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STAFF REPORT

TO THE

SPECIAL COMMITTEE ON AGING
UNITED STATES SENATE

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PREFACE

In recent years, assuring access to health care in rural areas has emerged as one of the most challenging health care issues facing the Congress. In 1988 alone, the Special Committee on Aging held three hearings on the subject to help focus attention on the numerous problems of the rural health care system, as well as the various innovative strategies rural communities are attempting to attract and retain needed health care providers.

Through our hearings, we learned that over 160 rural hospitals have closed since 1980 and as many as 600 face the prospect of closure in the next few years. We are concerned that the closures of large numbers of hospitals, combined with unmet health care personnel needs, are hindering and may well continue to hinder access to needed health care for years to come.

Because the elderly represent a disproportionate share of the overall rural population, the access issue is especially important to older Americans living in rural areas. In fact, while the elderly comprise 12 percent of the total U.S. population, they account for more than 25 percent of the population of rural America. As a result, rural health providers tend to be more dependent on Medicare payments than their urban counterparts.

This report, prepared for the Committee in conjunction with the June and July Washington, D.C., Aging Committee hearings, focuses on the challenges these communities must meet in the delivery of health care. It concentrates on the problems facing rural hospitals and the shortage of needed health care personnel many rural areas are experiencing.

The Committee's intention in requesting the report was to promote a greater awareness of problems affecting the ability of rural communities to deliver needed health care services, as well as to provide recommendations for needed policy changes. The release of this report does not constitute the Committee's formal endorsement of the report's findings or recommendations. However, we strongly believe that the information presented in it will be of great value to the Committee and to others in the Congress in our efforts to improve the delivery of health care to Americans of all ages living in rural areas.

The Committee wishes to express its sincere appreciation to the report's author, Larry T. Patton for his thorough and scholarly approach to the Committee's request. We also wish to recognize the contributions of Committee staff in the production of this document, including Christopher Jennings and Jennifer McCarthy. Finally, the Committee wishes to recognize the assistance of the Congressional Research Service, the Office of Technology Assessment, and numerous health care providers and policy experts who reviewed previous drafts of this report and provided valuable sugges-

tions. These individuals generously donated both their time and expertise, for which we remain grateful.

We hope that this report not only sheds light on the numerous challenges facing the delivery of health care in rural America, but through its analyses and recommendations also will assist the Congress in developing a more responsive policy governing rural health care.

JOHN MELCHER,
Chairman.
JOHN HEINZ,
Ranking Minority Member.

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EXECUTIVE SUMMARY

The special needs and characteristics of many rural communities make it difficult to maintain a financially viable health care system. This report focuses on the challenges these communities must meet in the delivery of health care, concentrating on the problems facing rural hospitals and the shortage of health care personnel in rural areas. It was written to increase awareness of these issues as well as to provide recommendations to address them.

MAJOR FINDINGS

- Federal Medicare reimbursement policy has unfairly placed the burden of proof on rural hospitals to demonstrate that their costs are equivalent to those of urban hospitals, rather than on urban hospitals to prove that their costs justify higher payments.
- Rural hospitals have the lowest Medicare Prospective Payment System [PPS] operating margins of all hospitals. In fact, of the hospitals that lost money in each and every year of the first three years (1984–1986) of PPS, 83 percent of these hospitals were located in rural areas. Furthermore, over half of the hospitals losing money in all three years were rural hospitals with less than 50 beds.
- In 1986 and 1987, rural hospital closures have exceeded urban closures, and as many as 600 rural hospitals face the prospect of closure in the next few years.
- The average small rural hospital (fewer than 50 beds) suffered a loss when caring for Medicare patients. The bottom 10 percent of these hospitals had losses of 45 percent or more, and one out of four lost at least 18.5 percent.
- The importance of hospitals which are their community's sole source of care or are so-called "frontier" hospitals is strongly suggested by a recent study of rural residents which found that, largely because of limited resources and access to transportation, only 31 percent of those under age 75 crossed a county line to obtain needed medical care; moreover, a mere 18 percent of those over 75 left their home counties for care.
- Rural hospitals cannot compete with urban hospitals in offering financial bonuses to attract nurses. The Department of Health and Human Services' (DHHS) Nursing Commission has estimated that 9 percent of rural hospitals were forced to close beds as a direct result of the nurse shortage.
- DHHS has been negligent in their responsibility to provide Congress with needed and timely data on what role Medicare and other Federal health care policy decisions have played in terms

of maintaining or improving access to medical care in rural areas.

- DHHS identified 1,292 rural primary care shortage areas in March 1988, requiring 1,792 practitioners. Further, a 1988 survey suggests that as many as 25 percent of rural physicians may retire or leave their communities within the next five years.
- Although greater overall numbers of physicians have contributed to notably increased numbers of physicians practicing in rural counties with a population over 10,000 people, rural counties which have populations under 10,000 have not similarly benefited.
- Rural areas dependent upon the services of a National Health Service Corps [NHSC] physician will find it increasingly difficult to secure a replacement when their current physician has met his/her commitment. The number of prior scholarship recipients available for service in 1989 is estimated at 222 (in contrast, 1,400 scholarship physicians were available for service in 1985). No new scholarships will be issued in 1989. While the Corps recruits physicians in other ways, the Corps' field strength is expected to drop dramatically.
- Rising malpractice premiums have resulted in an increasing number of rural counties losing all obstetrical services; Florida is a particularly dramatic example where obstetrical care is no longer offered in a majority of the state's rural counties.
- The nation's 357 rural community health centers and 117 migrant health centers are an important source of primary care for the non-poor as well as the poor in many rural communities. For this important part of the health care "safety net", federal funding has not kept pace with inflation. Moreover, the centers have experienced a dramatic increase in both the number of uninsured patients and their malpractice premiums in recent years.

Causes of Health Crisis in Rural Communities

Community Characteristics

- Rural communities often have characteristics that make it more difficult to provide health care to their residents. These include:
  (1) Not only is a higher percentage of the rural population uninsured (17 percent rural vs. 14 percent urban), but a higher percentage of rural Americans are uninsured at every income level. Only one-fourth of the rural poor qualify for Medicaid, compared to 43 percent of the poor in inner cities.
  (2) A disproportionate share of the rural population is poor; the rural poverty rate grew throughout the first half of the 1980's, reaching 18.3 percent in 1985, compared to an urban poverty rate of 12.7 percent.
  (3) While the elderly comprise 12 percent of the total population in the United States, they account for 25.4 percent of the population in rural communities.

(4) Beginning in 1980, the rural unemployment rate consistently has exceeded the urban rate, a reversal of the historical pattern.

(5) Rural population growth has slowed dramatically as migration to urban areas has hit its highest level in three decades (632,000 in 1985–1986), resulting in a declining patient base for rural health care providers. If this trend continues, rural America may soon experience negative population growth.

Challenges Facing Rural Hospitals

• Medicare's reimbursement policies have contributed to eroding the financial viability of rural hospitals. Rural hospitals, particularly small rural hospitals, have been hurt by the following policies:

(1) Maintaining a Medicare payment rate for rural hospitals which, for the exact same diagnosis, is 12.3 percent lower than the payment rate for urban hospitals;

(2) Assuming that all rural hospitals in a state have the same wage index (while urban hospitals receive a wage index specific to their area);

(3) Failing to provide adequate financial support for hospitals which are the community's sole source of care (sole community hospitals);

(4) Establishing difficult to meet qualification thresholds for assistance on unusually high cost cases ("outlier" cases), revenue "losers" which are much more difficult for small hospitals to absorb; and

(5) Failing to recognize the vulnerability of low-volume small rural hospitals to a payment system which leaves them at complete risk for fluctuations in admissions and costs.

Issues of Medicare reimbursement only add to the difficulties that most rural hospitals already face. Like all hospitals, rural hospitals face declining utilization of inpatient services, cost containment pressures brought on by public and private insurers alike, as well as increased competition for patients. However, rural hospitals face additional pressures as well:

(1) Smaller hospitals, which are based predominantly in rural areas, cannot take advantage of economies of scale because they simply do not have the necessary patient volume. Increased migration to urban areas exacerbates this problem.

(2) Disproportionately high levels of unemployment, poverty, and uninsuredness can undermine the viability of small rural hospitals by (1) creating financial barriers to demand which deprive hospitals of admissions and (2) increasing the demand for uncompensated care, thus producing increased levels of bad debt.

(3) Sole community hospitals and "frontier" hospitals (located in counties with fewer than 6 persons per square mile) often face substantial costs for infrequently used standby equipment and personnel.

Challenges of Attracting and Retaining Rural Health Care Personnel

- For many reasons, rural communities have always been plagued by shortages of health care personnel. These include:
  (1) Inadequate and inequitable reimbursement rates and the difficulty in developing an economically viable practice in areas of low population density. Because Medicare physician reimbursement rates are based on historical and geographical charge rates, payments to physicians in rural areas are less than those practicing in urban areas;
  (2) Fear of professional isolation and a lack of modern medical facilities, equipment or local referral laboratories;
  (3) Inability to find acceptable employment for a professional spouse; and
  (4) The fear that practice in rural areas may well prove to be a 24-hour job with inadequate back-up support.

As a result, rural communities have been forced to offer physicians bonuses or guaranteed salaries to induce them to relocate and, when that has failed and if possible, small isolated rural communities have been forced to rely upon physicians placed in their community by the National Health Service Corps.

Major Recommendations for Congressional Consideration

RURAL HOSPITALS

Changes in Medicare Reimbursement Policy

- Eliminate the 12.3 percent differential in urban and rural hospital payments.
- Annually survey hospital wages and develop a more appropriate wage index for rural hospitals without any further delay.
- Simplify and streamline the process by which hospitals qualify for financial assistance when they have experienced large declines in patient volume.
- Because of the importance for maintaining access to health care for Medicare beneficiaries in underserved areas, develop alternative reimbursement options for sole community hospitals, including removing sole community hospitals from the PPS system and returning them to a cost reimbursement basis.

Research

- To address the void of needed data on important aspects of the Medicare program, establish a PPS research agenda for the Office of Rural Health Policy, HCFA's Office of Research and Development, and the Prospective Payment Assessment Commission to assure answers to the major questions affecting the equity of PPS for rural hospitals such as:
  —sole community hospital protections;
  —protections for rural hospitals from high cost cases (outliers);
  —the source of higher urban hospital costs; and
  —the effectiveness of volume protection provisions.
- Provide $10 million to the National Center for Health Services Research to fully fund the rural health services research

agenda recommended by the Rural Health Services Research Conference.
- Establish a federal clearinghouse for rural health services research under the auspices of the Office of Rural Health Policy. Innovative and successful approaches to health services delivery in rural areas should be documented and catalogued so that other rural communities can emulate them.

Rural Health Care Personnel

Changes in Medicare Policy

- Eliminate the geographical distinctions in Medicare payments for physician services.

Improving the Supply of Rural Health Care Professionals

- Emphasize federal support for health professions training, particularly support for primary care training for individuals who reside in rural or underserved areas and are most likely to return to these areas to practice.
- Provide at least $8–$10 million in funding for National Health Service Corps [NHSC] scholarships and the loan repayment program to begin to address critical personnel shortages of physicians, nurses and dentists.
- To increase the likelihood that the NHSC loan repayment program is successful, emphasize targeting physicians who have received part of their training in rural areas.
- Expand programs that provide training for health care personnel in rural areas (such as the Area Health Education Program).

