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Health Care Shortage Designations:
HPSA, MUA, and TBD

BACKGROUND
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OVERVIEW — *A wide variety of federal programs designed to improve access to health care services rely on specific criteria to designate areas and populations eligible for funding and other types of aid. Two related yet distinct designations, the Health Professional Shortage Area (HPSA) and the Medically Underserved Area (MUA), are most commonly used to identify underserved people or places. This background paper reviews the methodologies currently utilized in these designations, identifies the federal programs that use these designations to allocate resources, describes proposals that have been advanced to consolidate and improve these designations, and discusses key issues and challenges for future effort.*

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While the Patient Protection and Affordable Care Act (PPACA) signed into law on March 23, 2010, largely focuses on insurance coverage as a means to improve access to care, the legislation also addresses the capacity of the delivery system to respond appropriately to increased demand for services. In general, policymakers remain wary of the escalating cost spiral associated with excess service capacity, provider-induced demand, and overutilization. At the same time, concerns exist regarding perceived shortages in certain services, like primary care, and for particular populations, such as rural residents. These concerns have resulted in new policies aimed at optimizing the "supply side" of the access to care equation.

PPACA seeks to support health care workforce development and primary care capacity in a variety of ways. The law both authorizes increased funding for some existing programs and creates new types of support mechanisms, such as school-based health center grants, a national health care workforce commission, and a loan repayment program for pediatric subspecialties. Such provisions suggest that targeted enhancements in service capacity are viewed as necessary complements to insurance coverage expansions in order to ensure meaningful access to care.

Before PPACA's enactment, economic stimulus funding had already begun to accelerate federal efforts to build medical service capacity. The American Recovery and Reinvestment Act of 2009 (ARRA) more than doubled support for several key activities sponsored by the Health Resources and Services Administration (HRSA), including the health center program, the National Health Service Corps, and Title VII and Title VIII health professions training grants. While the stimulus represented a time-limited investment, PPACA represents a longer-term commitment to capacity expansions.

Determining where capacity expansions are most needed is a highly technical yet imprecise undertaking. Most federal programs designed to improve health care access through supply-side interventions utilize clearly defined criteria to designate underserved

communities eligible for federal aid. Two shortage designations, Health Professional Shortage Area (HPSA) and Medically Underserved Area (MUA), are most commonly used. The criteria for these related yet distinct designations rely heavily on measures of physician supply relative to the size of a local population to assess geographically available care. However, these designation criteria also address financial, racial, linguistic, and cultural barriers to health care services and (to varying extents) consider how the need for services shapes resource requirements.

Despite attempts to reflect the multiple factors that influence access to care, the validity, utility, and scope of existing designation criteria have been contested. The designations have been criticized as being outdated, cumbersome, and scientifically unsound and are viewed by some as inadequate mechanisms for distinguishing levels of shortage or underservice. This dissatisfaction is not surprising, given the complexity of estimating unmet service needs and the importance of such measures in allocating capacity development resources.

In addition to increasing the level of resources to be allocated using the existing designations, PPACA also includes a specific provision that seeks to better harmonize the two. Efforts to revise and synchronize the designations have ample precedent. Since the HPSA and MUA designations were developed over 30 years ago, policymakers and outside observers have periodically asked, How well does each target support to the neediest people and places? Would a single, integrated designation process be more efficient and effective?

CURRENT METHODS FOR DESIGNATING SHORTAGE AREAS

Managed by the Bureau of Health Professions within HRSA, both the HPSA and the MUA designations are used to identify geographic areas—or populations within geographic areas—that are not adequately served by available health care resources. Each designation method quantifies underservice in a standardized way and facilitates comparison across communities. These designations incorporate similar data variables, but the specific criteria, procedures, and data calculations used to assess level of unmet need and eligibility for shortage designation vary between the two mechanisms.

Although the differences between HPSAs and MUAs are important, in many respects these distinctions are best understood in light of the similarities these shortage designations share. The following narrative compares and contrasts the two designations in terms of several important methodological considerations. Table 1 (next page) summarizes key aspects of the HPSA and MUA designation methods addressed in this discussion.

Types of Designations

Both the HPSA and the MUA designation are applied to geographically defined service areas, the boundaries of which must have a rational basis. HPSA designation requires that service areas represent natural catchment areas for the provision of health services. The MUA is less prescriptive in identifying the basis for service area definitions but requires contiguous geography and (for service areas larger or smaller than whole counties) a clear rationale for selection.[1]

Both methods allow the shortage designation to be applied either to the entire population of a defined service area or to a specific underserved population group that resides within a defined area.[2] The HPSA designation can also be given to an individual public or nonprofit facility that provides care to HPSA-designated areas or population groups, if the facility can demonstrate that its capacity is insufficient to serve the designated population adequately. Population-based designations of medical underservice are referred to as Medically Underserved Populations (MUPs), while nongeographic HPSAs are referred to as population group and facility HPSAs.

Designation Criteria

The designation processes used for both the HPSA and the MUA/P identify areas or populations with insufficient access to primary care and assess primary care capacity by measuring the supply of primary care physicians relative to population served.[3] Only the HPSA designation considers provider supply in select specialty services (namely dental and mental health care).

HPSAs are designed to identify areas experiencing workforce shortages for specific types of health professionals and are primarily intended to guide placement of personnel and professional training resources. HPSA designations are currently limited to primary

TABLE 1
Overview of HPSA and MUA/P Designations

	HPSA	MUA/P
Designation Types	• Geographic • Population • Facility	• Geographic • Population
Key Variable(s) Used in Designation Criteria	• Population-to-provider ratio	• Ratio of primary medical care physicians to 1,000 population • Infant mortality rate • Percentage of the population with incomes below poverty level • Percentage of the population age 65 or over
Providers Included	• Primary care physicians *(general practice, family practice, general internal medicine, pediatrics, obstetrics/gynecology)* • Dentists • Mental health workers *(psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists)*	• Primary care physicians *(general practice, family practice, general internal medicine, pediatrics, obstetrics/gynecology)*
Provider Exclusions	• Federal providers	• Federal providers
Service Area Definitions	• Natural catchment areas for the provision of health services • Boundaries defined by counties, political subdivisions, or census tracts	• Cohesive neighborhoods *(in metropolitan areas)* • Whole counties or groups of contiguous counties or census-based subdivisions if population centers are within 30 minutes travel time *(in nonmetropolitan areas)* • Boundaries defined by counties, county subdivisions, or census tracts
Contiguous Area Requirements	• Considers resources available in contiguous areas	• No contiguous area requirements
Scoring Metric (Primary Care Designation)	• HPSA score Range: 0 *(least shortage)* to 25 *(greatest shortage)*	• Index of Medical Underservice Range: 0 *(most underserved)* to 100 *(least underserved)* Scores ≤ 62 designated as MUA/Ps
Scoring Variables (Primary Care Designation)	• Population-to-provider ratio* • Percent of population below poverty • Infant Health Index *(infant mortality OR low birth weight rate)* • Travel distance to nearest accessible care outside of HPSA	• Primary medical care physicians per 1,000 population • Percent of population below poverty level • Infant mortality rate • Percentage of the population age 65 or over
Renewal Process	• Updates required annually *(In practice, no designations have been formally withdrawn in the last 8 years.)*	• No updates/renewals required

**HPSA designation determinations are based solely on population-to-provider ratios. This variable is then used, along with the others listed, to score designated areas.*

Source: Health Resources and Services Administration, Shortage Designation: HPSAs, MUAs & MUPs; available at http://bhpr.hrsa.gov/shortage/.

medical care HPSAs, dental HPSAs, and mental health HPSAs; in the past, similar designations identified shortages in a wide variety of health professions, including podiatry, pharmacy, and veterinary medicine.[4]

HPSA designation is based on population-to-provider ratios, with specific minimum designation thresholds identified for each profession, as described in Table 2. The population-to-primary-care-provider ratio threshold was established in 1978 because, at the time, this ratio identified the bottom quartile of all U.S. counties.[5] Similarly, thresholds for the dental HPSAs were based on the lowest quartile of the counties in the country. The mental health threshold was determined by expert opinion to represent areas of extreme shortage; at the time the American Psychiatric Association recommended a minimum standard of 10,000 to 1.

TABLE 2 | HPSA Designation Thresholds*

HPSA Type	Population-to-Provider Ratio**
Primary Care	≥ 3,500 : 1
Dental	≥ 5,000 : 1
Mental Health	Population-to-provider ratio ≥ 6,000 : 1 AND Population-to-psychiatrist ratio ≥ 20,000 : 1
	OR Population-to-provider ratio ≥ 9,000 : 1
	OR Population-to-psychiatrist ratio ≥ 30,000 : 1

* *Less stringent thresholds may be applied if an area qualifies as "high need" (discussed in more detail in Appendix A).*

** *Used to determine designation.*

Source: Health Resources and Services Administration, Shortage Designation: HPSAs, MUAs & MUPs; available at http://bhpr.hrsa.gov/shortage/.

In contrast to the HPSAs' focus on health professionals, MUAs were developed to broadly assess an area's primary care capacity and needs.[6] Although originally authorized to support a different (now defunct) program, the MUA designation was adopted to determine grantee eligibility for community health center grants when that program was authorized in 1975. Legislation passed in 1986 (P.L. 99-280) expanded the MUA to create the MUP designation for specific medically underserved populations residing within broader geographic areas.[7]

In establishing the MUA designation, Congress did not specify designation requirements but charged the secretary of the Department of Health, Education, and Welfare with developing such criteria. The Department developed a composite measure, known as the Index of Medical Underservice (IMU), and established the IMU as the basis of MUA designation through formal rule making. The IMU is based on four variables: (i) ratio of primary care physicians to 1,000 population, (ii) percentage of the population below the federal poverty level,[8] (iii) percentage of the population age 65 and older, and (iv) infant mortality rate.

