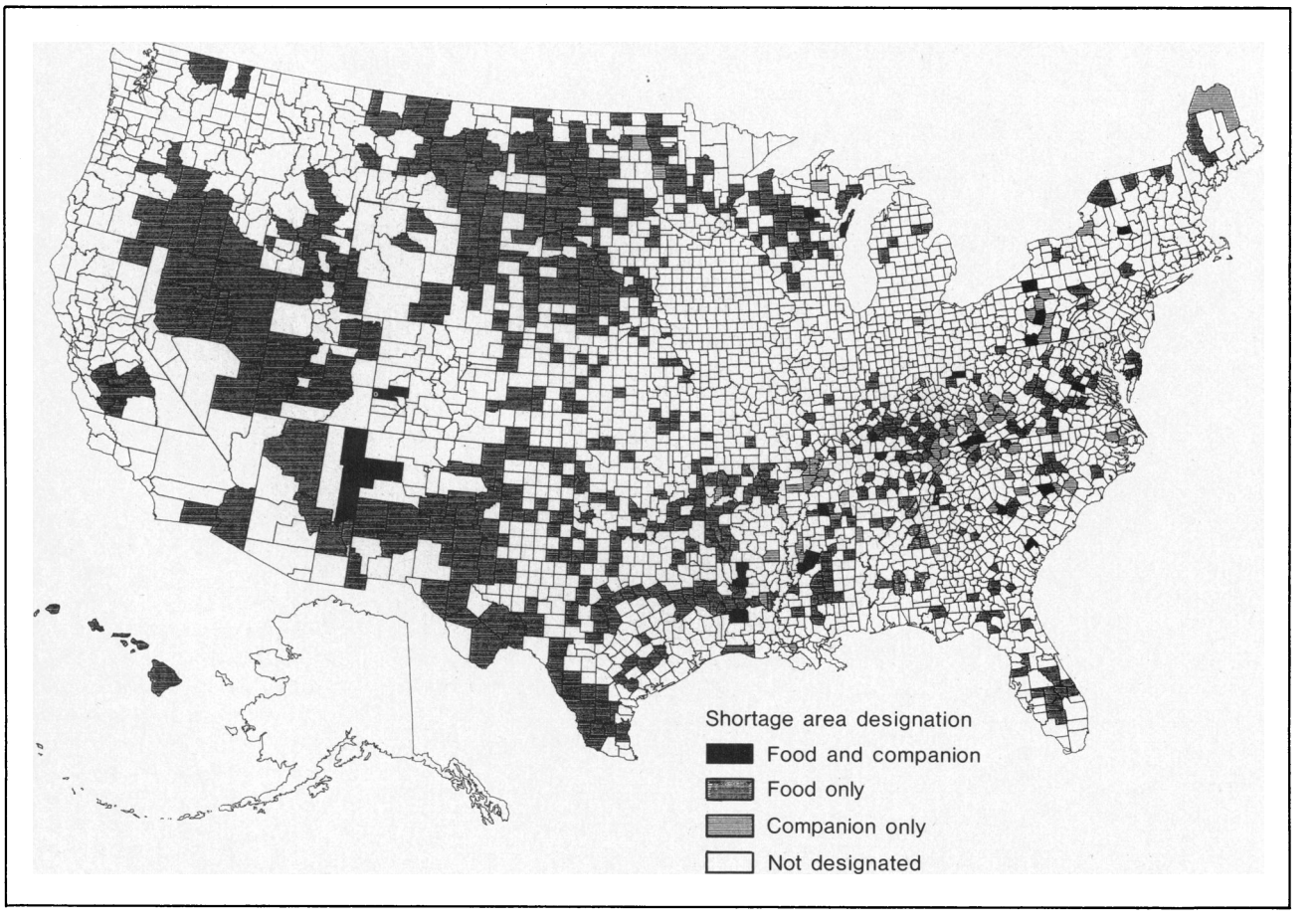
cedures for definition of rational service areas, using consistent national guidelines together with local input and conditions.