Building an Infrastructure for Health Care Delivery

- Expand federal support for rural community health centers [CHCs] and conduct an evaluation of the appropriateness of the CHC model for serving sparsely populated "frontier" counties.
- To address the fact that the percentage of community mental health centers [CMHC's] serving rural counties has declined over time, finance the expansion of the number of CMHC's in rural areas and provide funding to existing community health centers to begin offering mental health services.
- Extend additional malpractice protection to community and migrant health center physicians to enable them to provide obstetrical services in the growing number of rural counties without such services.
- Expand the Rural Health Clinic Act program by revising and streamlining the criteria for designation, providing automatic certification to community and migrant health centers operating in rural shortage areas and easing the criteria for nurse practitioners now that they are in short supply in rural areas.
- Provide funding for the expansion of the USDA's Agricultural Extension Service crisis counseling service to permit the program to serve all states rather than the eight states now serviced.

Research

- Direct DHHS to include in all of their health professions reports, an analysis of changes in personnel supply in rural areas.
- Conduct specific analyses on shortages of allied health personnel, particularly in areas such as home health care and nursing home care, which are of vital concern to Medicare beneficiaries.

Part I—Rural Hospitals

CHAPTER 1: THE RURAL HOSPITAL: AN OVERVIEW

INTRODUCTION

The rural [1] hospital often plays a pivotal role in the life of its community. It is not only the heart of the local health care delivery system, but is also a source of civic pride and a key player in the community's efforts to attract and retain physicians and other health care personnel. For rural communities isolated by distance, topography or inclement weather, a local hospital assumes even greater importance as the area's only provider of care.

From the perspective of all rural residents, however, the community hospital's role in the local economy is of at least equal importance. The fact that the presence of a hospital virtually guarantees a steady flow of funds into a rural community (such as public and private insurance payments) cannot be underestimated. These funds have a substantial direct and indirect impact on local employment and business prosperity since the hospital is generally the largest or second largest employer as well as a major purchaser of goods. Moreover, the community's prospects for future economic development—attracting and retaining employers—are often inextricably linked with the maintenance of a viable health care delivery system.

As a result, rural hospitals generally enjoy strong and often passionate community support. However, this support is increasingly being put to the test as growing numbers of rural hospitals face financial crisis.

Clearly, rural hospitals are not alone in their predicament. All hospitals are finding that the environment in which they operate is being fundamentally and permanently restructured by the powerful forces now at work in the health care industry. These forces include:

Declining utilization of inpatient hospital services.—Changes in payment systems, insurance coverage, consumer attitudes, medical practice patterns and technological innovation have dramatically reduced overall utilization of hospital inpatient

[1] Concepts such as "rural" and "urban", while clear in the abstract, are difficult to define with statistical precision because they are actually part of a broad continuum (on which population density is only one of many factors that can be considered). Even within rural areas, there is a continuum of "rurality" between larger rural communities and the most sparsely populated communities. This report will use the most common, but highly unsatisfactory, approach of considering as rural all hospitals and health care providers located in counties which are classified by the federal government as "non-metropolitan statistical areas" (non-MSAs) and as urban all counties classified as "metropolitan statistical areas" (MSAs). This classification system labels counties as MSAs if they have a minimum central city size of 25,000 and a minimum county size of 50,000; all other counties are non-MSAs.

services, shifting many medical procedures to ambulatory and outpatient settings.

Declining revenues.—Hospitals are at financial risk for expensive cases under prospective payment systems that have been adopted by Medicare and a number of State Medicaid programs. Furthermore, they face increased demands for discounts as a result of new organizational structures (such as Health Maintenance Organizations [HMOs] and Preferred Provider Organizations [PPOs]). Finally, the demand for uncompensated care has increased as the number of those without insurance coverage (or first dollar coverage) has risen.

Increased competition for patients.—Competition is taking place from hospitals with over-lapping or adjacent market areas, multihospital systems, and from physicians and other health care providers offering specialized diagnostic or treatment services on an ambulatory basis. Changing referral patterns and a dramatic increase in selective contracting by insurers, HMOs and PPOs have also heightened the competition for patients.

These developments have been unsettling for the entire hospital industry. The management and strategic planning skills of hospital administrators have become more critical than ever before as hospitals consider their options for diversification. Even the best managed, well-financed, high occupancy hospitals have been forced to re-examine their mission and their position in the health care marketplace.

The situation is particularly worrisome for rural hospitals. Because of the low patient volume of many small rural hospitals, significant changes in utilization, revenue or costs can all too easily endanger their financial viability.[2] In addition, rural hospitals have had to cope with problems largely unique to their location. For example:

- During the eighties, admissions to rural hospitals have fallen more than twice as fast as admissions to urban hospitals. By 1986, the average daily census had dropped to 6 patients in rural hospitals with fewer than 25 beds and 14 patients for hospitals with 25–49 beds. (Table 1)
- Although the difference in urban and rural standardized payments under Medicare's prospective payment system has been reduced, rural hospital payment rates are still 12.3 percent lower than the urban standardized amounts. While urban hospital payments are adjusted for area wage rates, all rural hospitals within a state are treated as if they face the same wage rate (thereby over- and under-compensating different hospitals). In addition, protections intended for sole community hospitals and hospitals with high cost cases (i.e., "outliers") do not appear to be as effective as they should be.
- As a result of their small size and low patient volume, rural hospitals often face greater fluctuations in occupancy, which lead to greater fluctuations in operating costs. Because Medicare and several State Medicaid programs now pay hospitals pro-

[2] While small urban hospitals are not the focus of this report, they share many of the same problems related to size and low patient volume.

spectively (i.e., paying the "average" cost of treatment), small rural hospitals are at a greater financial risk for cost fluctuations. Rural hospitals thus find it more difficult to acquire sufficient operating revenue to meet their fixed costs.

- Rural hospitals have few opportunities to subsidize losses on Medicare and Medicaid patients with revenue from private pay patients. The level of insurance coverage of rural Americans has traditionally been low and increasing rural unemployment and rural poverty rates threaten to lower the number of insured patients available to rural hospitals at the very time that demand for free care is increasing.
- Many rural hospitals, already serving areas with low population density, appear to be facing an eroding patient base. In 1985–86, rural areas experienced the largest annual outmigration of rural residents to urban counties (632,000 residents) of the last three decades.[3] Since 1983, over half of all nonmetropolitan counties lost population (hardest hit are the Plains and Western Corn Belt States and, more recently, the lower Great Lakes States and parts of the South).
- The combination of patient volume decline and increases in malpractice premiums have been especially harmful to small hospitals with fewer than 50 beds. Part II of this report notes that from 1983 to 1985 approximately 21 percent of these small hospitals faced increases in their malpractice insurance costs per inpatient day that were greater than 200 percent.
- Staffing shortages are a chronic problem for rural hospitals, which are often at a disadvantage in recruiting experienced administrators, physicians and other health professionals.

While both urban and rural hospitals have experienced losses on patient care in the face of these and other health care delivery developments, the impact has been keenly felt by rural hospitals (Table 2).[4] In 1986, a higher percentage of rural hospitals experienced losses on patient care (63 percent of rural hospitals versus 44 percent of urban hospitals) and a higher percentage of rural hospitals faced large losses (38 percent of rural hospitals versus 22 percent of urban hospitals). For the rural hospitals most at risk (hospitals with fewer than 25 beds), the losses were not only much larger that year (an average loss on patient care of −20.7 percent, but their losses have been escalating rapidly (up from −13.8 percent in 1984). Clearly, losses of this magnitude cannot be sustained for many years.

In fact, since 1980, 163 rural community hospitals have closed their doors. Over 70 percent of these closures involved rural hospitals with fewer than 50 beds. While a higher number of urban hospitals (201) closed during this same period, the number of rural closures has been mounting in each of the last 5 years, and in the last 2 years (1986 and 1987) more rural than urban community hospi-

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[3] *Rural Economic Development In The 1980's: Preparing For The Future.* Economic Research Service Staff Report No. AGES870724. (Washington, DC.: U.S. Department of Agriculture, 1987)

[4] These data refer to patient revenue from all payment sources, including Medicare. Data on rural hospital operating margins for Medicare beneficiaries are presented in the Medicare chapter.

tals closed.[5] Of the remaining 2,700 rural hospitals, another 600 are estimated to be at risk of closure in the next few years.[6]

Nevertheless, rural hospitals are not homogenous. Not every rural hospital has been subject to the same mix of pressures, and there is tremendous variation in local economic conditions. All rural hospitals are not in financial trouble, and some have actually prospered in recent years. However, even these rural hospitals which have prospered have seldom enjoyed financial success to the extent of their urban counterparts. For example, a smaller percentage of rural hospitals reported a profit on patient care in 1986 (38 percent of rurals versus 54 percent of urbans) and rural hospitals were much less likely to realize large [7] profits (18 percent of urbans versus 10 percent of rurals) (Table 2).

To develop a broader perspective on rural hospitals, the remainder of this chapter will be devoted to a review of descriptive data regarding rural hospitals and their operations. Chapter 2 will then examine in more detail the challenges facing the rural hospital, which were briefly outlined above. Therefore, readers wishing to continue the narrative may want to proceed directly to Chapter 2.

As Chapter 2's discussion will suggest, many of the forces that negatively affect rural hospitals are not easily amenable to Federal intervention, even if Federal policymakers want to intervene. The primary exception is Medicare's Prospective Payment System, which will be explored in considerable detail in Chapter 3.

As Chapter 4 makes clear, rural hospitals have not been idle as recent events have unfolded. In fact, most have actively developed multiple strategies in an effort to assure their survival. In addition, there are a number of innovative public-private sector demonstration grant programs now underway that may provide insights into the best paths that rural communities can follow to develop and maintain a viable health care system.

The final chapter of this examination of rural hospitals will provide some concluding observations regarding their future and the future of health care delivery systems in rural areas.

The Rural Hospital In Perspective

The distinguishing characteristic of a rural hospital is its small size, generally a result of serving areas with relatively low population density. In fact, 7 out of 10 rural hospitals match the traditional definition of small hospitals, those with fewer than 100 beds. They divide almost evenly into two categories: hospitals with fewer than 50 beds and those with 50-99 beds (Table 3).

Bed Size. Significant contrasts in size and distribution emerge between rural hospitals located east and west of the Mississippi River. West of the Mississippi, rural hospitals tend to be quite

[5] The American Hospital Association identified 364 community hospital closures from 1980-87, involving 201 urban and 163 rural hospitals. In 1986, 37 rural and 34 urban community hospitals closed. In 1987, 40 rural and 39 urban community hospitals closed.

[6] The Robert Wood Johnson Foundation cited the 600 figure in its solicitation for the Hospital-Based Rural Health Care Grant Program discussed in chapter 4. While a variety of estimates, many of which are higher, have appeared in the trade press, the estimate of 600 hospitals at risk is the most common. Of course, such estimates are speculative.

[7] Large profits are defined as larger than 6 percent (and large losses are defined as greater than 6 percent) in the American Hospital Association data in Table 1.

small: average bed size for most regions of the west ranges between 65 and 75 beds, making them one-third to one-fourth the size of western urban hospitals. East of the Mississippi, however, the average bed size generally exceeds 100 beds, and in the Mid-Atlantic region approaches the 150 bed mark. While both rural and urban hospitals in the east are much larger, the difference in bed size is, on average, much smaller. Eastern rural hospitals have a third to nearly half the number of beds of their urban counterparts (Table 3).