Scores for each data variable are determined using published conversion tables (available at http://bhpr.hrsa.gov/shortage/muaguide.htm). The scores for each of the four variables are then summed to determine the IMU. Possible IMU scores range from 0 (completely underserved) to 100 (least underserved). Areas or populations with an IMU score of 62 or less are designated as MUA/Ps. This cutoff was selected because in 1975 it represented the median IMU for all U.S. counties.[9]

Counting Noses: Provider Supply Metrics

In general, the two designation processes follow similar conventions for determining how health professionals should be enumerated, although HPSA instructions are somewhat more directive. Both methods exclude nonpracticing providers or providers not engaged in patient care activities and require that provider counts be expressed as full-time equivalents (FTEs).[10] Both types of primary care designations[11] exclude nonphysician providers and identify the medical specialties that should be included in primary care physician counts.

Both the HPSA and the MUA/P allow for certain categories of providers to be excluded from or "backed out" of FTE counts. Both designation methods exclude "federal" providers (defined as clinicians employed by the federal government, U.S. military personnel, and obligated members of the National Health Service Corps), as well as foreign medical graduates practicing in the United States under J-1 visa waivers. These exclusions have been permitted to avoid a "yo-yo" cycle of areas and populations periodically gaining and losing designation as federal assistance tied to these designations is alternatively eliminated and restored.

The HPSA designation process explicitly considers the adequacy of provider resources in areas contiguous to the candidate service area and sets specific standards for such considerations. HPSA designation is contingent on documenting that providers in contiguous areas are overutilized, excessively distant, or inaccessible, and specific criteria have been established to define these conditions. The MUA/P designation does not rely on specific standards for assessing resources in areas contiguous to the candidate service. However, the required service area rationale is intended to reduce gerrymandered boundaries.

Variation in Populations

Assessing access to health care services is obviously more complex than simply determining the number of people and the number of providers in a particular geographic area. Health needs and service demands can vary substantially, depending on a wide range of population characteristics, such as age, income, environmental conditions, and behavioral norms. At the same time, the supply of available physicians is not uniformly accessible to all people within a given service area, because of various financial, racial, cultural, or linguistic barriers. The significance and impact of these barriers varies dramatically across populations and communities. These complexities raise a host of methodological challenges that are addressed but not fully resolved by the current designation processes.

Access Constraints—Population-based designations are an important mechanism for documenting unequal access to physician supply within and across service areas. As noted previously, both the HPSA and the MUA/P designation can be applied to specific underserved populations residing within the defined service area. Populations considered for MUP designation include those with economic barriers to care (such as low-income, uninsured, or Medicaid-eligible), as well as those facing other types of barriers that impair access. HPSA criteria reference similar economic, cultural, and linguistic barriers in identifying populations as appropriate candidates for population group HPSAs.

Data for population-based designations can be difficult to obtain. Population-based designations rely on the same computational steps used for assessing geographic designations. However, ratio calculations include only the number of persons in the underserved

population identified and the number of providers willing and able to serve this needy population. Data regarding providers available to specific populations are not often included in existing administrative data, such as state licensure records. Therefore, specialized, resource-intensive surveys of providers are usually required to document and support population-based designations.

Health Needs—Both the HPSA and the MUA/P designations also seek to recognize variability in the underlying need for health care services by incorporating need-based variables into their respective criteria. While level of need plays a more dominant role in MUA/P designations, neither method fully adjusts for the wide range of population characteristics that could influence need or demand for services. Both the MUA/P and, to a lesser extent, the HPSA utilize proxies, such as poverty rates and infant mortality rates, to recognize increased health needs without quantifying the degree to which these characteristics are likely to influence demand.

As a composite measure, the MUA/P directly incorporates need-related variables into the designation criteria. Rates of infant mortality, poverty, and agedness directly influence the IMU score which determine MUA designation. Implicit in this methodology is the notion that high levels of health-related needs are, in and of themselves, indicative of medical underservice. For MUA/P designations, high levels of need (as represented by the three particular proxy measures used) have an independent effect on the designation determination and could collectively counterbalance the one variable related to supply of primary care providers. This suggests that high levels of need could offset relatively robust supply, while, conversely, low levels of need could counterbalance relatively severe supply constraints.

The MUA/P directly incorporates need-related variables into the designation criteria

The MUP criteria do include an exceptional case provision allowing population groups that do not meet the established IMU threshold of 62 to be considered for designation. P.L. 99-280 allows for MUP designation if "unusual local conditions which are a barrier to access to or the availability of personal health services" can be documented and are recommended by the governor and local health officials. To date, approximately 200 exceptional/governor-defined MUP designations have been granted.

Need measures can also be a part of HPSA designations but arguably play a less influential role. Rather than building need variables into the designation criteria, the HPSA designation process allows areas or populations identified as having an unusually high need for services to be assessed using a somewhat less stringent designation threshold. For example, to be designated as primary medical care HPSAs, high-need areas must demonstrate a population-to-provider ratio that is greater than 3,000 to 1, while the more stringent threshold of greater than or equal to 3,500 to 1 is used for areas not identified as high need.[12] Both the primary medical care HPSA and the dental HPSA also allow the application of the less stringent high-need threshold if areas or populations can document an "insufficient capacity of existing providers."[13] The mental health HPSA designations have no provision for insufficient capacity. (See Appendix A for a more detailed description of the criteria used to demonstrate high need and insufficient capacity and the alternative HPSA designation thresholds used for areas and populations meeting these criteria.)

Unlike MUA/P designation, HPSA designation is not contingent on high levels of need. Need-related measures are only necessary when an area or population cannot meet the higher supply ratio established for non–high-need areas. Only a small proportion of all HPSA designations have been granted based on the high-need or insufficient-capacity thresholds.

The HPSA process does, however, utilize measures of need to compare the degree of shortage across HPSA-designated areas. A HPSA score is developed for all areas, populations, or facilities that receive HPSA designations. Nondesignated areas, populations, or facilities do not receive a HPSA score. As described in greater detail in Appendix B, scoring methods rely on (i) the population-to-provider ratio, (ii) the same data variables used to identify high-need areas or populations, and (iii) a variable related to distance to nearest accessible providers outside of the HPSA. A point-value

Facility Scores

Facilities designated as HPSAs receive the score of the geographic or population HPSA they serve.

An exception is made for both federally qualified health centers (FQHCs) and those rural health clinics that serve all patients, regardless of ability to pay. These facilities can be automatically designated as facility HPSAs. Automatic designation allows FQHCs to receive placement of NHSC personnel without having to secure a separate HPSA designation.

HRSA calculates HPSA scores for automatically designated facilities based on nationally available data for the primary care service area (PCSA) in which the facility is located. (PCSAs are defined by the utilization patterns of Medicare beneficiaries.) Facilities receive a HPSA score based on the data that are obtainable. When no data are available, the facility receives a score of zero; when some data are available a partial score is calculated. Facilities may submit data for scoring as an alternative to nationally available data if more accurate or complete community-level data are available.

score is calculated for each variable, or factor, and these scores are added together for a total HPSA score.[14]

Application and Update Process

Although processes for granting HPSA and MUA/P designations are similar in many respects, they also differ in important ways. Both methods primarily rely on state governments to identify areas or populations that should be designated and to gather the information needed to document that the designation criteria have been met. Both processes also allow other interested parties (such as local governments, primary care associations, private providers, or even individual citizens) to petition for designation, but they encourage coordination of these applications with the appropriate state agency,[15] commonly referred to as the state primary care office (PCO).

A key difference between the HPSA and the MUA/P is the update requirement related to review and renewal of designation status.

A key difference between the HPSA and the MUA/P is the update requirement related to review and renewal of designation status. Federal law requires the Department of Health and Human Services (DHHS) to conduct periodic review and revision for HPSA designations.[16] However, updates are not required for MUA/Ps, which are in effect granted in perpetuity. As conditions change, states and other interested parties may submit updated information in order to revise their IMU scores, but they are not obligated to do so. Presumably, updates for MUA/Ps would be pursued only when the provision of more recent data would result in a lower IMU score.

Concerns have been raised regarding the timeliness of HPSA updates. While DHHS is charged with conducting annual reviews of HPSA designations, action to withdraw invalid designations has not been taken for several years. Every year, HRSA submits a list of current designations to each state PCO.[17] Updated information is requested for those HPSA designations that have not been renewed in the previous three years. If the state does not provide current information for those designations flagged for update or if the information provided indicates that designation is no longer appropriate, HRSA proposes that designation be withdrawn. De-designations do not, however, take effect until published in the *Federal Register.* HRSA has not published a list of either designated HPSAs or de-designations proposed since

2002. Despite the absence of formal withdrawals over the past eight years, states typically comply with requests for updated information.

USE IN RESOURCE ALLOCATION DECISIONS

The HPSA and MUA/P shortage designations are used by more than 30 federal programs to identify areas, populations, or facilities eligible to receive federal aid and assistance related to medical underservice. These programs can be divided into four broad categories, described below.