The data base for identification of shortage areas needs substantial improvement. Currently, data bases are being improved moderately through information supplied by the professional health manpower organizations and the Cooperative Health Statistics System, but such data are not always generally available or completely current. There are also several other variables important to the identification of shortage areas for which data are not now generally available (such as waiting times, physician office and emergency room utilization rates, health status indicators); the collection or compilation of such data at the HSA level would be extremely useful for shortage area designation purposes.

Perhaps the most critical methodological need is to devise criteria that go beyond adjusted population-to-practitioner ratios, with more rigorous and formal consideration of other factors. It may be desirable to identify surrogate variables (perhaps available from census data or other common data sources) which might represent factors that would better identify health manpower shortage areas. The methodology for defining the degree of shortage also needs improvement. An HRA study is under way to evaluate the criteria now in effect and recommend improvements.

The methodology for designating nursing shortage areas needs major changes. The criteria in effect under section 836(h) of the PHS Act do not meet the new requirements of section 332 for other types of shortage, and this inconsistency should be removed. Research needs to be done on more appropriate measures of nursing shortage and into more appropriate applications of available data. Methods of designating nursing shortage areas should take into account the nursing resources and needs of contiguous counties; methods for designating subcounty areas with shortages need to be formulated; designation of facilities short of nurses should also be considered. A second HRA study is under way to develop better nursing shortage criteria.

Veterinary health manpower shortage areas by county: United States, July 17, 1978, for food and companion animal practices



SOURCE: Division of Manpower Analysis, Bureau of Health Manpower, Health Resources Administration, Public Health Service, U.S. DHEW

The categories of health manpower for which shortage criteria are currently defined are by no means exhaustive. In fact, NHSC scholarship awards have already been made to students in other disciplines, such as public health nursing, nurse-midwifery, public health nutrition, audiology, and speech pathology. These practitioners will probably be used in primary care settings in most cases. A third study is under way to assess the distribution of health manpower of these and other types and to develop possible shortage area criteria for them, if appropriate.

Outstanding Issues

With the congressionally required changes in the factors to be considered in designating health manpower shortage areas, there is really little conceptual difference left between "populations with health manpower shortages" and "medically underserved populations." This opens a policy issue for discussion: should there continue to be two shortage area designation systems, one for health manpower-specific programs and another for the more general community health services programs? Or should there be one set of criteria for each type of health service (that is, primary care, dental care, vision care, and so forth), with the areas meeting those criteria eligible for all types of Federal programs relating to that health service? We have made one step toward the second approach by an interagency agreement that all areas designated as primary care manpower shortage areas will also be considered designated as medically underserved areas. Other areas which qualify using the Index of Medical Underservice will continue to be designated as MUAs, however, whether or not they meet the criteria for primary care health manpower shortage areas. To make the two lists identical would require significant changes in one or both methodologies.

A second issue, which has not really been fully engaged in the process of designating shortage areas, is the difference between needs and demands for care. The criteria, as they stand, represent a compromise between the two, since the key population-to-practitioner ratio is basically a need factor, but the population is modified to reflect demands for and utilization of services. In general, our policy is to designate shortage areas based primarily on need, with the demand considerations to be taken into account in considering applications to the NHSC for placement of personnel (or applications to the Bureau of Community Health Services or the Bureau of Health Manpower for grant funds to be used in medically underserved areas or health manpower shortage areas).

A related issue is that of adequacy versus shortage. As discussed previously, we currently use population-to-practitioner ratios for designations that are higher than the corresponding adequacy levels, in an effort to assure that Federal resources are used only where the imbalance of supply and requirements for services result in high levels of unmet need. The NHSC uses target population-to-practitioner ratios lower than the designation ratios to determine staffing levels for particular sites. Areas worse than the staffing levels but better than the designation levels are not considered shortage areas, but are in a kind of limbo between shortage and adequacy. It is sometimes argued that all areas which do not meet adequacy levels should be designated as shortage areas. We have not gone this route largely because of limited Federal resources, but also because adequacy levels vary so much according to different observers. Resolution of this matter thus awaits a definitive study of adequacy levels together with a policy decision on the proper extent of the Federal role in areas with inadequate health care resources.

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