At the extremes, rural hospitals in the Mountain States, with an average bed size of 65 beds, operate on a much smaller scale than those in the Mid-Atlantic region, with an average bed size of 149 beds.

Distribution. The difference in distribution of rural hospitals follows a notably consistent pattern: rural hospitals in the West generally comprise a majority of hospitals in most census regions while urban hospitals dominate in the East (Tables 3 and 4).

In fiscal year 1984, the States with the largest percentage of rural hospitals were Montana, Idaho, and South Dakota, where more than 90 percent of the hospitals were rural. In absolute numbers of rural hospitals, Texas leads the list with more than 200 rural hospitals, followed by Kansas, Minnesota, Iowa, and Mississippi, with more than 100 rural hospitals.

In the eastern United States, urban hospitals dominate all regions except the southeastern States. In every southeastern State, except Florida, the majority of hospitals are rural. It is also worth noting that while rural hospitals represent only 36 percent of all hospitals in New England, this regional average is skewed by the urban dominance of Massachusetts, Connecticut, and Rhode Island. In each of the northern-most States in New England, rural hospitals accounted for more than half of the total: Vermont (87.5 percent), Maine (57.8 percent) and New Hampshire (51.9 percent). It is also in the east that the only jurisdictions without a rural hospital can be found: The District of Columbia, New Jersey, and Rhode Island.

Low Population Density. As noted above, rural hospitals generally serve areas with lower population densities (Table 5). There is a 12-fold variation, however, between the western Mountain States, where there is an average of 11 persons per square mile in rural areas, and New England, where there is an average of 140 persons per square mile.

Under the circumstances, it is perhaps not surprising that rural hospitals are found in much closer proximity in the East than in the West. There is a far greater likelihood of another hospital being present in the same county in New England and the Mid-Atlantic region. When adjacent counties are included, the differential between census regions narrows, but rural hospitals in New England and the Mid-Atlantic still have the closest proximity to other hospitals.

In considering the county data, an important frame of reference is county size (Table 5). Rural counties in the Mountain States and west south central generally cover much broader areas. Thus, residents of eastern and western census regions, which might have

similar numbers of hospitals per county, may well face significant differences in travel time and difficulty of access.

When these factors are taken into account, it is clear that rural hospitals located in the west are more likely to be their community's only source of health care. In addition, the majority of so-called "frontier" hospitals are located there as well.

Public policy has only recently differentiated "frontier" hospitals from other isolated small rural hospitals.[8] The definition of "frontier" hospitals is that they are located in counties with fewer than 6 persons per square mile. While only 16 percent of the Nation's 2,443 rural counties (394 counties) have been identified as "frontier" counties, they account for 45.6 percent of the land area of the United States. A high percentage of counties are classified as "frontier" in Alaska (96 percent), Nevada (80 percent), Utah (55 percent), Idaho (44 percent) and Montana (41 percent).

Ownership. Small rural hospitals (under 100 beds) are often owned by State or local governments (Table 6), while larger rural hospitals are likely to be privately owned, on a not-for-profit basis. Rural hospitals as a group are twice as likely to be operated under a management contract (19 percent of all rural hospitals vs. 9 percent) of all urban hospitals), although comparable percentages of small rural and small urban hospitals (approximately 20 percent) are contract-managed.[9]

Fewer than 3 out of 10 rural hospitals of any size belong to a multi-hospital system, but among small rural hospitals, church-affiliated multihospital systems play the largest role. In 1983, two of the three largest health systems, which own or lease more than 20 small rural hospitals, were church-related.[10] With the exception of the largest rural hospitals, rural facilities have virtually no involvement in teaching.

Rural Hospital Operations

Admissions. The single largest threat to rural hospital solvency in the eighties has been the decline in patient admissions (Table 7).[11] From 1981 to 1986, the average number of rural hospital admissions fell two and a half times as fast as the average number of admissions to urban hospitals (20.2 percent versus 7.8 percent). This dramatic decline reduced rural hospitals' share of total admissions from nearly one out of every four patients in 1981 to slightly more than one out of five patients by 1986.

Close examination of Table 7 suggests the importance of the decline in non-Medicare admissions to rural hospitals, an issue that has received inadequate study. A significant decline in non-Medicare admissions was clearly underway prior to 1983 when the DRG

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[8] See, for example, the report of the Senate Labor and Human Resources Committee accompanying the Infant Mortality Reduction Act in the 100th Congress.

[9] The reader should note that comparable percentages yield very different numbers of hospitals that are contract-managed since 7 out of 10 rural hospitals have fewer than 100 beds while 8 out of 10 urban hospitals have more than 100 beds.

[10] The three health systems which owned or leased in 1983 more than 20 small rural hospitals were: Lutheran Hospital and Home Society, Hospital Corporation of America and Adventist Health Systems USA. Data provided to the committee by Dr. David Berry.

[11] Tables 7, 8, 9, 10, 11, and 17 were developed for this report by Christopher Hogan of the National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Project.

system was introduced. In fact, the decline in non-Medicare admissions was so pronounced during that period that it more than offset the continuing increases in Medicare admissions.

Medicare admissions declined from 1983 to 1986, reflecting (in part) implementation of PPS and increased scrutiny of admissions by Medicare's Peer Review Organizations. During these years, Table 7 shows that rural hospitals experienced a 15 percent decline in the number of Medicare admissions, while urban hospital admissions declined less than 6 percent.

Because non-Medicare admissions declined more than Medicare admissions, the dependence of rural hospitals (in every bed size category) on Medicare admissions increased slightly. Medicare admissions increased from 39.6 percent in 1983 to 40.7 percent of all rural admissions in 1986.

Length of Stay. The long-term decline in average length of stay (ALOS) for patients at rural hospitals leveled off between 1984 and 1986, as the ALOS increased by 4.4 percent from 6.8 days to 7.1 days (Table 1). The shortest length of stay is found in the smallest rural hospitals, and ALOS increases as bed size increases.[12]

Inpatient Days. Rural hospitals with fewer than 100 beds experienced losses of over 30 percent in the average number of inpatient days from 1981 to 1986. This was significantly greater than the 20 percent reduction in rural admissions discussed above, suggesting the significant impact of declining lengths of stay during most of this period (Table 8).

Looking only at the period since adoption of the PPS system (1983–86), the reduction in Medicare days (28 percent rural versus 16.5 percent urban) was even greater than the decline in inpatient days for all patients (26 percent rural versus 16 percent urban) and, as a result, Medicare beneficiaries accounted for a smaller percentage of all inpatient days in 1986 (50.9 percent rural versus 43.8 percent urban) than in 1983 (54.5 percent rural versus 44.6 percent urban). Because of overall utilization rates, the drop in both total inpatient days and Medicare inpatient days is more significant for rural hospitals and, in particular, smaller rural hospitals.

Staffing. The average number of acute care beds set up and staffed in rural and urban hospitals remained virtually constant from 1981 to 1983, but from 1983 to 1986 the number of acute care beds dropped more sharply for rural hospitals (7.5 percent rural versus 4.9 percent urban) (Table 9). The smallest rural hospitals experienced the smallest declines in the number of staffed beds.

The average number of full-time-equivalent (FTE) employees at rural hospitals dropped over 7 percent since 1981 while urban hospitals increased their FTE utilization by 1.6 percent. As of 1986, the number of employees was growing once again for rural as well as urban hospitals.

Because admission declines exceeded the reductions in staffing of both rural and urban hospitals, the average inpatient FTE person-

[12] There are two additional points to note regarding this table. First, regional variation in length of stay remains quite significant, although the ordering of the regions has changed somewhat from 1984 to 1986. Second, the data in this table are unadjusted for case-mix or other factors that may effect length of stay.

nel per admission has increased for rural and urban hospitals of every bed size from 1981 to 1986 (Table 10).

Expenditures. Table 10 also provides data on the cost of treating each patient (i.e., expenditures per case) at rural and urban hospitals from 1981 to 1986. The rate of increase in expenditures per case from 1981 to 1986 was comparable for rural and urban hospitals (64 percent and 62 percent, respectively). As a result, while the differential in expenditures per case between rural and urban hospitals narrowed slightly, rural expenditures remained approximately 40 percent lower than for urban hospitals.

A Summary Portrait of Rural Hospitals

Several points are clear from this litany of descriptive statistics. First, the vast majority of rural hospitals are small (under 100 beds), particularly those situated west of the Mississippi, where the majority of sole community provider and "frontier" hospitals are found.

Second, the fact that total admissions declined more than Medicare admissions has slowly increased the dependence of rural hospitals on Medicare. This suggests that the adequacy of payments under Medicare has become a more significant issue for rural hospitals.

Third, the largest declines in admissions and occupancy have taken place in those hospitals which have the least financial capacity to weather such changes: small rural hospitals.

CHAPTER 2: CHALLENGES FACING THE RURAL HOSPITAL

While many of the forces of change outlined in the previous chapter are common to all hospitals, their mix and intensity differs for each hospital. More importantly, the ability of individual hospitals to respond to these pressures will vary considerably. For this reason, management and strategic planning skills of hospital administrators are more important today than ever before. Even then, in some communities, the pace of change may easily eclipse the ability of administrators to effectively plan for the future.

As this chapter will outline, the resources available to management to meet these challenges will depend upon a number of factors beyond the immediate control of individual hospital administrators, such as geographic location, population growth or decline, changes in the local economy, and shifting medical practice patterns.

Unique Circumstances of Rural Hospitals

As noted earlier, small, low-volume hospitals are especially vulnerable to fluctuations in utilization, costs, and revenue. Further, the special needs and characteristics of many rural communities only seem to increase the financial uncertainty faced by rural hospitals. For example, there are a number of factors which affect the demand for care and the ability of rural residents to reimburse hospitals for that care. For example:

- *Aged Population.*

  While a quarter of the population lives in rural America, a third of the nation's elderly live in rural communities. Data from the 1980 Census indicate that the rural population continues to age faster than the urban population (in part due to migration of the elderly from urban to rural areas). A recent study by the staff of the National Center for Health Services Research found that over 70 percent of all rural residents in New York State requiring hospitalization received care in their county of residence. Further, a mere 18 percent of elderly rural residents over age 75 were likely to seek hospitalization elsewhere when they faced severe illness.[13]

- *Poverty.*

  Throughout this century, a disproportionate share of the poor have lived in rural areas and the rural poverty rate grew throughout the first half of the 1980s. While the urban poverty rate has improved somewhat during the economic recovery, the rural poverty rate has remained at its highest level in a

[13] Hogan, Christopher. "Patterns of Travel for Rural Individuals Hospitalized in New York State: Relationships Between Distance, Destination and Case Mix," *Journal of Rural Health*, 4(2), July 1988.

generation. In 1985, the rural poverty rate was 18.3 percent while urban poverty was 12.7 percent. Only a quarter of the rural poor qualify for Medicaid, compared to 43 percent of the poor in inner cities.[14]

- *Unemployment.*
  Since the late 1970s, the official rural unemployment rate has exceeded the urban rate, a reversal of the historical pattern. Moreover, studies suggest that the true unemployment rate in rural areas may be higher because of greater underestimation of rural unemployment and higher rates of rural under-employment.
- *Less Well-Insured.*
  Not only is a higher percentage of the rural population uninsured (17 percent rural vs. 14 percent urban), but a higher percentage of rural Americans are uninsured at every income level. Insured rural residents tend to have less extensive coverage than the urban insured.[15]
- *Low and Declining Patient Base.*
  One of the primary characteristics of rural hospitals is that they serve areas of relatively low population density and there is evidence that the patient base for some rural hospitals is eroding even further. Rural population growth (atypically high in the 1970's) has slowed dramatically as migration to urban areas has hit its highest level in three decades (632,000 in 1985–86). There is a real prospect that rural America will experience negative population growth in the final years of this decade if current trends continue. The concentration of out-migration in specific geographic regions only serves to magnify its impact.
- *Personnel Shortages.*
  As Part II of this report details, fewer experienced hospital administrators, physicians, nurses, and other health care personnel choose to locate in rural areas.