Grants to Support Primary Care Services

Eligibility for grant awards through HRSA's health center program ($2.15 billion in fiscal year [FY] 2010)[18] is restricted to facilities that serve MUA/Ps. The shortage designation serves only as an initial eligibility screen. HRSA considers a wide variety of factors in making grant awards through a competitive application process. Applicants for grant awards must meet additional organizational requirements, such as those related to governance structure; supply information related to organizational resources, clinical capacity, financial sustainability, and quality of care assurance mechanisms; and submit detailed needs assessments. These assessments are reported in need for assistance worksheets (NFAs). The structure of these worksheets has varied in recent grant competitions, but they generally collect data on barriers to care and health disparities. Scores derived from NFAs influence the competitiveness of grant applications. The IMU is not included in the NFA, but related data variables (such as percent of population below 200 percent of poverty) are used.

Support for the Training and Recruitment of Health Professionals

At least 24 federal programs intended to support the training and recruitment of health professionals use one or both of the shortage designations to allocate resources. The most visible of these efforts is the HRSA-administered National Health Service Corps (NHSC), which represented a $142 million federal investment in FY 2010.[19] The NHSC awards scholarships to students and repays the educational loans of health professionals in exchange for service in a HPSA. Financial aid is provided through four separate programs.[20]

Historically, funding levels for the NHSC have not been adequate to support the number of clinicians needed to fill all position vacancies in eligible HPSAs. For example, FY 2009 appropriations ($135 million) supported 39 new scholars and 977 new loan repayors, yet nearly 9,000 vacancies currently remain and nearly 17,000 practitioners are still needed to remove designations.[21] The NHSC has identified HPSAs for priority placement of its personnel to ensure assignments to areas with the highest level of need. In 2009–2010, primary medical care HPSAs with scores of 10 or above were authorized for priority placement of Corps personnel participating in the loan repayment program, and those with scores of 17 or above were authorized for priority placement of personnel participating in the scholarship program. In the past, NHSC personnel placements have largely been limited to priority HPSAs.[22]

In addition to the NHSC, HRSA also administers a variety of grant programs authorized under Title VII and VIII of the Public Health Service Act, which are intended to support health professions training or scholarship programs in academic institutions ($390 million in FY 2010).[23] These programs provide funding preference to academic institutions that train a significant proportion of students who go on to practice in underserved communities, but they do not limit grant eligibility to such institutions. These education training programs typically accept either HPSA or MUA designation in determining award preferences. HRSA does not track the proportion of Title VII and VIII grants awarded to academic institutions meeting this shortage-related funding preference.

Enhanced Payment Through Medicare and Medicaid

The Centers for Medicare & Medicaid Services (CMS) implements three distinct reimbursement policies that provide preferential payment to providers located in underserved communities.

The federally qualified health center (FQHC) program provides a special reimbursement mechanism through both Medicare and Medicaid to medical facilities designated as FQHCs. Criteria for FQHC designation are generally comparable to eligibility criteria for grants through HRSA's health center program, including the requirement that eligible health centers serve MUA/Ps. However, receipt of HRSA grant funding is not a requirement for FQHC designation.

The rural health clinic program provides a special payment mechanism through both Medicare and Medicaid for certain rural clinics. In addition to meeting other eligibility requirements, rural health clinics must be located in rural communities designated as underserved for primary care services. The "rural" component of these criteria is determined by a Bureau of the Census definition that identifies nonurbanized areas, based on population densities. Accepted shortage designations include geographic and population HPSAs, geographic MUAs, and other areas designated by a state's governor.

The Medicare HPSA bonus program provides a 10 percent bonus payment for all physician services provided to Medicare beneficiaries in geographic primary medical care HPSAs.[24] In areas designated as mental health HPSAs (but not primary medical care HPSAs), only psychiatrists are eligible for the bonus.

Immigration Policies for Health Professionals

The Department of Homeland Security's U.S. Citizenship and Immigration Services extends immigration waivers to certain foreign-born physicians in exchange for service in designated shortage areas. Under J-1 visas, foreign medical graduates receive graduate medical training in the United States; after completing their training, they are normally required to return to their country of origin for two years before applying for permanent visas. However, if J-1 visa holders agree to practice in a shortage area and are sponsored by a state or federal government agency, these return requirements may be waived. National interest waivers also encourage foreign-born physicians to practice in the United States. These waivers, established under a 1999 amendment to the Immigration and Nationality Act, waive the job offer requirement for immigrant physicians who agree to practice in shortage areas or in Department of Veterans Affairs' facilities. For the purposes of these immigration waivers, shortage areas can be identified using either the HPSA or the MUA/P.

IS THERE A BETTER WAY?

Despite (or perhaps because of) their widespread use in federal programs, the current shortage designations are often criticized. Over the last two decades, HRSA and others have periodically proposed

substantial revisions to and, in some proposals, consolidation of the shortage designations. These efforts have been motivated by limitations inherent in each of the current approaches, as well as by concerns regarding the administrative efficiency of maintaining two separate and arguably redundant designation mechanisms.

Concerns Regarding Current Methods

Questions and concerns about the accuracy, validity, and utility of the shortage designations have proliferated since the inception of both methods. These issues have only intensified and become more divisive as both the number of designated areas and the number of federal programs utilizing the designations has grown. Formal assessments of the existing shortage designations have been made by the Government Accountability Office (GAO), the DHHS Office of the Inspector General, and independent health services researchers. Collectively, these analyses have raised the following issues.

Both the HPSA and the MUA/P provide incomplete assessments of provider supply. The GAO has criticized the MUA/P and HPSA methodologies for excluding certain types of physicians, such as NHSC personnel, from provider counts. GAO believes these exclusions inflate national estimates of provider shortages (which are often based on the number of practitioners needed to remove HPSA designations) and distort comparisons across communities. GAO and others have further observed that neither the HPSA nor the MUA/P includes midlevel providers, such as nurse-practitioners, and therefore provide only a partial and perhaps suboptimal representation of health service capacity. The GAO also found that the service areas used as the basis of designations do not always reflect realistic market boundaries for health services and may underemphasize the availability of services in contiguous areas. Health services researchers have noted that subcounty service areas are often carefully constructed for the purposes of securing designation.[25] Concerns have also been raised that the designations do not consider the availability of specialty physicians (except for psychiatrists). Some believe this practice underestimates primary care capacity, given that some specialty physicians provide primary care services. Others believe that access to specialists is becoming increasingly constrained and merits further analysis.

Both designation mechanisms create data collection burdens for states and communities and may favor those with experience in applying for designation. State PCOs play a key role in defining service areas and providing data necessary to evaluate both MUA/P and HPSA designations. The processes for designating HPSAs and MUAs have become more flexible over time as Congress has allowed partial-county geographic HPSAs and population-based designations; consequently, the sophistication and data collection capabilities of states and localities has taken on increased significance. Both the GAO and the Council on Graduate Medical Education have noted that the technical and political resources of states and local jurisdictions may be inappropriately influential in determining whether designations are granted.[26]

Data collection capacity is particularly important for population-based designations, which require surveying available providers to ascertain their willingness to deliver services to the population of interest. In contrast to population designations, geographic designations are more likely to rely on administrative data, such as licensure records, to enumerate providers. However, some states have found that administrative data may not accurately represent how physicians allocate their time across multiple practice sites. Therefore, provider surveys may also be required to support geographic designations if physicians divide their time across several offices, a common practice for rural physicians. These physician surveys are often resource-intensive and require significant staff time to develop valid instruments and ensure complete and accurate responses. States with the resources and technical expertise necessary to conduct these types of provider surveys may be more successful in securing designations.

Data collection capacity is particularly important for population-based designations.

Both designations fail to provide an up-to-date perspective on current health needs and available resources. Updates for the MUA/P designations are not required (and do not frequently occur), and the timeliness of HPSA review and revision has also been questioned. Although HPSA updates are initiated at least every three years, in practice no HPSA designation has been withdrawn since February 2002, when the last official notice of designations was published in the *Federal Register.* Approximately 1,400 HPSAs are currently identified by HRSA as "proposed for withdrawal," but such action remains pending. Even if such updates were to occur, concerns have

also been raised that the numeric thresholds used in the designation criteria are themselves premised on statistical reference points established over 30 years ago. Since the 1970s, much has changed in the population's demographic composition and health status, as well as in the provision of health care services. These changes have led some to question the overall credibility of the designations and the funding decisions they support.

Neither the MUA/P nor the HPSA methodology clearly identifies which communities would benefit the most from expansions in health service capacity. The vast majority of the United States has now been granted some type of shortage designation. (See Appendix C for maps of the contiguous United States by designation type.) Growth in the number of designated areas reflects the expanded application of population-based designations and partial-county service areas, the increased number of programs relying on these designations, and the lack of an MUA/P update process. HRSA has estimated that approximately 50 percent of MUA/P designated areas would lose their designations if more current data were used to assess compliance with the existing designation criteria.[27]

The pervasive application of the shortage designations has led many to question the utility of designation status in the allocation of federal resources. Some believe that more selective criteria are needed to ensure that resources are targeted appropriately. In practice, however, few federal programs rely solely on designation status in granting assistance. With the exception of the CMS payment provisions, most federal programs utilize supplemental data and qualitative information (such as HPSA or IMU scores, information regarding existing federal resources deployed, and assessments of unmet service needs) to evaluate relative resource constraints and determine assistance levels.

Alternative Approaches

HRSA has explored numerous options for regulatory changes to address the various concerns about the existing shortage designations. HRSA has twice issued a notice of proposed rule making (NPRM) to establish a new designation method which would consolidate the primary medical care HPSA and the MUA/P. The first was published in the *Federal Register* on September 1, 1998 (NPRM-1), the second on February 29, 2008 (NPRM-2). In an effort to respond to criticisms,

both proposals sought to streamline the designations, reduce the administrative burden on states and localities, and minimize disruption for currently designated areas. Appendix D summarizes key methodological features of the proposed rules.