There are a number of consequences that flow from these circumstances:

- Smaller rural hospitals cannot take advantage of economies of scale because they simply do not have the necessary patient volume. For areas hardest hit by current trends in migration to urban areas, it may become even more difficult to secure sufficient patient volume.
- Unemployment, poverty, lower incomes and lower levels of insuredness can undermine the viability of small rural hospitals in two ways. They may create financial barriers to demand which deprives hospitals of admissions. These factors may also contribute to increased demand for uncompensated care or rising levels of bad debt (rural hospitals often find it more difficult to collect bad debts; it poses a serious public relations problem).

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[14] Unless otherwise noted, data in this section are drawn from *Rural Economic Development in the 1980's: Preparing for the Future* identified in footnote 3.

[15] Rowland, Diane and Barbara Lyons. "Triple Jeopardy: Rural, Poor and Uninsured," a paper prepared for the Rural Health Services Research Agenda Conference in San Diego, CA, December 13-15, 1987.

- Sole community hospitals and "frontier" hospitals (located in counties with fewer than 6 persons per square mile) often face substantial costs for infrequently used standby equipment and personnel.
- The importance of sole community hospitals and other "frontier" hospitals is suggested by the finding that a high percentage of rural residents seek medical care in their own county. The fact that the elderly, who constitute an even higher proportion of rural residents in the more isolated areas, are less willing (or able) to travel outside their county of residence for hospital care reinforces the importance of these hospitals to Medicare. Unlike the factors listed above, this "consumer preference" may serve to increase demand for local hospital services.
- The Senate Aging Committee's hearings suggest that more isolated hospitals (or those located in less desirable locations) are increasingly being forced to offer bonuses to secure essential personnel.[16] The nurse shortage has undercut the effectiveness of earlier strategies for coping with personnel shortages, such as two or more small hospitals sharing the cost of a nurse's services.

MEDICARE

Reflecting the higher proportion of elderly living in rural areas, rural hospitals have always been more dependent upon Medicare admissions than their urban counterparts. While the operation of the Medicare Prospective Payment System will be discussed in more detail in chapter 3, it is important to briefly note two other ways in which Medicare has affected the viability of rural hospitals.

First, Medicare policies have contributed to the declining trends in admissions and length of stay. Increasing use of preadmission review by Medicare's Peer Review Organizations (PRO's) has served to limit admissions. A particularly controversial issue has been payment denial for so-called "social admissions" in which nonmedical factors (e.g., unavailability of nursing home, home health or caretaker arrangements for elderly patients, or long travel times) motivated rural physicians to admit Medicare beneficiaries. While Congress has subsequently directed HCFA to implement a less stringent approach to "social admissions" (since they appeared to disproportionately involve the older, frail elderly), this change has not yet been implemented.

Second, after many years of lax enforcement, HCFA has begun to insist that all hospitals meet Medicare's conditions of participation. HCFA's action is a direct result of mounting congressional concern regarding the quality of care being provided to Medicare beneficiaries. While most of the conditions of participation (establishing safety, staffing, and equipment standards) are relatively uncontroversial and need to be observed by all hospitals, some (such as requirements for 24-hour availability of clinical lab services)

[16] The Senate Special Committee on Aging held a hearing on rural hospitals on June 13, 1988, and a hearing on rural health personnel on July 11, 1988. The hearings will be published in the fall of 1988 in one volume entitled The Rural Health Care Challenge, Parts 1 and 2.

have been criticized by rural hospital administrators as unnecessary and prohibitively expensive for low-volume hospitals.

While rural hospitals were not the target of congressional concerns, a number of rural hospitals appear to face financial problems in complying with HCFA's conditions of participation. One report identified 15 rural Texas hospitals which closed between 1980 and 1986 due to loss of certification and indicated that 82 more face the same prospect.[17]

Adverse Changes in the Rural Economy

While the unemployment rate and poverty rate have already been discussed, there are aspects of the rural economy and the fundamental structural transformation it is now experiencing which have important implications for rural hospital viability.

There are three keys to understanding the modern rural economy: change, specialization, and vulnerability. The nature of the rural economy has changed significantly. The major employer in rural America today is manufacturing rather than farming, and there is a rapid rise underway in the number of service sector jobs.

While these changes have taken place in the aggregate, the economy of individual rural counties is often dependent upon a single industry. The degree of specialization is significant: the economy of two out of every three nonmetropolitan counties is dominated by a single industry (agriculture, manufacturing, or mining).

As a result, rural communities are vulnerable to economic catastrophe if their main industry faces an economic downturn. However, even more unsettling is the fact that these industries are increasingly sensitive to national and international forces far beyond the control of local residents. International fluctuations in energy and food prices and changes in trade policies of other nations can force the local economy into boom and bust cycles. Even in manufacturing, the older plants are often focused on the production of labor-intensive, minimum wage products (e.g., shoes, textiles, and leather goods) which have proven vulnerable to international competition.

Beginning in the late 1970's and continuing through much of the 1980's, many rural areas have faced a period of economic retrenchment, which has been noteworthy both because of its depth and duration. A number of primary industries have been affected: agriculture (650,000 farm foreclosures from 1981 through 1986); manufacturing (loss of half a million jobs in the same period); wood products (triggered by the drop in housing starts) and energy extractive industries (triggered by declining oil prices).[18] Just as the farm economy was slowly beginning to rebound in 1988, the worst drought in 50 years hit.[19]

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[17] Prospective Payment Assessment Commission. *Technical Appendixes To The Report and Recommendations To The Secretary, U.S. Department of Health and Human Services.* (Washington, DC.: Prospective Payment Assessment Commission, April 1, 1987.)

[18] Patton, Larry. "The Rural Homeless" in *Homelessness, Health and Human Needs.* (Washington, D.C.: The National Academy Press, 1988.)

[19] The drought now appears to have hurt fewer farmers than initially feared. William Robbins, "On the Farm, A Disaster That Wasn't," *The New York Times,* October 16, 1988 (section 3), 1, 22.

These developments have adversely affected rural hospitals in at least three ways. First, there was a dramatic increase in the number of rural uninsured and under-insured, which has served to increase the demand for uncompensated care. Second, as discussed previously, it has renewed the migration of rural residents to urban areas. Finally, it has severely restricted the resources of local and county governments, which own more than half of all rural hospitals. As the value of farm land and property values has declined, so has local government revenue, which is dependent upon property taxes. One study found that from 1981 to 1985, farm land values fell as much as 40 percent in eight Northwestern States, resulting in a significant decline in local government revenues.[20]

Declining government revenue and increasing hospital costs have forced rural communities to face tough choices. While rural governments appear to have increased tax subsidies for public hospitals even in the wake of declining tax revenues, anecdotal evidence suggests that many of these hospitals have also been forced to restrict the level of uncompensated care they provide.[21]

Rapid Shifts in Medical Practice Patterns

The most significant change in medical practice patterns in the eighties has been the substitution of outpatient care for part of an inpatient stay or for an entire admission. This has resulted in a rapid decline in admissions (Table 7) and an initial drop in patient length of stay through 1985 (Table 1), which have combined to sharply reduce the total number of inpatient days at rural hospitals (Table 8).

Rural and urban hospitals alike are finding their survival linked to an ability to respond to the increasing incentives by public and private payers to treat simple cases on an outpatient basis. The strength of this shift is reflected in the number of surgical procedures now performed on an outpatient basis. In 1981, rural hospitals performed 16 percent of their operations on an outpatient basis; by 1986, 42.3 percent of all operations were outpatient (Table 11). For urban hospitals, the comparable figures are 19.5 percent and 41.5 percent. With the exception of small urban hospitals, which already had a high percentage of operations performed on an outpatient basis, hospitals of every size demonstrated a comparable shift.

As increasing numbers of simpler, easier-to-treat cases are handled on an outpatient basis, the remaining inpatients tend to be those requiring more intensive or complex treatment and longer lengths of stay, which account for the recent increases in length of stay and a large part of the increase in rural hospital case mix since 1983.

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[20] U.S. Senate Committee on Governmental Affairs. *Governing The Heartland: Can Rural Communities Survive The Farm Crisis?* A Committee Print. (Washington, D.C.: U.S. Government Printing Office, 1986.)

[21] For example, in Montana where half of the State's 60 hospitals have fewer than 30 beds, local tax subsidies increased by 54 percent from 1984-85 as local communities helped these hospitals to offset their losses.

Increased Competition

The competition now underway between rural and urban hospitals and among rural providers themselves has not been systematically studied, but the number of rural hospital diversification activities reported in the trade press (discussed in Chapter 4) provide at least some indication of the intensity of competition.

There has been a sharpening in recent years of the differences between rural and urban hospitals. Historically, the primary distinction between urban and rural hospitals was the difference in size and, subsequently, the presence of teaching programs in urban hospitals. In the last three decades, there has been a veritable explosion in the acquisition of high technology equipment by all urban hospitals that the smaller rural hospitals have been unable to match due to a lack of capital or simply insufficient patient volume to support such services and equipment.

Such differences in technology, coupled with improved transportation systems and increased competitive tactics by larger institutions, have induced some rural residents to bypass their local hospital in favor of larger rural or urban facilities when the need for treatment is discretionary or predictable and travel is feasible.[22]

Because public policy changes or subsidies cannot maintain a hospital which has lost the confidence of local residents, rural hospitals are discovering that they must squarely face any doubt of local residents about the quality of their services. In most cases, these concerns appear to be unfounded and rooted in competitive advertising of urban hospitals or a tendency to confuse a low technology approach to acute care with low quality of care. In some cases, however, there may be a quality problem which requires attention. In either event, quality of care perceptions will be central to the survival of many rural hospitals. Several private sector initiatives on quality of care will be reviewed in chapter 4.

[22] It is important to recognize that rural residents have traveled for specialized care for many years. This may not reflect perceptions of quality of care but the fact that such services cannot economically be provided in areas of low population density. The degree to which rural residents in different regions travel for care is unknown. The study of New York State residents by NCHSR staff cited earlier found that only 31 percent of rural residents under age 75 and 18 percent of those over age 75 were hospitalized outside of their county of residence.

CHAPTER 3: THE MEDICARE PROSPECTIVE PAYMENT SYSTEM (PPS)

OVERVIEW

The prospective payment system (PPS), mandated by the Social Security Amendments of 1983 (Public Law 98-21), fundamentally restructured Medicare's relationship with the Nation's hospitals. The new system, with its emphasis on incentives, was initially welcomed by most rural hospital administrators as a relief from the burdensome rules of the prior payment system, known as retrospective cost-based reimbursement.

Under that system, Medicare and its fiscal intermediaries essentially functioned as auditors of the Nation's hospitals. Medicare established detailed rules governing the costs of patient care which could be properly billed to the program and then required a detailed review of a hospital's Medicare cost report, submitted after the close of its fiscal year, to be sure that these rules had been followed. It was not unusual for disputes between Medicare and a hospital over allowable costs to take several years to resolve. Unlike larger, predominantly urban hospitals, small rural hospitals were often unable to hire sophisticated in-house accountants, billing and collection personnel.

The 1983 amendments significantly changed the rules of the game. The law established PPS: a fixed payment schedule to be developed and announced in advance of the fiscal year in which it would be applied. To serve as a basis for payment, the law also mandated the adoption of a patient classification system, known as diagnosis related groups (DRG's), to serve as the basis for payment. Each of the 475 DRG's carries its own payment level, which in theory corresponds to the average cost of treatment for a cluster of similar diagnoses (requiring the same level of hospital resources for patient care). The hospital then receives a payment for each Medicare patient they treat based upon the DRG in which the patient's principal diagnosis falls.

PPS has significantly altered the relationship of hospitals and Medicare. First, the new reimbursement system increased financial predictability for hospitals to the extent that Medicare's payment level for each treatment category (DRG) is known in advance. Second, PPS transferred to hospitals both the risk and potential profit associated with their treatment of Medicare patients.[23] Third, by providing hospital administrators with an incentive to assure efficiency, there is no longer any need for Medicare to

[23] All other things held constant, losses or profits should be a function of both the mix of patients they treat and the clinical efficiency with which the hospital's physicians provide treatment. As this report has documented, nothing has remained constant for rural hospitals.

"second guess" the hospital over "allowable" costs for services covered by PPS payments.

Rural hospital administrators have been generally supportive of the prospective payment concept, but have been very critical of the way in which it has been implemented. Criticism has primarily been directed at the computation of PPS payments and the degree of risk which small hospitals face under PPS as currently structured. In addition, a key element of PPS incentives, prospectively set rates, has not been as dependable as hospitals had been led to expect because: (1) the politics of deficit reduction have meant that the rates have not reflected hospital inflation, (2) the rates have not always been established before the start of the fiscal year, and (3) the actual rates seldom reflect the formulas embodied in legislation enacted just a year earlier.

Computation of Payment Under PPS

Before turning to the impact of PPS on rural hospitals and the major issues that rural advocates have raised, it is useful to begin with a simplified review of the way in which PPS payments are computed. There are three essential elements used in calculating the basis PPS payment of hospitals. They are the national standardized amounts, the hospital's wage index, and the DRG weight.

National Standardized Amounts. Currently, national standardized amounts are established for metropolitan counties over 1 million in population (large urban), metropolitan counties with a population under 1 million (other urban) and non-metropolitan (rural) counties.[24] Each standardized rate is divided into two components: a labor component and a nonlabor component. In 1989 the national standardized amounts are $3,215.17 for "large urban" hospitals ($2,374.22 labor/$840.95 nonlabor), $3,183.85 for "other urban" hospitals ($2,351.10 labor/$832.75 nonlabor) and $2,834.71 for rural hospitals ($2,219.89 labor/$614.82 nonlabor). The difference between rural and "other urban" hospitals is 12.3 percent.

In theory, the standardized amount equals the average cost of treating the average Medicare patient in the average DRG. The standardized amount assumes that all hospitals are nonteaching hospitals and that each hospital pays its workers at wage rates that are equal to the national average wage level. The standardized amount reflects all routine costs of care (bed and board), ancillary services (medical treatment), special care services and malpractice costs associated with that care. Capital-related costs (e.g., rent, net interest, and depreciation) and certain other elements of costs (e.g., direct costs of medical education programs and Medicare bad debts) are excluded.

The Area Wage Index. The area wage index is used to adjust the standardized payment amounts for variations in local wages. While urban hospitals are provided with a wage index more clearly tailored to their local area, all rural areas within a State are assigned the same wage index.

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[24] Although there are some statutory execeptions, the Medicare program generally considers hospitals as "urban" if they are located in metropolitan statistical areas (MSA's) and "rural" if they are located in non-MSA counties.

DRG weight. DRG's group diagnoses together by the relative costliness of patient care required. Each DRG has a numeric weight, which is carried out four decimal places. Thus, a DRG weight of 2.0000 would represent a DRG whose patients are, on average, twice as costly to treat as the patients in a DRG with a weight of 1.0000. A hospital's Medicare case-mix index is the average DRG weight of all of its Medicare patients.

Calculating A Hospital's PPS Payment. There are essentially two steps in calculating a hospital's PPS payments using the three elements above.

Step one is to adjust the standardized amount for local wages. To do this, the labor component of the standardized amount is multiplied by the area wage index. Then, the nonlabor component is added back in. The resulting amount is the wage-adjusted standardized amount.

Step two simply multiplies this wage-adjusted amount by the weight of the DRG to which a Medicare patient is assigned because of his or her principal diagnosis.

A hospital's total PPS payments will include the DRG payments for all Medicare cases, computed in this way, plus additional payments for indirect teaching costs (the extra costs of patient care associated with teaching), adjustments for disproportionate share hospitals (those treating a large number of low-income patients) and outliers (additional payments for particularly costly cases). As noted above, certain hospital costs are excluded from the PPS system; these items are still paid on the basis of cost reimbursement.

Transition Period. The original 1983 legislation provided for a 3 (later extended to 4) year transition to full national PPS rates. During the transition, calculation of DRG payments was quite complicated: a hospital's payment was a mix of its historical costs and a PPS payment. Furthermore, the PPS payment itself was a mix of a national PPS rate and one of nine regional PPS rates (determined by the census region in which the hospital was located).

With each year of the transition, a hospital's historical costs constituted a smaller percentage of the hospital's total payment and the PPS payment constituted a higher percentage of total payment. At the same time, the nature of the PPS payment was changing: with each year of the transition, the regional component diminished in size and the national PPS component constituted a higher proportion. At full implementation, a hospital was to be paid solely on the basis of urban or rural national PPS rates without regard for its historical costs; regional rates would no longer play a role in the payment process.

As noted above, one change has been to subdivide urban areas into "large urban" and "other urban" so that there are now three national PPS rates, two urban rates and one rural rate.

National Rates. Following adoption of the PPS system, it quickly became apparent that the move toward national rates involved a significant redistribution of Medicare payments. Hospitals with costs higher than the national rates found their Medicare payments progressively reduced while hospitals in regions with lower costs received progressively higher Medicare payments for providing the same service.

The redistributional aspects of the move to national rates has further complicated the question of rural-urban equity. For rural hospitals in areas which benefitted from the move to national rates, the inequity of lower rural rates may be partially or fully offset. For those rural hospitals in census regions in which all hospitals received progressively lower Medicare reimbursements with the move to national rates, the losses of rural hospitals were merely compounded.

While hospitals from regions of high costs were not successful in blocking the transition to national rates, they did succeed in securing a temporary adjustment. The Congress included a provision in the Omnibus Reconciliation Act of 1987 (OBRA 87) requiring the continued calculation of regional rates for all three classes of hospitals (large urban, other urban, and rural) until fiscal year 1991. OBRA 87 guarantees hospitals payments which are the higher of: (a) the full national PPS rate, or (b) a blend of the national rate (85 percent) and the applicable regional rate (15 percent). This provision primarily assists hospitals in the Midwest and New England.

Rural Hospitals and PPS

The Prospective Payment Assessment Commission (ProPAC)[25] uses PPS operating margins in its reports to Congress as a measure of hospital financial performance under prospective payment.[26] These margins measure the difference between PPS payments and Medicare allowable operating costs expressed as a percent of PPS payments.

During each of the first 3 years of PPS (fiscal years 1984–86), rural hospitals, as a class, have had the lowest PPS operating margins of all hospitals.[27] After facing declining operating margins since the first year of PPS, the average small rural hospital (under 50 beds) lost money on Medicare patients in fiscal year 1986. For the bottom 10 percent of this group of hospitals, the average operating margin had plummeted to nearly −45 percent in fiscal year 1986 (Table 13). Furthermore, for the first time, rural hospital closures exceeded the number of urban hospital closures in 1986.

While it is clear that rural hospitals are faring poorly as measured by PPS operating margins, there is no consensus regarding the extent to which low utilization, high costs per case, or inadequate reimbursement account for their performance. Small rural hospitals may well be suffering from a combination of all three.

There has been no definitive analysis of the characteristics of hospitals in the bottom or top 10 percent of operating margins yet such an analysis is needed.[28] However, ProPAC's June 1988 Report

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[25] ProPAC is a legislative branch commission, created by the Social Security Amendments of 1983 (Public Law 98–21), to provide independent analysis and advice to the Secretary and the Congress on the operation of the Prospective Payment System.

[26] ProPAC has repeatedly pointed out in its reports the shortcomings of using operating margins as a measure of hospital financial performance, but notes that at this point there is no simple alternative.

[27] The only rural hospitals with high PPS operating margins were those with more than 170 beds, a category that is dominated by large rural referral centers (RRC's). RRC's are a special category under the PPS system and receive the Federal urban rate rather than the rural rate.

[28] Given the variation in costs and operating margins of hospitals in different census regions (see Tables 13, 14, and 15), such an analysis should examine the impact of geographic location.

to the Congress provided a brief analysis of the hospitals in the bottom 10 percent of Medicare operating margins. Strikingly, more than 80 percent of these hospitals were rural. ProPAC found that these hospitals had low occupancy rates (an average of 29 percent), they had experienced a sharp decline in Medicare discharges between fiscal years 1984 and 1986 (an average of 25 percent) and their average costs per case had increased by 49 percent.

To the extent that factors other than PPS inpatient rates play a role in causing low or negative margins of rural hospitals, issues concerning the fairness of Medicare policy may still remain. For example, hospital admissions are affected by the activities of Peer Review Organizations (PRO's) and incentives for outpatient treatment. Nationally established reimbursement rates for hospital outpatient services, such as clinical lab tests or diagnostic X-rays, may not fully reflect the high per unit costs of low volume, small rural hospitals. Thus rural hospitals have broader concerns with Medicare policy than the PPS payment formula alone.

It is useful to keep several points in mind in evaluating the discussion which follows. It is not the role of the Medicare trust fund to guarantee the financial solvency of hospitals in general. As the demand for inpatient care has declined, there is a clear need for the entire hospital industry to "down-size," by reducing the size of hospitals, merging with neighboring hospitals or, in some cases, closing their doors. Such responses to market forces may be entirely appropriate.

However, the dire financial straits in which a number of small rural hospitals find themselves raise several serious public policy concerns. First, with the adoption of provisions to protect sole community providers over 15 years ago in the Social Security Act Amendments of 1972, the Congress has recognized the appropriateness of using Medicare funds to assure access to medical care for Medicare beneficiaries living in underserved or remote areas. Because the elderly constitute a higher percentage of the population in more remote rural communities, and are less likely to seek care outside of their county of residence, the problem of assuring access is far from trivial. In such communities, preservation of the hospital (in some form) and preservation of access to care for Medicare beneficiaries are virtually indistinguishable.