In both cases HRSA elected not to pursue the revisions as published, in large part due to concerns regarding the number of areas and populations that would lose designation under the proposed methodologies. Because NPRM-1 would have required MUA/P designation prior to HPSA consideration, over 50 percent of whole-county HPSAs were projected to lose designation.[28] This aspect of the methodology was perceived as a bias against rural areas, which often have significant provider shortages but may not exhibit high levels of need as defined by the other variables used in the proposed designation criteria. In response to these concerns, NPRM-2 abandoned the step-wise application of designations. However, a significant number of de-designations continued to be projected under NPRM-2, this time with MUAs more significantly impacted, in part because of the dated nature of the MUA/P designation. One estimate suggested that 605 HPSAs (containing a population of 32 million and 31,565 primary care physicians) and 917 MUAs (containing a population of 31 million and nearly 39,000 primary care physicians) could lose designation under the proposed NPRM-2 methodology.[29]

The two NPRMs were similar in several ways, but HRSA attempted to respond to criticisms that had been leveled against the earlier proposal by incorporating multiple modifications into NPRM-2. For example, both methods proposed establishing a two-tiered designation: one tier would include all practicing primary care providers; the second tier would exclude certain types of federally sponsored providers from the provider counts used to calculate the population-to-provider ratios (much as the current designation processes do). NPRM-2 excluded more types of providers under the second tier of designation because many comments on NPRM-1 indicated that J-1 visa physicians and clinicians obligated under the State Loan Repayment Program were important safety net resources and should not be included in provider counts.

Similarly, both NPRMs used proxy measures, such as race, ethnicity, and poverty, to assess unmet needs for medical services. HRSA believed that incorporating these need-related measures would necessitate fewer population-based designations, which can be particularly resource-intensive for states to secure. One objection to NPRM-1's

use of such proxies was the absence of a strong empiric basis for tying these variables to access constraints. NPRM-2 utilized regression analyses to explore the relationship between proxy measures and provider supply in order to develop weights which were used to adjust population counts. However, the methodological complexity and validity of these population adjustments were later questioned.

HRSA intends to issue a new NPRM for review and comment in the future. As the past failed proposals illustrate, melding the designations while simultaneously addressing all of the perceived weaknesses in each and avoiding significant disruption in currently designated communities represents a formidable challenge. Some have suggested that these various goals are inherently conflicted and that a more focused, less ambitious approach is needed to overhaul the shortage designation criteria.

An alternative perspective has questioned the wisdom of relying on one, or even two, generic shortage designations to allocate federal aid. The GAO has suggested that program-specific criteria for determining medical underservice should be developed.[30] Such program-specific criteria could be tailored to best support the particular objectives of any given aid program. However, programmatic application of either (or both) the HPSA and the MUA/P is typically defined in statute, and an act of Congress would be needed to implement alternative program-specific measures. Legislative debate related to health reform initiated a variety of proposals intended to modify the current approach to shortage designations,[31] but none would have allowed for the fundamental reorientation proposed by GAO.

However, PPACA does have important implications for the shortage designations. The legislation creates a number of new programs that would employ the HPSA and MUA/P designations to distribute federal funding and authorizes funding increases for existing workforce and capacity development efforts. In a more methodologically focused provision, PPACA requires DHHS to engage in negotiated rule making to develop a new approach to MUA/P and HPSA designation.[32] The statutory language does not stipulate that a consolidated method must be developed, but it does require a comprehensive methodology and criteria that address both the MUA/P and HPSA.

HRSA published a notice of the agency's intent to form a negotiated rulemaking committee in the *Federal Register* on May 7, 2010.[33] The notice identifies proposed negotiation participants, highlights key

issues that the committee will need to address, solicits public comment on committee composition and issues for deliberation, and establishes a timeline for the negotiation process. A target date of July 1, 2011, has been set for completion of the committee's final report.

CONCLUSION

Although they rely on similar data variables, the procedures and processes used to evaluate designation criteria differ significantly between the HPSA and the MUA/P. In assessing underservice, the MUA/P heavily emphasizes the health needs of vulnerable populations, independent of provider supply or accessibility of care. However, need measures are limited to three variables—poverty, infant mortality, and percent of the population that is elderly—which may disadvantage communities that exhibit other forms of health needs, such as high rates of chronic disease. In contrast, the HPSA designation relies almost solely on provider availability and makes only modest attempts to factor need into designation determinations.

While these differences reflect the original intent of each of the designations, data constraints have also played a role in methodological development. Shortage designations must be based on data variables that are already available from existing sources or are feasible to collect for designation purposes. Unfortunately, such variables represent imperfect proxies for the numerous, interrelated factors that shape access to care, such as the composition and productivity of the provider workforce, the nature and magnitude of access barriers, and the degree to which health needs influence resource requirements.

Relatively broad consensus exists that both of the current methodologies used to designate underserved populations and areas are suboptimal, yet repeated attempts to develop a superior, more integrated approach have failed to produce an acceptable alternative. Reasonable methodological concerns have been raised regarding the alternatives proposed. However, methodological weaknesses are also evident in existing methods and current designations are based on outdated data and thresholds. Some believe that any proposed modification would prove problematic and politically unviable given the large number of de-designations that would likely ensue.

It remains unclear whether attempts to harmonize the existing designations will prove successful. In light of the diverse purposes of the

many federal programs that use the designations to allocate funds, the broad utility of any single measure appears questionable. A full consolidation of the two designations would likely entail judgments that may be more political than methodological in nature.

ENDNOTES

1. Medically Underserved Area (MUA) designation specifically permits (in nonmetropolitan areas) whole counties or groups of contiguous county- or census-based subdivisions, if population centers are within 30 minutes travel time. In metropolitan counties, MUA designation permits service area boundaries to coincide with cohesive neighborhoods.

2. Both the Health Professional Shortage Area (HPSA) and the MUA designations were originally developed only to identify shortages in geographic areas. Initially, most designations for shortages of health professionals were made for whole counties, mostly in rural areas. However, policy changes made in the early 1970s allowed more subcounty service areas to be designated as "manpower" shortage areas. Congress expanded Health Manpower Shortage Area (HMSA) designations to population groups and facilities in 1976 (P.L. 94-484), and implementing regulations were published in November 1980. Congress allowed Medically Underserved Population (MUP) designations in 1986 (P.L. 99-280) and the first MUPs were published in the *Federal Register* in 1987. U.S. Congress, Office of Technology Assessment (OTA), *Health Care in Rural America,* OTA-H-434 (Washington, DC:U.S. Government Printing Office, 1990), p. 289; available at www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/3f/56/60.pdf.

3. Typically, the latest available data from the Census Bureau are used to estimate population size. State-level data may be used if available, but few states conduct independent population surveys.

4. Health care workforce shortage designations were initially developed by the federal government in the mid-1960s, when scholarship and loan replacement programs for health professionals (predecessors of the National Health Service Corps, or NHSC) were first implemented.

5. OTA, *Health Care in Rural America*.

6. Authorized in 1973 by the Health Maintenance Organization (HMO) Act, MUAs were initially created to support a now defunct program that provided federal loans to start-up HMOs drawing more than 30 percent of their membership from MUAs. Congress charged the Secretary of the Department of Health, Education, and Welfare with developing criteria for the MUA designation, resulting in the establishment of the Index of Medical Underservice (IMU). Criteria for calculating IMU scores and designating MUAs were first published in the *Federal Register* in 1975. *Federal Register,* vol. 40 (1975): p. 40316.

7. Health Services Amendments Act of 1986.

8. Based on poverty guidelines issued by the Department of Health and Human Services annually. These poverty guidelines are a simplified version of the poverty thresholds updated each year by the Bureau of the Census.

9. OTA, *Health Care in Rural America,* p. 293.

10. HPSA guidelines provide detailed directions for adjusting part-time office hours for patient care and dictate how the productivity of professionals-in-training should be discounted (that is, primary care physician interns and residents counted as 0.1 full-time equivalents, or FTEs, while psychiatric residents counted as 0.5 FTEs). The MUA/P does not utilize these types of productivity adjustments for students.

11. The mental health HPSA is the only designation that directly includes non-physician professionals in the provider to population ratios used to assess designation status. The dental HPSA excludes dental hygienists and dental assistants from dental practitioner counts but does consider the number of auxiliary staff in computing a dentist's productivity to estimate dental FTEs.

12. For comparative purposes, the difference between the high-need threshold and the general threshold used in designating primary care HPSAs translates into less than 2 points on the 100-point IMU scale.

13. Health Resources and Services Administration (HRSA), "HPSA Designation Criteria for Primary Medical Care," available at http://bhpr.hrsa.gov/shortage/hpsacritpcm.htm, and HRSA, "Dental HPSA Designation Criteria," available at http://bhpr.hrsa.gov/shortage/hpsacritdental.htm.

14. Scores can range between 0 and 25 for the primary medical care HPSA, between 0 and 26 for the dental HPSA, and between 0 and 26 for the mental health HPSA.

15. State agencies identified by HRSA as the preferred applicants for shortage designations include public health departments and state health planning agencies.

16. U.S. Code 42, section 254e(d).

17. Statutory language suggests that DHHS should take the lead in identifying areas and populations both ineligible and eligible for HPSA designation. However, from a practical perspective, nationally available data are often inadequate for definitive determination of designation status.

18. Excludes American Recovery and Reinvestment Act of 2009 (ARRA) funds.

19. Excludes ARRA funds.

20. The NHSC includes the scholarship program, the federal loan repayment program, the state loan repayment program, and the Ready Responders program.