Second, a policy issue arises if any class of hospitals is systematically discriminated against under the payment formula. Differences in urban and rural hospital costs are used to justify the difference that exists in standardized payment amounts (12.3 percent) and the average difference in actual payments (40 percent). In light of the consistently lower operating margins of all but the largest rural hospitals, it is important to look behind these "cost differences" to determine their origin and the fairness of fully reflecting them in the payment formula.

Financial Impact of PPS

In comparing Tables 13, 14, and 15, the most striking finding is the degree to which summary statistics, such as operating margins for a class of hospitals, can disguise the true financial difficulty in

which many rural hospitals find themselves.[29] While Table 14 clearly notes the declining operating margins for small hospitals over this period, Table 13 suggests the true depth of the crisis.

As Table 13 demonstrates, one in four rural hospitals under 50 beds experienced negative Medicare operating margins of −18.5 percent or more, while 10 percent of all hospitals in this category faced Medicare losses of −45 percent or greater. Even the average (mean) hospital for this group faced a negative operating margin (−0.7 percent).

The average sole community hospital had a small positive operating margin (3.1 percent), but one in four of these hospitals experienced operating margin losses of −7.5 percent or worse, and 10 percent of all sole community hospitals had Medicare losses of at least −31.2 percent.

Table 15 looks at a cohort of 3,321 hospitals whose performance ProPAC has been following. The final column of this table notes that 8.7 percent of these hospitals, approximately 289 hospitals, experienced negative operating margins in each of the first 3 years of PPS. Of those 289 hospitals, 54.5 percent were rural hospitals under 50 beds (83.3 percent of the 289 hospitals were rural). In addition, 10.8 percent (31 hospitals) were designated sole community provider hospitals.[30]

Fairness Under PPS

In criticizing the fairness of Medicare's PPS system, rural hospitals have focused on several fundamental aspects of PPS:

- The fairness of the standardized amount;
- The extent to which low-volume providers face a greater degree of financial risk under PPS than large-volume institutions; and
- The appropriateness of the area wage index.

Before turning to the specific issues related to these concerns, it is important to note that Congress has faced a major obstacle in addressing the problems of rural hospitals: the timeliness of PPS data. In part, this reflects the fact that HCFA has never fully adjusted from its role as bill payer under a cost-based reimbursement system to the role of effective manager of a complex administered pricing system under PPS, a system which requires close monitoring. As a result, HCFA has generally been too complacent about the need to better monitor ongoing developments.

An even more frustrating problem for the Congress has been the failure of the Reagan Administration to deliver statutorily mandated reports on PPS-related issues in a timely manner, an issue that has drawn bipartisan criticism. The office that generates these re-

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[29] The following points should be noted in reviewing the data used in this section:

ProPAC data focus on Medicare net operating income (revenues minus expenses) as a share of PPS revenues.

The data do not include profits or losses from outpatients or non-Medicare admissions. Similarly, they do not include nonpatient revenue.

The data have a 2-year lag time: the PPS 3 data just released are for fiscal year 1986 and do not reflect changes in Congressional policy in OBRA 1986 and OBRA 1987 to assist rural facilities.

[30] Of the hospitals with the lowest 10 percent of PPS operating margins in fiscal year 1986, 58.7 percent were rural hospitals with fewer than 50 beds. What is surprising is the fact that rural hospitals with fewer than 50 beds also constituted 24.9 percent of all hospitals in the top 10 percent of PPS operating margins (Table 15). In fact, the 90th percentile of these hospitals had margins of 19.3 percent (Table 13).

ports (HCFA's Office of Research) does not appear to be the primary source of these delays. In fact, despite statutory deadlines that are often unrealistically short, it appears that the Office of Research has been generally successful in completing their reports on schedule. Rather, it is the layers of political review and revision—within HCFA, the Department of Health and Human Services and the Office of Management and Budget—which have delayed these mandated reports for as long as 3 to 4 years beyond the required deadline.[31] Moreover, this process has been suspected of systematically altering findings unfavorable to administration policy.

Such efforts are remarkably short-sighted. In the long-run, every administration and the Congress need to rely upon the integrity and credibility of ORD's work to develop appropriate adjustments in Medicare program policy. By systematically undermining the credibility of ORD through such a politically tainted review process, the Administration has also undercut its own effectiveness in using ORD's excellent analytic staff to buttress policy changes which it supports. In addressing the rural health care challenge as well as other PPS issues, the Congress and the Administration need to recognize their joint interest in strengthening ORD and assuring its independence from political interference.

1. THE URBAN-RURAL DIFFERENTIAL

Ever since its implementation, the equity of maintaining separate urban and rural DRG standardized amounts has been challenged.[32] In its original PPS proposal in 1982, the Administration recommended implementation of a single DRG price schedule, applicable to both urban and rural hospitals, with an immediate transition to full national rates. Concerned about the implications of such a rapid redistribution of funds, the Congress adopted separate urban and rural price schedules (standardized amounts) and chose the slow transition to national rates discussed earlier.

As HCFA noted in its report on the urban-rural differential, an ideal prospective payment system would compute a standardized payment amount based upon the cost of efficient treatment for Medicare beneficiaries, taking into account factors (such as differences in the price of inputs, in the severity of cases and in the quality of care) which may legitimately affect the cost of efficient treatment.[33] However, there are two problems in developing such an ideal system. First, there is no measure of how much it costs to treat patients "efficiently"; only hospital costs are known. Second, the ability to measure and adjust for all factors that affect the cost of efficient treatment is limited.

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[31] One example raised during the Senate Aging Committee's hearing on rural hospitals was the Administration's long delay in submitting the statutorily-mandated report on the urban-rural differential. Federal law required this report to the submitted to the Congress in 1984 but it was only received on December 24, 1987, over 3 years late.

[32] Most rural advocates who oppose separate urban and rural DRG price schedules are not opposed to compensating urban hospitals for higher costs they face which reflect forces beyond their control. In general, though, they argue that these costs should be handled as adjustments to a single DRG price schedule.

[33] Bowen, Otis. *Report to Congress: Studies of Urban-Rural and Related Geographical Adjustments in the Medicare Prospective Payment System.* (Washington, D.C.: U.S. Department of Health and Human Services, December 24, 1987.)

As a result, PPS payments were constructed based upon data from the 1981 Medicare cost reports. Because average Medicare costs per case in urban and rural hospitals differed by 40 percent in the 1981 Medicare cost reports, that disparity was incorporated into the DRG system.

The fact that cost differences persist, however, does not necessarily justify differential urban-rural payments by Medicare. As noted above, the underlying philosophy of PPS is that payments should reflect the cost of efficient treatment, recognizing the effects of factors that are beyond a hospital's control. Therefore, the source of the higher costs of urban hospitals is of great importance in determining whether these costs should be reflected in PPS payments.

For example, higher urban costs may reflect unmeasured differences in patient characteristics, severity of illness or the quality of care being rendered to urban hospital patients. If this is true, higher payments to urban hospitals could be justified. The reason is that increased costs in such a case would reflect factors which are clearly beyond the control of hospital management or, in the case of higher quality care, these costs would reflect a different "hospital product."

On the other hand, higher urban costs may reflect variations in geographic practice patterns, a more technology-intensive practice style of medicine in urban hospitals or greater access to capital by urban hospitals that have little or nothing to do with quality of patient care. These factors are likely to reflect costs which hospitals can control and, according to the underlying theory of PPS, such controllable costs should not be reflected in payments, unless they can be linked to differences in quality of care.[34] Otherwise, Medicare runs the risk of recognizing and permanently rewarding unnecessarily resource-intensive urban practice styles and neglecting to address unnecessary duplication of equipment among competing urban hospitals. Medicare would also be contributing to a permanently less resource-intensive practice style in rural communities.

Similarly, past differences in average costs may simply reflect the historical ability of urban hospitals to acquire a vast arsenal of high technology equipment while the lower level of financial support available in rural communities did not afford their hospitals such opportunities.[35] As ProPAC noted in a review of the arguments regarding a separate urban and rural rates: [36]

> . . . lower historic average costs and intensity may not reflect rural hospitals' current need for technologically sophisticated services to compete with their urban counterparts in providing high quality care. Under these circumstances, it could be argued that separate payment rates may underfund rural hospitals . . .

Unfortunately, little is known regarding the reasons for urban hospitals' higher costs. The major study to date (Cromwell, Hendricks, and Pope) [37] found that urban hospital physicians practice

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[34] Adjustment of PPS payments to promote goals which the Federal Government deems socially desirable would also be consistent with PPS theory.

[35] The extent to which rural hospitals faced obstacles to their acquisition of technology in the era of cost-based reimbursement has not been adequately documented, however.

[36] Prospective Payment Assessment Commission. *An Evaluation of the Department of Health and Human Services' Report to Congress on Studies of Urban-Rural and Related Geographical Adjustments in the Medicare Prospective Payment System.* June 1988, p. 9.

[37] Summarized in Bowen, Otis, *op. cit.*, footnote 33.

a more technology-intensive style of medicine, unexplained by DRG case mix or patient severity of illness. While not definitive, the study suggests that Medicare may not want to fully compensate urban hospitals for all of the higher costs they experience.[38]

For rural hospitals, then, the case against the urban-rural differential is relatively simple and grounded in the underlying theory of PPS: differences in payments should only reflect costs that are beyond the control of hospital management and, until the higher costs of urban hospitals can be linked to factors beyond the control of these hospitals (such as unrecognized patient severity of illness or systematic differences in quality of patient care), their higher costs should not be fully reflected in PPS payments.

Given the logic of PPS and the widespread belief that physicians in urban hospitals practice a technologically-intensive style of medicine, rural advocates expected that policymakers would place the burden of proof on urban hospitals to justify their higher costs and higher PPS payments. Rural hospitals have been surprised to discover that the public policy debate has essentially placed the burden on them to make the case for elimination of the urban-rural differential.

The reluctance of policymakers to address the urban-rural differential is understandable. The redistribution of funds from urban to rural hospitals presents a political problem to the Congress. In light of declining Medicare operating margins for the entire hospital industry and past restrictions on the annual update factor for PPS payments, urban hospitals can be expected to resist such an additional loss in payments. At the same time, there is an understandable desire to know more about the sources of higher urban costs before making further changes in the differential. While these political realities will need to be faced, rural hospitals can make a strong case for elimination of the differential.

First, as pointed out above, the position of rural hospitals is consistent with the basic theory of PPS. As ProPAC noted in its report to Congress on the urban-rural differential: [39]

> The issue is whether PPS payments should continue to reflect poorly understood geographic variations in practice patterns that cannot be attributed to measurable differences in patient characteristics, quality of care, or market area features that are beyond the control of the individual hospital.

As ProPAC correctly points out, these cost differences cannot currently be attributed to factors beyond the control of urban hospitals based upon current knowledge. Therefore, it is reasonable to question the current policy of fully reflecting them in PPS payments.

Second, rural hospitals are only addressing the portion of the urban hospital cost differences which are reflected in the 12.3 percent urban-rural differential in standardized payments. As noted several times in this report, the difference in reported costs is actually 40 percent and the difference in average payments between urban and rural hospitals is approximately 40 percent as well.

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[38] The study's findings must be viewed as preliminary, rather than definitive. Replication of this type of study, using a variety of measures of severity of illness and patient outcomes, is essential.

[39] Prospective Payment Assessment Commission, *op. cit.*, footnote 36.

Most rural advocates have recognized that a portion of that 40 percent difference in costs may eventually be documented as legitimate as work progresses on severity of patient illness measures. They have thus focused their attention on the inequity of separate standardized rates and the wage index (discussed later in this report).

Third, it is important to realize that Congress does not have the luxury of awaiting empirical research to develop an appropriate policy. Significant research findings on the underlying causes of higher urban hospital costs may not be available for at least 3 to 5 years. While ProPAC's report appropriately emphasizes the need for research in this area, there is little research now underway at HCFA, ProPAC or other Federal agencies that will provide, in a timely manner, strong analysis and sound policy options. Federal research priorities have shifted to capitation and physician payment issues and, without an infusion of additional research funds and directives to give research on the urban-rural differential priority, needed data will simply not be available.

Even when research results are available, the analytic insights they yield may be limited. One example may suggest the difficulties involved. More than a half dozen measures have been developed over the last few years to assess severity of patient illness. The difficulty in reaching a consensus regarding the most appropriate system of measurement has been complicated both by technical considerations as well as the financial implications for different groups of hospitals of adopting a specific approach. As such, decisions regarding an appropriate severity of patient illness system are as much policy judgments as they are technical or analytic issues. In a similar fashion, Congress may find that the ultimate decisions regarding the differential will be guided by policy judgments rather than research results.

In this respect, it is important to read ProPAC's report to the Congress very carefully. ProPAC's report spells out the issues involved, outlines the need for additional research in this area and then notes the Commission's unwillingness to make specific recommendations at this time. Notably absent from the Commission's report is a recommendation that the Congress delay any action in this area until further research is available. In essence, ProPAC's report reflects a recognition that this issue is more of a policy judgment, irrespective of the analytic or technical components.

Thus, the argument for elimination of the urban-rural differential is that currently available research does not provide a rationale for fully reflecting urban hospitals' higher costs in their entirety in PPS payments. Recognizing that some differences may ultimately be justified, rural hospitals have focused on only a portion of that difference, the current 12.3 percent differential in standardized payments. Furthermore, while additional research is desirable, it is unlikely to be available in a timely manner and, even when available, such findings may well be inconclusive. As a result, Congress is left with essentially a policy judgment call.

The issue of equity, however, is not simply a matter of elimination of the current urban-rural differential but the manner in which it is done. Congress can eliminate the urban-rural differential in three ways: (1) raising rural hospital standardized payment

rates to the urban payment level; (2) lowering the urban payment rate without increasing rural payment rates (thereby lowering total PPS spending and returning the "savings" to the Medicare trust fund); or (3) equalizing the urban and rural hospital payment rates without affecting total PPS outlays (which increases rural hospital standardized payments as urban rates are decreased).

The policy debate has tended to link a reduction in urban hospital payments to an increase in rural payments, as ProPAC did in its urban-rural differential report. The other two approaches have received little consideration for understandable reasons. The option to raise rural standardized payments to the urban rate would require a significant expansion of Medicare spending at a time of continuing budget pressure and such an option is not easily reconciled with arguments that the higher costs of urban hospitals are not fully justified. The option to reduce the urban standardized payment rate to the rural rate would result in a more significant reduction in urban payments than equalization of the rates. The reason for this is that all rural hospitals account for only 17 percent of PPS payments (Table 12); ProPAC in June 1988 estimated that equalization of the standardized rates would lower the urban hospital standardized amount by 1.6 percent while the rural standardized amount would increase 11.5 percent.

The general acceptance of this linkage between urban and rural standardized payment rates actually strengthens the case for elimination of the urban-rural differential by permitting policymakers to consider the adequacy of rural hospital payment rates. While there are variations within each hospital bed size category, for each of the years for which data is available, rural hospitals, as a class, have had operating margins which have averaged 52 percent to 57 percent of urban hospital operating margins. In the early years of PPS, when all margins were high, this differential may not have had a significant negative impact on the financial viability of rural hospitals. As operating margins have declined for all hospitals, the impact of the urban-rural differential has become pernicious especially for small, rural hospitals.

As noted in chapter 2, there are, of course, a host of other forces that may be of great significance in explaining rural hospital performance. However, the financial decline of rural hospitals has been so rapid, so severe, and so widespread that there is a need to immediately address the urban-rural differential in an effort to stabilize the rural hospital industry.

To address this issue, this report outlines two alternative approaches to the differential for Congressional consideration, an immediate or phased elimination. The third recommendation echoes ProPAC's judgment that research in this area is vital.

Recommendations:

Immediate elimination of the urban-rural differential.

In light of the real and perceived inequity of the Medicare hospital reimbursement differential, Congress should move to immediately eliminate the urban-rural differential.

Mandate a 3-year phaseout of the urban-rural differential.

If the congressional committees with legislative jurisdiction over the Medicare program conclude that immediate elimina-

tion is not achievable, a phaseout of the payment differential should be implemented. A 3-year phaseout would limit the financial disruption of the move to a single payment rate and would provide an incentive for the research recommended by ProPAC on the sources of urban-rural hospital cost differences to be initiated and completed.

Provide sufficient funding to HCFA's Office of Research and the National Center for Health Services Research to implement ProPAC's recommendation for further research on urban-rural cost differences.

ProPAC is correct that further research is essential on urban-rural cost differences. Given competing research priorities, such as existing Congressionally mandated studies and current initiatives such as physician payment reform, AIDS and treatment outcome studies, it is not enough to simply direct HCFA to carry out this research. Additional funding will need to be appropriated for this task. NCHSR can also address some of these questions as part of the rural research agenda outlined in chapter 15.

2. FINANCIAL RISK OF HOSPITALS UNDER PPS (OUTLIERS)

A continuing debate has surrounded the question whether a payment system based upon average costs and "the law of large numbers" can work for hospitals with low patient volume, such as small rural hospitals.

While PPS recognizes that hospitals may incur catastrophic losses or windfall profits on an individual case, it is premised upon the averaging principle inherent in what is commonly known as "the law of large numbers." Simply put, the law of large numbers assumes that losses on high cost cases will be offset by the profits from easier-to-treat cases. In the long haul, profits and losses will be balanced by the averaging that takes place both within each DRG and across all DRGs.

There is a very real possibility that small or rural hospitals face an undue level of risk under this system. It is likely that small or rural hospitals do not have sufficient patient volume for the "law of large numbers" to protect them from the catastrophic losses that may accompany unusually expensive cases. Should the trend of declining patient occupancy (volume) continue, so will the level of risk for these hospitals. Furthermore, Medicare's outlier policy, which attempts to protect hospitals against extraordinary losses on an individual case, may provide insufficient risk protection for small rural hospitals.

Medicare's Outlier Policy

Medicare provides additional payments to hospitals for two types of cases: those with unusually long lengths of stay or exceptionally high costs.

HCFA has proposed that to qualify as a day outlier in fiscal year 1989, a case will need a length of stay equal to 24 days or 3.0 stand-

ard deviations [40] of the distribution for that DRG, whichever is lower. For cases which qualify, Medicare divides the hospital's DRG payment rate by the national geometric mean of the length of stay for that DRG and then pays 60 percent of that per diem amount for each additional day the patient remains in the hospital.

For cost outliers, the proposed fiscal year 1989 threshold is 2 times the PPS payment rate for that DRG or $27,000, whichever is greater. To determine a hospital's eligibility for cost outliers under current regulations, HCFA multiplies a hospital's charges by 66 percent (which is the national ratio of all hospitals' costs to charges). The resulting dollar figure is considered to be a hospital's "costs" and is compared with the cost outlier threshold. Medicare then pays 60 percent of the amount that a hospital's "costs" exceeds the threshold.

HCFA has proposed two additional changes to be implemented in fiscal year 1989. First, instead of using a national conversion factor of 66 percent to determine a hospital's "costs," HCFA will begin using a hospital's own cost-to-charge ratio. Because hospitals with lower profit margins (such as small rural hospitals) tend to have higher cost-to-charge ratios, this should assist rural hospitals in qualifying for the cost outlier threshold. Second, HCFA is proposing to pay hospitals 80 percent, rather than 60 percent, of the amount that a hospital's "costs" exceed the threshold.

Beginning in fiscal year 1989, Medicare will also pay hospitals for cases that meet both the day and cost outlier criteria at the greater of the 60 percent per diem payment or 80 percent cost outlier payment. In addition, the new regulations put somewhat greater emphasis on cost outliers, for which rural hospitals find it easier to qualify.

While these changes should benefit rural hospitals, a fundamental question remains with regard to the adequacy of outlier thresholds for small hospitals. Given their smaller patient volume and operating revenue, it is likely that rural hospitals may not be able to sustain the losses that could be incurred under the proposed increase in the fiscal year 1989 thresholds and may need lower thresholds. Data are not available regarding the high cost cases of rural hospitals which do not meet the day or cost threshold criteria. To address the lack of information necessary to make Medicare "outlier" policy decisions, the Congress should give serious consideration to the following recommendation.

Recommendation:

Evaluation of the outlier thresholds.

Funding should be provided to ProPAC to support a short-term contract to evaluate the adequacy of the present outlier thresholds. At minimum, ProPAC should assess and report back to the Congress within a year on the advisability of sepa-

[40] For nonstatisticians, the concept of standard deviations is best visualized in terms of the traditional bell shaped curve. One standard deviation is equal to 68.27 percent of all cases, half of which are to the left and half of which are to the right of the center (or arithmetic mean) of the curve. Two standard deviations cover 95.4 percent of all cases and 3 standard deviations cover 99.73 percent of all cases. By setting outlier status at 3 standard deviations, only a fraction of all cases would be eligible for outlier status in any single DRG.

rate standards for high volume and low volume hospitals (since high cost cases leave a low volume institution at greater risk).

3. SOLE COMMUNITY HOSPITALS

Congress first provided statutory protection for sole community hospitals (SCH's) under Medicare in 1972, a protection that was incorporated within the PPS legislation in 1983. The Congress recognized, quite appropriately, that insolvency of the only hospital in an area might unduly restrict access by aged and disabled Medicare beneficiaries.

Designation and Payment of SCH's

Two issues have arisen regarding the SCH provision. The first has to do with the eligibility criteria and the appropriateness of the designated hospitals. A recent study of SCH providers by Systemetrics under contract to ProPAC found a mismatch between those hospitals that would qualify under current criteria and those currently designated.[41] This reflects at least three factors: a large number of hospitals were "grandfathered" into the system; the decentralization of SCH designations to the regional offices (resulting in decisions that are not always consistent); and the basic ambiguity of the criteria themselves. HCFA responded to the ProPAC recommendation by proposing to impose additional uniformity on the process.[42]

The second issue is the financial protection available to SCH hospitals. Under current law, these hospitals are provided: (1) a blended payment rate that is 75 percent hospital-specific and 25 percent regional PPS rate; (2) exemption from capital payment cuts; and (3) the right to apply for volume protection.