21. NHSC, "Facts & Figures," available at http://nhsc.hrsa.gov/about/facts.htm, and HRSA, "Designated Health Professional Shortage Areas (HPSA): Statistics," available at http://ersrs.hrsa.gov/ReportServer?/HGDW_Reports/BCD_HPSA/BCD_HPSA_SCR50_Smry&rs:Format=HTML3.2.

22. HRSA anticipates that ARRA funding is likely to lead to both a reduction in the scores needed to qualify for priority placement, as well as increased placements to nonpriority sites. ARRA funding ($300 million) will significantly increase the number of NHSC loan repayment awards and scholars. HRSA estimates that between 2009 and 2011 ARRA funding will support 114 new scholars and approximately 3,300 new loan repayors. *Federal Register,* 74, no. 101 (May 28, 2009): pp. 25568–25569, available at http://edocket.access.gpo.gov/2009/pdf/E9-12531.pdf, and *Federal Register,* 74, no. 119 (June 23, 2009): pp. 29708–29710, http://edocket.access.gpo.gov/2009/pdf/E9-14741.pdf.

23. Excludes ARRA funds.

24. Between January 1, 2005, and December 31, 2007, the Centers for Medicare & Medicaid Services also provided an additional 5 percent bonus payment to providers located in physician scarcity areas (PSAs). These PSAs are not identified using either the MUA or the HPSA. Primary care PSAs are defined as those counties in the lowest quintile for the ratio of primary care relative to Medicare beneficiaries. Specialty PSAs are defined as those counties in the lowest quintile for the ratio of specialty physicians relative to Medicare beneficiaries.

25. Thomas C. Ricketts *et al.*, "Designating Places and Populations as Medically Underserved: A Proposal for a New Approach," *Journal of Health Care for the Poor and Underserved*, 18 (2007): p. 578.

26. Government Accountability Office (GAO), *Health Professional Shortage Areas: Problems Remain with Primary Care Shortage Area Designation System*, GAO-07-84, October 2006, available at www.gao.gov/new.items/d0784.pdf, and HRSA, *Physician Distribution and Health Care Challenges in Rural and Inner-City Areas*, Council on Graduate Medical Education, Tenth Report, February 1998, p. 3; available at www.cogme.gov/10.pdf.

27. *Federal Register*, 73, no. 41 (February 29, 2008): p. 11255.

28. Laurie J. Goldsmith and Thomas C. Ricketts, "Proposed Changes to Designations of Medically Underserved Populations and Health Professional Shortage Areas: Effects on Rural Areas," *Journal of Rural Health*, 15, no. 1 (Winter 1999): pp. 44–54.

29. Rick Kellerman *et al.*, letter to Michael O. Levitt, Secretary of the Department of Health and Human Services, commenting on "Designation of Medically Underserved Populations and Health Professional Shortage Areas; Proposed Rule Change," May 8, 2008 (based on an impact analysis conducted by the Robert Graham Center); available at www.acponline.org/advocacy/where_we_stand/ workforce/underserved.pdf. Related analyses conducted by The George Washington University School of Public Health and Health Services, Department of Health Policy, found that nearly one-third of federally qualified health centers would lose designation status under NPRM-2. Peter Shin *et al.*, "Highlights: Analysis of the Proposed Rule on Designation of Medically Underserved Populations and Health Professional Shortage Areas," Geiger Gibson Program/RCHN Community Health Foundation Research Collaborative, May 1, 2008, available at www.gwumc.edu/sphhs/departments/healthpolicy/dhp_publications/pub_uploads/dhpPublication_5E650B95-5056-9D20-3DE9EEC606A16B11.pdf, and Peter Shin *et al.*, "Grantee-Level Estimates Show that 31 Percent of All Health Centers would Fail to Meet Tier Two Status under HRSA's Proposed MUA/MUP/HPSA Designation Regulations," Geiger Gibson Program/RCHN Community Health Foundation Research Collaborative, Research Brief #3, May 12, 2008; available at http://gwumc.gwu.edu/sphhs/departments/healthpolicy/dhp_publications/pub_uploads/dhpPublication_A5E44C6C-5056-9D20-3D2E4A191E1D866C.pdf.

30. GAO, "Health Care Shortage Areas Designations Not a Useful Tool for Directing Resources to the Underserved," GAO/HEHS-95-200, September 1995; available at www.gao.gov/archive/1995/he95200.pdf.

31. The reform proposal enacted by the House in November 2009 (H.R. 3962) would have created two new shortage designations. A "health professional shortage area with extreme need" (HPSA-extreme) designation would have been used

to identify areas eligible to participate in a new NHSC demonstration to provide incentive payments to Corps members willing to serve in the "extreme-need" areas (H.R. 3962, division C, title V, subtitle E, section 2596). These areas would not only meet HPSA requirements but also have high rates of "untreated" disease, including chronic conditions. The bill did not specify how these disease rates would be measured. A separate "health professional needs area" (HPNA) designation would have supported a new program named the Frontline Health Providers Loan Repayment Program (H.R. 3962, division C, title II, subtitle A, subpart XI, section 340H(b)(2)). The bill charged DHHS with developing specific criteria for this new designation. Although not stated explicitly, the bill language suggested that these criteria would be less restrictive than those used to designate HPSAs, as award levels were targeted at 50 percent of the average award made under the NHSC loan repayment program. The HPNA designation would also have been used (along with HPSAs) to identify hospitals eligible for redistributed, unused residency slots.

32. H.R. 3590, section 5602. Negotiated rulemaking was authorized by Congress in 1996 and incorporated into the Administrative Procedure Act (P.L. 79-404). This mechanism allows agencies to pursue a consultative approach to rule making that substantially involves affected stakeholders. Although agencies generally pursue negotiated rule making at their own discretion, Congress has mandated it in a limited number of circumstances. An analysis of the public comments on NPRM-2 noted the opposition and confusion surrounding the proposal and recommended the use of negotiated rulemaking in future efforts to revise the designations. Emily Jones *et al.*, "Designation of Medically Underserved and Health Professional Shortage Areas: Analysis of the Public Comments on the Withdrawn Proposed Regulation," Geiger Gibson Program/RCHN Community Health Foundation Research Collaborative, Issue Brief #5, September 3, 2008; available at www.gwumc.edu/sphhs/departments/healthpolicy/dhp_publications/pub_uploads/dhpPublication_A5F93284-5056-9D20-3DBBE61B2772E65F.pdf.

33. *Federal Register,* vol. 75, no. 90 (May 11, 2010): pp. 26167–26171; available at http://edocket.access.gpo.gov/2010/2010-11214.htm.

APPENDIX A
HPSA Designation Thresholds and Criteria for Demonstration of High Need or Insufficient Capacity

HPSA Designation Thresholds

Areas or populations that demonstrate either high levels of need or insufficient provider capacity can qualify for HPSA designation under population-to-provider thresholds that are somewhat less stringent than those used to evaluate areas or populations that do not meet the high-need or insufficient capacity criteria.

AREA/POPULATION TYPE

HPSA Type	Standard	High Need/Insufficient Capacity
Primary Care	Population-to-provider ratio ≥ 3,500 : 1	Population-to-provider ratio > 3,000 : 1
Dental	Population-to-provider ratio ≥ 5,000 : 1	Population-to-provider ratio > 4,000 : 1
Mental Health	Population-to-provider ratio ≥ 6,000 : 1 AND Population-to-psychiatrist ratio ≥ 20,000 : 1	Population-to-provider ratio ≥ 4,500 : 1 AND Population-to-psychiatrist ratio ≥ 15,000 : 1
	OR Population-to-provider ratio ≥ 9,000 : 1	OR Population-to-provider ratio ≥ 6,000 : 1
	OR Population-to-psychiatrist ratio ≥ 30,000 : 1	OR Population-to-psychiatrist ratio ≥ 20,000 : 1

Criteria for Determination of...	
Unusually High Needs for Primary Medical Care Services	An area will be considered as having unusually high needs for primary health care services if at least one of the following criteria is met: • The area has more than 100 births per year per 1,000 women aged 15 to 44 • The area has more than 20 infant deaths per 1,000 live births • More than 20 percent of the population (or of all households) have incomes below poverty level
Insufficient Capacity of Existing Primary Care Providers	An area's existing primary care providers will be considered to have insufficient capacity if at least two of the following criteria are met: • More than 8,000 office or outpatient visits per year per FTE primary care physician serving the area • Unusually long waits for appointments for routine medical services (that is, more than 7 days for established patients and 14 days for new patients) • Excessive average waiting time at primary care providers (longer than one hour where patients have appointments or two hours where patients are treated on a first-come, first-served basis) • Evidence of excessive use of emergency room facilities for routine primary care • A substantial proportion (two-thirds or more) of the area's physicians do not accept new patients • Abnormally low utilization of health services, as indicated by an average of two or fewer office visits per year on the part of the area's population

Appendix A — *continued >*

APPENDIX A *(continued)*

HPSA Designation Thresholds and Criteria for Demonstrating High Need or Insufficient Capacity

Criteria for Determination of...	
Unusually High Needs for Dental Services	An area will be considered as having unusually high needs for dental services if at least one of the following criteria is met: • More than 20 percent of the population (or of all households) has incomes below poverty level • The majority of the area's population does not have a fluoridated water supply
Insufficient Capacity of Existing Dental Care Providers	An area's existing dental care providers will be considered to have insufficient capacity if at least two of the following criteria are met: • More than 5,000 visits per year per FTE dentist serving the area • Unusually long waits for appointments for routine dental services (that is, more than six weeks) • A substantial proportion (two-thirds or more) of the area's dentists do not accept new patients
Unusually High Needs for Mental Health Services	An area will be considered to have unusually high needs for mental health services if one of the following criteria is met: • Twenty percent of the population (or of all households) in the area have incomes below poverty level • The youth ratio, defined as the ratio of the number of children under 18 to the number of adults of ages 18 to 64, exceeds 0.6 • The elderly ratio, defined as the ratio of the number of persons aged 65 and over to the number of adults of ages 18 to 64, exceeds 0.25 • A high prevalence of alcoholism in the population, as indicated by prevalence data showing the area's alcoholism rates to be in the worst quartile of the nation, region, or state • A high degree of substance abuse in the area, as indicated by prevalence data showing the area's substance abuse to be in the worst quartile of the nation, region, or state *Note: There is no insufficient capacity provision for the mental health HPSA.*

Source: Health Resources and Services Administration, Shortage Designation: HPSAs, MUAs & MUPs; available at http://bhpr.hrsa.gov/shortage/.

APPENDIX B: HPSA Scoring

PRIMARY MEDICAL CARE HPSAs

Factor 1: Population-to-Provider Ratio *(double-weighted)*

POINTS	CRITERIA
5	Ratio ≥ 10,000 : 1 OR no primary care physicians *and* population ≥ 2,500
4	Ratio < 10,000 : 1 *but* ≥ 5,000 : 1 OR no primary care physicians *and* population ≥ 2,000
3	Ratio < 5,000 : 1 *but* ≥ 4,000 : 1 OR no primary care physicians *and* population ≥ 1,500
2	Ratio < 4,000 : 1 *but* ≥ 3,500 : 1 OR no primary care physicians *and* population ≥ 1,000
1	Ratio < 3,500 : 1 *but* ≥ 3,000 : 1 OR no primary care physicians *and* population ≥ 500
Ineligible	Ratio < 3,000 : 1

Factor 2: Percent of Population with Incomes Below Poverty Level

POINTS	CRITERIA
5	Percent of population below poverty level ≥ 50%
4	Percent of population below poverty level < 50% *but* ≥ 40%
3	Percent of population below poverty level < 40% *but* ≥ 30%
2	Percent of population below poverty level < 30% *but* ≥ 20%
1	Percent of population below poverty level < 20% *but* ≥ 15%
0	Percent of population below poverty level < 15%

Factor 3: Infant Health Index

POINTS	CRITERIA
5	Infant mortality rate ≥ 20 OR low birth weight rate ≥ 13
4	Infant mortality rate < 20 *but* > 18 OR low birth weight rate < 13 *but* > 11
3	Infant mortality rate < 18 *but* > 15 OR low birth weight rate < 11 *but* > 10
2	Infant mortality rate < 15 *but* > 12 OR low birth weight rate < 10 *but* > 9
1	Infant mortality rate < 12 *but* > 10 OR low birth weight rate < 9 *but* > 7
0	Infant mortality rate < 10 OR low birth weight rate < 7

Factor 4: Travel Time/Distance to Nearest Source of Accessible Care Outside the HPSA

POINTS	CRITERIA
5	Time ≥ 60 minutes OR distance ≥ 50 miles
4	Time < 60 minutes *but* ≥ 50 minutes OR distance < 50 miles *but* ≥ 40 miles
3	Time < 50 minutes *but* ≥ 40 minutes OR distance < 40 miles *but* ≥ 30 miles
2	Time < 40 minutes *but* ≥ 30 minutes OR distance < 30 miles *but* ≥ 20 miles
1	Time < 30 minutes *but* ≥ 20 minutes OR distance < 20 miles *but* ≥ 10 miles
0	Time < 20 minutes OR distance < 10 miles

Primary Medical Care HPSA Score

(Scores can range between 0 and 25)

Appendix B — *continued >*

APPENDIX B: HPSA Scoring *(continued)*

DENTAL HPSAs

Factor 1: Population-to-Provider Ratio *(double-weighted)*

POINTS	CRITERIA
5	Ratio ≥ 10,000 : 1 OR no dentists *and* population ≥ 3,000
4	Ratio < 10,000 : 1 *but* ≥ 8,000 : 1 OR no dentists *and* population ≥ 2,500
3	Ratio < 8,000 : 1 *but* ≥ 6,000 : 1 OR no dentists *and* population ≥ 2,000
2	Ratio < 6,000 : 1 *but* ≥ 5,000 : 1 OR no dentists *and* population ≥ 1,500
1	Ratio < 5,000 : 1 *but* ≥ 4,000 : 1 OR no dentists *and* population ≥ 1,000
Ineligible	Ratio < 4,000 : 1

Factor 2: Percent of Population with Incomes Below Poverty Level *(double-weighted)*

POINTS	CRITERIA
5	Percent of population below poverty level ≥ 50%
4	Percent of population below poverty level < 50% *but* ≥ 40%
3	Percent of population below poverty level < 40% *but* ≥ 30%
2	Percent of population below poverty level < 30% *but* ≥ 20%
1	Percent of population below poverty level < 20% *but* ≥ 15%
0	Percent of population below poverty level < 15%

Factor 3: Travel Time/Distance to Nearest Source of Accessible Care Outside the HPSA

POINTS	CRITERIA
5	Time ≥ 90 minutes OR distance ≥ 60 miles
4	Time < 90 minutes *but* ≥ 75 minutes OR distance < 60 miles *but* ≥ 50 miles
3	Time < 75 minutes *but* ≥ 60 minutes OR distance < 50 miles *but* ≥ 40 miles
2	Time < 60 minutes *but* ≥ 45 minutes OR distance < 40 miles *but* ≥ 30 miles
1	Time < 45 minutes *but* ≥ 30 minutes OR distance < 30 miles *but* ≥ 20 miles
0	Time < 30 minutes OR distance < 20 miles

Factor 4: Water Fluoridation

POINTS	CRITERIA
1	Fluoridated water available for < 50% of population
0	Fluoridated water available for ≥ 50% of population

Dental HPSA Score

(Scores can range between 0 and 26)

Appendix B — *continued >*

APPENDIX B: HPSA Scoring *(continued)*

MENTAL HEALTH HPSAs

Factor 1: Population-to-Provider Ratio

	CRITERIA		
POINTS	PSYCHIATRISTS		CORE MENTAL HEALTH PROVIDERS
8	Ratio > 45,000 : 0	AND	Ratio > 4,500 : 0
7	—	—	Ratio < 6000 : 1 *but* > 4500 : 1
6	Ratio < 20,000 : 1 *but* > 15,000 : 1	AND	Ratio < 9,000 : 1 *but* > 6,000 : 1
5	Ratio < 30,000 : 1 *but* > 15,000 : 1	OR	Ratio < 6,000 : 1 *but* > 4500 : 1
4	Ratio < 45,000 : 1 *but* >20,000 : 1	AND	Ratio < 6,000 : 0 *but* > 4,500 : 0
3	Ratio > 20,000 : 1	AND	Ratio > 6,000 : 1
2	Ratio > 30,000 : 1	—	—
1	—	—	Ratio > 9,000 : 1

Note: "Core Mental Health Provider" includes psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.

Factor 2: Percent of Population with Incomes Below Poverty Level

POINTS	CRITERIA
5	Percent of population below poverty level ≥ 50%
4	Percent of population below poverty level < 50% *but* ≥ 40%
3	Percent of population below poverty level < 40% *but* ≥ 30%
2	Percent of population below poverty level < 30% *but* ≥ 20%
1	Percent of population below poverty level < 20% *but* ≥ 15%
0	Percent of population below poverty level < 15%

Factor 3: Travel Time to Nearest Source of Accessible Care Outside the HPSA

POINTS	CRITERIA
5	≥ 60 minutes
4	< 60 minutes *but* ≥ 50 minutes
3	< 50 minutes *but* ≥ 40 minutes
2	< 40 minutes *but* ≥ 30 minutes
1	< 30 minutes *but* ≥ 20 minutes
0	< 20 minutes

Factor 4: Youth Ratio

POINTS	CRITERIA
3	≥ 0.6:1
2	< 0.6:1 and > 0.4:1
1	< 0.4:1 and > 0.2:1

Note: The ratio of the number of children under 18 to the number of adults of ages 18 to 64.

Factor 5: Elderly Ratio

POINTS	CRITERIA
3	≥ 0.25:1
2	< 0.25:1 and > 0.15:1
1	< 0.15:1 and > 0.10:1

Note: The ratio of the number of persons aged 65 and over to the number of adults of ages 18 to 64.

Factor 6: Substance Abuse Prevalence

POINTS	CRITERIA
1	Area's rate is in worst quartile for nation/region/or state

Factor 7: Alcohol Abuse Prevalence

POINTS	CRITERIA
1	Area's rate is in worst quartile for nation/region/or state

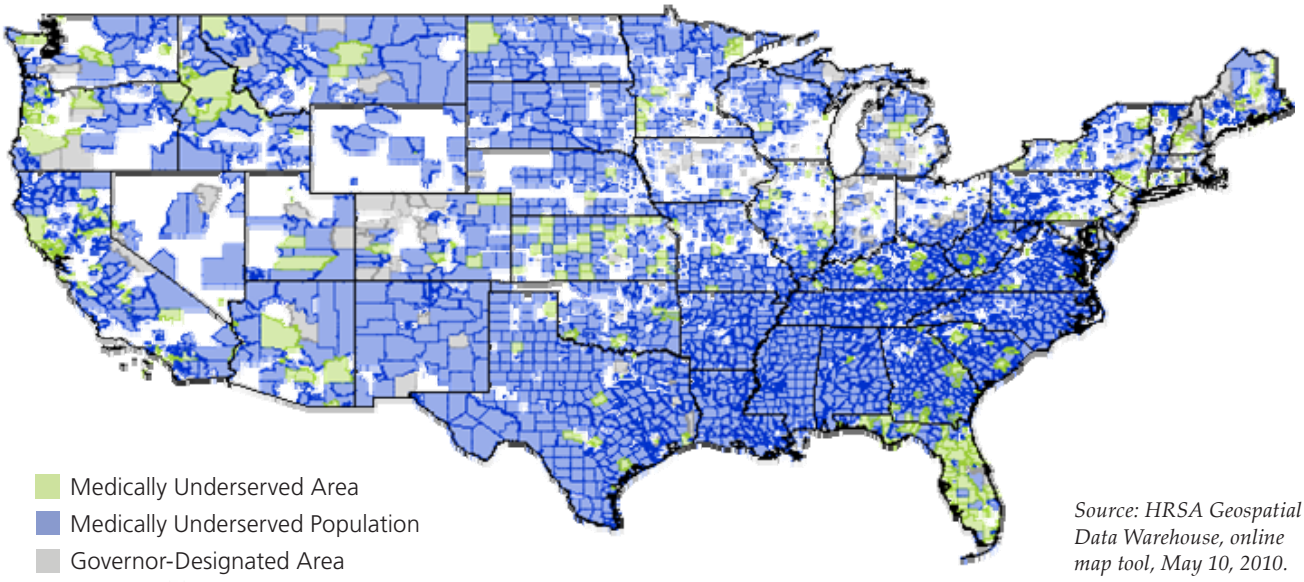
Mental Health HPSA Score

(Scores can range between 0 and 26)

APPENDIX C: HPSA and MUA/P Designations, Contiguous United States, 2010

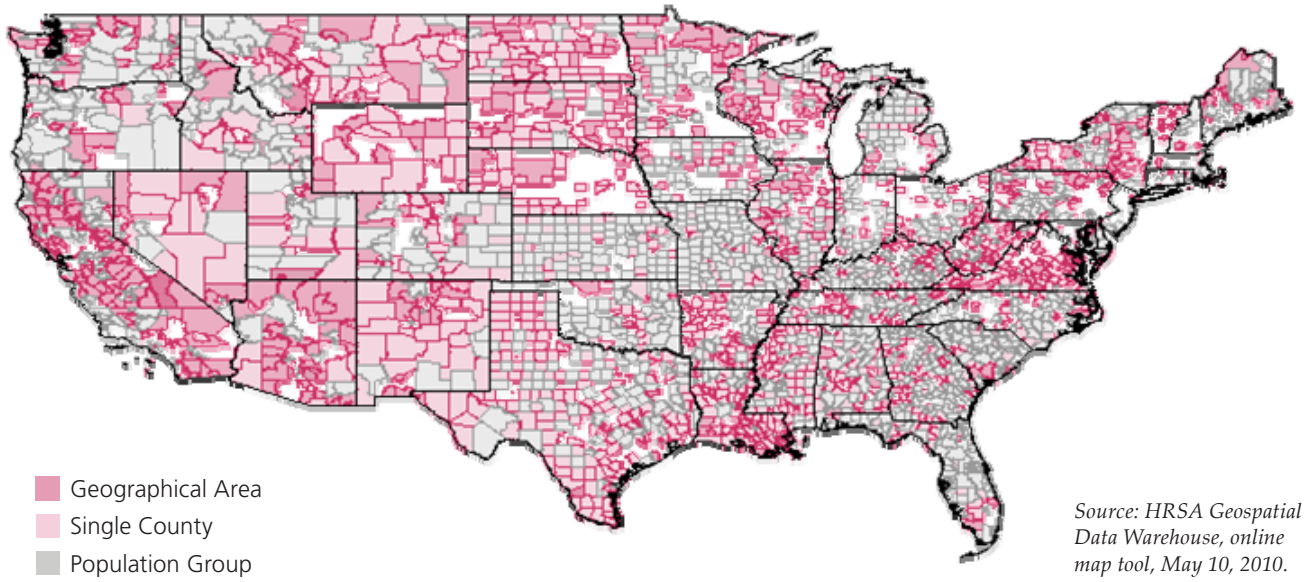
The maps in this appendix were created with the online map tool provided by the HRSA Geospatial Data Warehouse. This tool is available at http://datawarehouse.hrsa.gov/DWOnlineMap/MainInterface.aspx.

MAP 1: Medically Underserved Areas/Populations



Source: HRSA Geospatial Data Warehouse, online map tool, May 10, 2010.

MAP 2: Health Professional Shortage Areas (Primary Care)



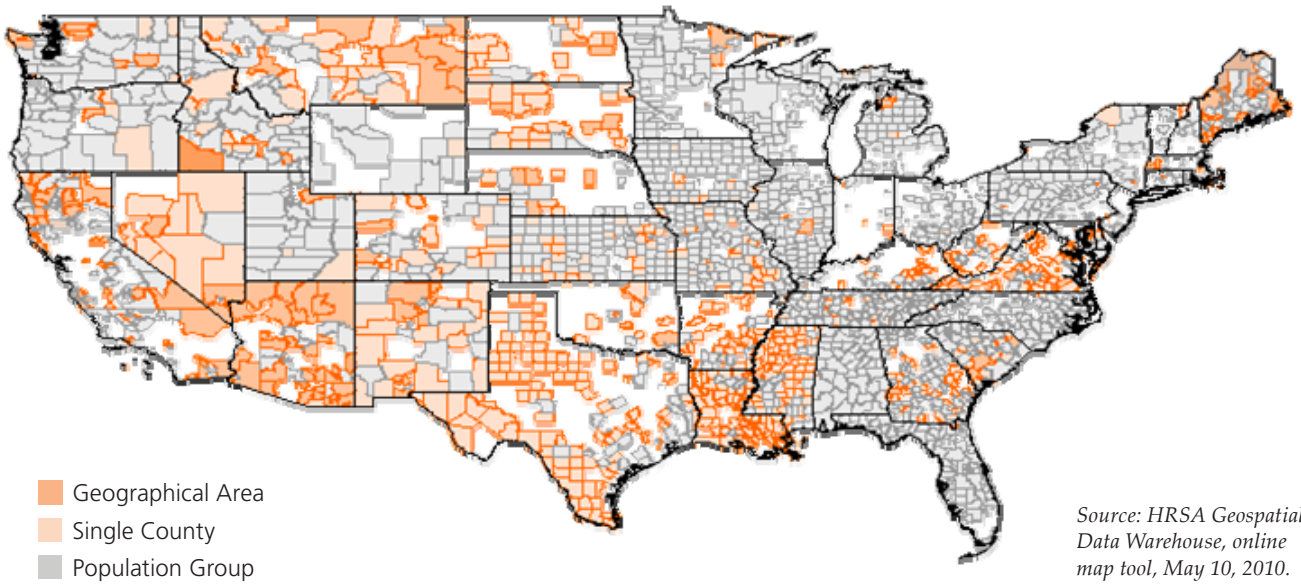
Source: HRSA Geospatial Data Warehouse, online map tool, May 10, 2010.

Note: The maps appear "stretched" because they are displayed in a geographic projection, which distorts a three-dimensional representation of the world to fit a two-dimensional presentation.

Appendix C — *continued >*

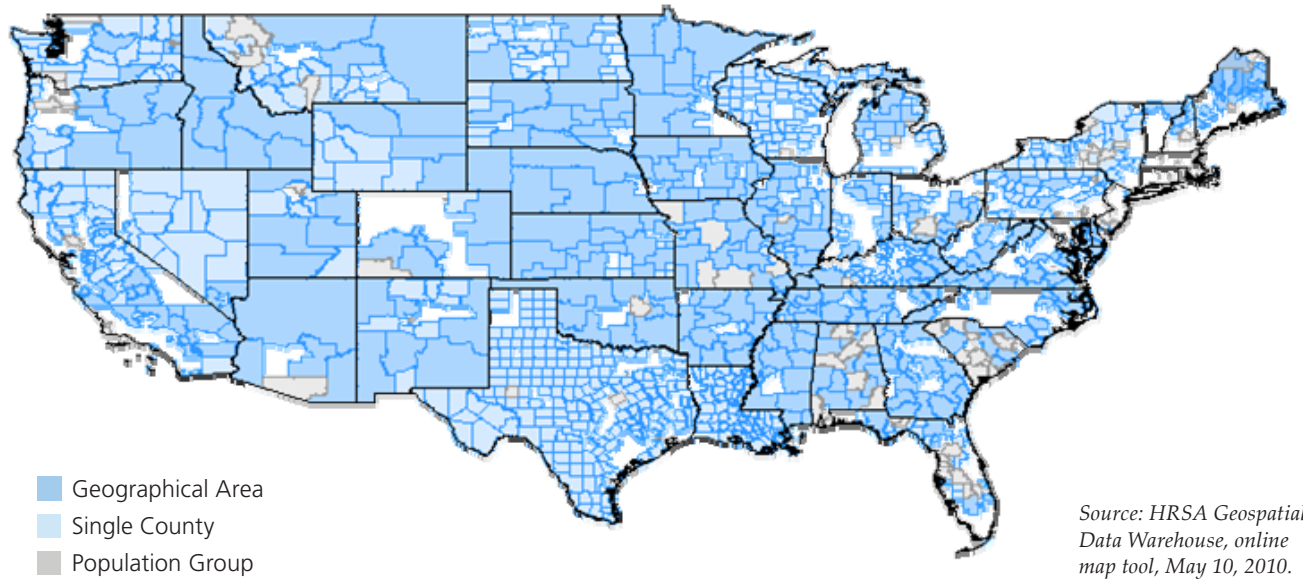
APPENDIX C: HPSA and MUA/P Designations, Contiguous United States, 2010 *(continued)*

MAP 3: Health Professional Shortage Areas (Dental Care)



Source: HRSA Geospatial Data Warehouse, online map tool, May 10, 2010.

MAP 4: Health Professional Shortage Areas (Mental Health)



Source: HRSA Geospatial Data Warehouse, online map tool, May 10, 2010.

Note: The maps appear "stretched" because they are displayed in a geographic projection, which distorts a three-dimensional representation of the world to fit a two-dimensional presentation.

APPENDIX D: Methodological Summaries of NPRM-1 and NPRM-2

METHODOLOGICAL APPROACH	Comparative Overview of Proposed Rules	
	NPRM-1	**NPRM-2**
Consolidation Strategy	Step-wise application of designations, with a subset of MUA/Ps further designated as HPSAs.	Dual MUA/P and HPSA designation for all areas and populations meeting the new consolidated criteria.
Revised Designation Criteria	MUA/Ps designated using new Index of Primary Care Services (IPCS) based on a weighted combination of seven variables: • Population-to-primary care clinician ratio • Percent of population earning less than 200 percent of poverty level • Percent racial minorities • Percent Hispanic • Percent of population linguistically isolated • Infant mortality rate or low birthweight rate • Population density HPSA designation given to all areas or populations meeting the MUA/P criteria AND a population-to-primary-care-provider ratio > 3,000:1	Designation based on new Index of Primary Care Underservice (IPCU), expressed as a population-to-provider ratio, but actual ratio adjusted mathematically to reflect both access constraints and indicators of community need. Need variables include: • Percent of population earning less than 200 percent of federal poverty level • Percent nonwhite • Percent Hispanic • Low birthweight rate • Infant mortality rate • Percent of population above 65 years of age • Unemployment rate • Standardized mortality rate • Population density Weights developed using regression analyses and scores expressed in population metric to adjust the base population-to-provider ratio.
Service Area Definitions	Each state required to map all rational service areas (RSAs) for primary care services within its jurisdiction. These geographic boundaries would be used in assessing consolidated MUA/P and HPSA criteria.	Required to conform to an RSA. States encouraged, but not required, to develop a state-wide system of RSA boundaries. States opting not to establish state-wide boundaries would be required to meet the contiguous area requirements imposed under the current HPSA methodology.
Provider Exclusions	Two designation tiers created: Tier 1 to include those areas meeting the criteria when all practicing primary care clinicians counted. Tier 2 to include those additional areas meeting the criteria when NHSC assignees and those practicing in health centers excluded. Nurse practitioners (NP), physician assistants (PA), and certified nurse midwives (CNM) to be included in provider counts weighted at 0.5 full time equivalents (FTE) relative to primary care physicians.	Two designation tiers created: Tier 1 to include those areas meeting the criteria when all practicing primary care clinicians counted. Tier 2 to include those additional areas meeting the criteria when all federally sponsored clinicians excluded: • NHSC assignees • Clinicians obligated under the State Loan Repayment Program • J-1 visa physicians • Providers at health centers NPs, PAs, and CNMs to be included in provider counts weighted at 0.5 FTEs relative to primary care physicians. Or, at the applicant's option, 0.8 times a state-specific practice scope factor running from 0.5 to 1.0 (in recognition that not all NP/PA/CNM practices operate at the same level due to state policies).

Appendix D — *continued* >

APPENDIX D: Methodological Summaries of NPRM-1 and NPRM-2 *(continued)*

NPRM-1

The rules proposed under NPRM-1 would have created one process for designating both Medically Underserved Populations (MUPs) and Health Professional Shortage Areas (HPSAs) and would have defined HPSAs as a subset of Medically Underserved Areas/Populations (MUA/Ps), that is, those with a population-to-practitioner ratio exceeding 3,000 to 1.

NPRM-1 revised criteria for designation of MUA/Ps, based on a new Index of Primary Care Services (IPCS). The index calculation was based on a weighted combination of seven variables: (i) population-to-primary-care-clinician ratio, (ii) percent population below 200 percent of poverty, (iii) percent population racial minorities, (iv) percent population Hispanic, (v) percent population linguistically isolated, (vi) infant mortality rate or percent low birthweight births, and (vi) low population density. Among these variables, population-to-primary-care-clinician ratio and percent population below 200 percent of poverty were most heavily weighted. Each of these variables had the potential to contribute 35 points to a maximum possible score of 100, while other variables had the potential to contribute only 5 to 10 points each.

All rational service areas (RSAs) whose IPCS scores equaled or exceeded 35 would have qualified for MUA/P designation. HPSA designation would have been given to those MUA/Ps with a population-to-primary-care-physician ratio greater than 3,000 to 1. Both population- and facility-based HPSA designations would have continued under NPRM-1, but HRSA anticipated that the need for these designations would decrease, given the expanded number of need-based variables added to the MUA/P designation criteria.

Two tiers of designations were created, with the first tier consisting of those areas meeting the criteria when all primary care clinicians practicing in the area were counted and the second tier consisting of those additional areas meeting the criteria when NHSC assignees and those practicing in health centers were excluded from clinician counts. Nurse practitioners (NPs), physician assistants (PAs), and certified nurse midwives (CNMs) were included in counts of primary care clinicians, weighted at 0.5 full time equivalents (FTEs) relative to primary care physicians.

NPRM-1 required each state to map all RSAs for primary care services within its jurisdiction and utilized these geographic boundaries for assessing compliance with the new consolidated MUA/P and HPSA criteria.

Appendix D — *continued >*

APPENDIX D: Methodological Summaries of NPRM-1 and NPRM-2 *(continued)*

NPRM-2

The rules proposed under NPRM-2 would have conferred dual MUA/P and HPSA designation on all areas and populations meeting joint criteria based on a new Index of Primary Care Underservice (IPCU). This index was expressed as a population-to-provider ratio, but the actual ratio was adjusted mathematically to account for population characteristics associated with access constraints and other factors influencing community need.

The IPCU was designed to allow nationally available data to reduce burdens on states and localities but also allowed submission of local data. The proposal identified a six-step process for calculating the IPCU:

Step One: Determine the "effective barrier-free population."

This step would have developed an estimate of the utilization the target population would have if it did not have any barriers to care. This calculation would have applied to the target population the primary care office utilization rate of white, non-Hispanic, nonpoor persons observed in the 1996 Medical Expenditure Panel Survey (MEPS), adjusted for age and gender composition. This estimate would not have been expressed in terms of the number of primary care visits that would be expected in a barrier-free environment. Rather, this estimate would have been divided by the average utilization rate reported in MEPS, effectively inflating population counts to represent the suppressed utilization in these communities.

Step Two: Obtain a count of the number of FTE primary care providers (PCPs).

This step would have enumerated all PCPs (nonfederal, direct patient care), including midlevel providers. Discounted FTE counts would have been used for hospital residents (0.1) and for NPs, PAs, and CNMs (0.5) to adjust for the decreased productivity of these providers relative to that of practicing physicians.

Step Three: Calculate the base population-to-provider ratio.

This step would have expressed service capacity relative to population by dividing the effective barrier-free population by the number of FTE PCPs.

Step Four: Adjust the base population-to-provider ratio for community characteristics.

This step would have effectively inflated the population-to-provider ratio, using "weighted scores" based on the target area or population's percentile rank for select data variables that suggest a greater need for services relative to the "barrier-free estimates of service use." The variables proposed included (i) percent nonwhite, (ii) percent Hispanic, (iii) percent of population greater than 65 years

Appendix D — *continued* >

NPRM-2

of age, (iv) percent of population earning less than 200 percent of the federal poverty level, (v) unemployment rate, (vi) standardized mortality rate, (vii) low birth weight rate, (viii) infant mortality rate, and (ix) population density. Weights were developed using regression analyses, and scores were expressed in population metric so they could be added to the base population-to-provider ratio. While step one was designed primarily to estimate average service needs absent capacity constraints, step four attempted to adjust for the higher levels of underlying need in certain populations.

Step Five: Compare the need-adjusted population-to-provider ratio to the designation threshold.

This step would have determined whether the adjusted ratio was greater than the predetermined threshold ratio for underservice (proposed at 3,000 to 1).

Step Six: Determine tiers of shortages.

This step would have removed the number of federally sponsored PCPs (NHSC personnel, providers obligated under State Loan Repayment Program, physicians working under J-1 visa waivers, and all other PCPs providing services at health centers receiving Section 330 grant funds from HRSA) from the total number of FTE PCPs. Based on the results of this calculation, areas or populations designed as underserved would have been divided into two tiers:

- Tier 1 Designation — Areas that exceed the threshold even when all federally sponsored PCPs are counted
- Tier 2 Designation — Areas that exceed the threshold only when the federally sponsored PCPs are excluded from the provider supply count in the denominator

The service area against which these criteria would have been assessed would have been required to conform to an RSA. States would have been encouraged but not required to develop a state-wide system of RSA boundaries. States establishing such state-wide systems would not have been required to submit information regarding resources in contiguous areas; those opting not to establish such state-wide boundaries would have been required to meet the contiguous area requirements imposed under the current HPSA methodology. Designation of populations, as well as areas, would have continued to be permitted, but HRSA anticipated that fewer population-based designations would be necessary, given the incorporation of need-based variables into the designation criteria. The review and update process would have substantially mirrored those already used in designating HPSAs.