There is reason for concern regarding the adequacy of these protections. First, nearly 11 percent of SCH providers have experienced negative operating margins in each of the first 3 years of the prospective payment system (Table 15). In the third year alone, at least one-fourth of SCH providers had losses of −7.5 percent or more than 10 percent of these hospitals experienced losses on their Medicare business greater than −31.2 percent, a record slightly worse than rural hospitals without SCH protection (Table 13). This evidence strongly suggests that the present payment system for SCH providers does not provide adequate protection to some of these hospitals and should be reevaluated by HCFA and ProPAC. Second, the Systemetrics study cited earlier identified 119 hospitals eligible, but not designated as SCH providers.

Because of the importance of maintaining Medicare beneficiary access to hospital care, the financial viability of SCH providers is an important policy concern. The following recommendations for Congressional consideration focus on the importance of developing a better assessment of the protections afforded SCH hospitals under current law, including an assessment of the implications of a return to cost-based reimbursement for these hospitals.

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[41] The Systemetrics report was summarized in *Technical Appendixes To The Report and Recommendations To The Secretary, U.S. Department of Health and Human Services.* (Washington, D.C.: Prospective Payment Assessment Commission, March 1, 1988.)

[42] *Federal Register*, May 27, 1988, pp. 19517-8.

Recommendations:

The Office of Rural Health Policy should develop a definition of isolated, rural providers that could be used to revise the definition of Sole Community Hospitals.

Funds should be provided to the Office of Rural Health Policy to develop a more appropriate definition of isolated, rural providers. It is important to develop such a definition outside of the Medicare program since such a definition may well prove useful to Public Health Service programs in assuring the access of rural residents to health care. This study should build upon the work of Systemetrics, in particular their identification of rural hospitals which should be considered SCH hospitals but are not eligible under current criteria. The Office should provide Congress with proposals for revising the present criteria.

The Office of Rural Health Policy should develop an assessment of the protections provided to SCH hospitals and work with HCFA to develop alternative reimbursement approaches, including an assessment of the impact of returning SCH providers to cost-based reimbursement.

Funds should be provided to the Office of Rural Health Policy to assess the adequacy of present SCH provisions and, working with HCFA, develop a series of alternative reimbursement approaches for consideration by the Congress. To assure consideration of all possible approaches, the ramifications of returning SCH providers to cost-based reimbursement should be assessed. Consideration should also be given to the financial position of those hospitals eligible for, but not designated as, SCH providers.

GAO should be asked to assess the cost structure of outpatient services provided by sole community hospitals.

With an increasing number of hospital services and procedures being provided on an outpatient basis, the equity of Part B reimbursement for sole community hospitals needs to be assessed since many of the arguments presented in this report regarding low volume providers are equally applicable to outpatient services. GAO should assess the arguments of rural hospital administrators that Part B constraints on outpatient services, such as hospital-based clinical labs, do not fully recognize the costs experienced by SCH providers.

Volume Protection

The concept of volume protection (additional payments to hospitals experiencing more than a 5 percent decrease in patient volume) originated as one of the benefits accorded to hospitals receiving Sole Community Hospital (SCH) status. OBRA 87 extended volume protection to all SCH-eligible institutions, regardless of whether they sought such a designation.

Despite its intuitive appeal, the effectiveness of volume protection has yet to be proven. In its April 1987 report to the Secretary of HHS, ProPAC reported that only 11 of the then-eligible 363 sole

community hospitals had applied for volume protection.[43] Of these 11 applicants, 7 were denied.

As ProPAC's report noted, such a small number of applications is surprising, given the large reductions in patient volume experienced by smaller hospitals. The American Hospital Association reports that in 1986 rural and urban hospitals with fewer than 25 beds had an average occupancy of 6; those with 25–49 beds, had an average daily census of 14 (rural) and 16 (urban).

ProPAC suggested that one factor may have been a HCFA requirement that a hospital demonstrate "extraordinary circumstances," and HCFA has since deleted that requirement from its regulations. However, rural hospitals may be discouraged from applying for volume protections for other reasons including: the lack of ability to determine what specific financial adjustment will be provided for qualifying hospitals and the still lengthy application process (which can last 6 months to a year).

Because the volume protection provisions have benefitted few hospitals, it is not clear that Congressional intent has been fully followed. Unfortunately, sufficient data are not available to suggest detailed modification of the existing volume protection policy at this time.

It is important to recognize that volume protection is, in the final analysis, a policy designed to assist SCH providers that are not sufficiently protected by the basic SCH payment mechanism. To the extent that an appropriate payment policy for SCH providers can be developed, it may be possible to eliminate the need for a volume protection provision altogether. However, recognizing that comprehensive reform of the current SCH policy will take time, the Congress may want to seriously consider ways for improving the usefulness of the volume protection process in the interim.

Recommendations:

The application process needs to be simplified.

HCFA and the Congress need to develop ways to simplify the application process and to streamline the turn-around time on application decisions.

Eligibility Criteria should be reassessed.

Funds should be provided to the Office of Rural Health Policy to reassess which hospitals should be eligible for volume protection. The Office of Rural Health Policy is in the best position to assess the implications of SCH designation from a beneficiary access, rather than a strictly budgetary perspective.

The General Accounting Office should review HCFA's implementation of the volume protection provision to assess the adequacy of the volume protection payments made to SCH providers and determine whether application denials have been consistent with Congressional intent.

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[43] Prospective Payment Assessment Commission. *Technical Appendixes To The Report and Recommendations To The Secretary, U.S. Department of Health and Human Services.* (Washington, D.C.: Prospective Payment Assessment Commission, April 1, 1987.)

4. THE WAGE INDEX

One problem that has defied simple resolution since the adoption of the PPS system has been the development of local area wage indices that are accurate. Currently, HCFA develops area wage indices for urban hospitals, but assigns a single wage index to all rural hospitals in a State.

The importance of an accurate wage index to a hospital can be seen by reviewing the previous discussion on computation of the PPS payment. The labor portion is approximately 75 percent of the standardized payment. Multiplication by an inappropriately low wage index thus has a major impact on each PPS payment.[44]

In its March 1988 report to the Secretary of HHS, ProPAC reported that the average hospital wage within urbanized rural counties was 8.5 percent higher than the average wage within nonurbanized counties. As a result, ProPAC recommended that the Secretary distinguish between urbanized and nonurbanized rural counties, classifying a county as urbanized if it contained a city or town having a population greater than 25,000. HCFA rejected this recommendation in its formal response to ProPAC in the *Federal Register*.[45]

The policy of assigning the same wage index to all rural hospitals is difficult to defend. A wage index based upon a statewide rural "average" undoubtedly undercompensates rural hospitals in close proximity to urban areas and those which have higher labor costs for other reasons, while rural hospitals with labor costs below the statewide average are overcompensated. This has complicated the task of even developing a dialog regarding the appropriateness of ProPAC's recommendation.

There are other issues which affect the appropriateness of the wage index. A major issue for rural hospitals has been the tendency of HCFA to see the hospital labor market as a local one. Rural hospitals argue that they face multiple labor markets. They acknowledge that nonprofessional personnel generally can be recruited in the local labor market. However, to successfully attract administrators and health care professionals, they claim that they are forced to recruit in regional, statewide, and, in some cases, national labor markets for personnel. The cost of recruiting these personnel exceeds local labor market costs.

Another issue that can affect the accuracy of the wage index is the treatment of contract employees. Rural hospitals are more likely to be operated under a management contract. This means that the salaries of the two highest paid employees of the rural hospital (the administrator and the chief financial officer) are often paid by the management firm directly (out of the management contract fee) and, in such cases, their salaries may not be included in the hospital's employee salary structure and may not be reflected in the wage data that HCFA has collected in the past. Rural hospitals also claim that they are more likely than their urban counterparts to contract with outside firms for routine services. These fac-

[44] The annual reports of the ProPAC to the Secretary of HHS, beginning in 1985, provide a detailed review of the various facets of the wage index problem, which will not be reviewed here.

[45] *Federal Register*, May 27, 1988.

tors may result in an some rural hospitals receiving an inappropriately low wage index.

To address these issues, the Congress should give serious consideration to the following recommendations.

Recommendations:

HCFA should survey hospital wages annually.

HCFA does not regularly survey hospital wages, despite their importance in the PPS payment formula. HCFA should conduct an annual wage survey and use the most current data in the calculation of PPS payments.

GAO should develop an assessment of the extent to which rural hospitals recruit health care professionals in regional, State, or national labor markets and recommend ways in which these costs can be better reflected in the current wage index.

As part of that effort, GAO should also assess whether the current wage survey accurately reflects the true wage structure of contract-managed hospitals and the use of contract labor in general.

ProPAC should provide a forum for review by the rural hospital industry of its proposed two-tiered rural wage index.

There is a need to bring the rural hospital industry to the table to discuss the most appropriate solution to this problem and ProPAC can provide an appropriate forum for such a discussion.

The Congressional Response

The fact that this chapter has focused on unresolved PPS issues is not meant to suggest that Congress has been indifferent to the needs of rural health care providers. There are, in fact, at least three reasons for optimism regarding Congressional interest in rural health care.

The first is the development of a broad base of Congressional interest in rural health care issues beyond the traditional alliance of farm State and Western/Mountain State representatives. The extensiveness of interest in rural health care is best reflected in the growth in membership of the bipartisan Senate Rural Health Caucus, established in 1986, and the bipartisan House Rural Health Coalition, established in early 1987. In just 2 years, Senate caucus membership had grown to include a majority of Senators and the House coalition membership includes over a fifth of the more urban-oriented House of Representatives.

The breadth of Congressional interest is also significant. It is becoming increasingly clear that the caucus and coalition agendas are broader than PPS, although PPS issues will undoubtedly remain a central focus until these issues are adequately addressed. Both groups have begun to focus on a broad array of issues affecting rural providers such as physician payment, HMO payments, and the entire gamut of Public Health Service programs.

Second, Congress is responsible for two important developments in the Executive Branch with long-run significance: the establishment of an Office of Rural Health Policy in the Department of

Health and Human Services [46] and the development of a Rural Health Services Research Agenda.

Rural advocates have argued that rules and regulations governing Federal programs seldom take into account the differences in scale, density, and resource base of rural areas. The establishment of an Office of Rural Health Policy thus provides an institutional focus for rural concerns in the Department of Health and Human Services and an opportunity for rural issues to be given appropriate consideration before Federal rulemaking takes place. Although it has been in existence for little more than a year, the Office of Rural Health Policy has generally been considered effective in encouraging HHS program managers to take into account the unique needs of rural communities.

Another development of long-run importance is the funding provided by the Senate Appropriations Committee to the National Center for Health Services Research and Healthcare Technology Assessment (NCHSR) to prepare a Federal rural health services research agenda. As the PPS discussion has demonstrated, there are a multitude of issues which Federal policymakers need to address for which fundamental research and data are lacking. By pulling together Federal policymakers as well as rural health services researchers and practitioners, this effort has resulted in a reasonable research agenda specifically designed to meet Federal policymakers' needs. Chapter 15 in Part III of this report contains a summary of that research agenda.[47]

Finally, the Congressional authorizing committees for the Medicare program [48] deserve recognition for their increasing sensitivity to the problems rural hospitals face under PPS. The last two reconciliation bills (OBRA 86 and OBRA 87) have contained a myriad of provisions designed to assist rural hospitals. Those provisions have addressed a number of areas:

Increasing the average rural hospital PPS payment.

A series of technical changes in OBRA 86 increased the pool of funds available to rural hospitals (reducing rural hospital contributions to the outlier pool and switching to case-weighted rural averages in determining costs) and OBRA 87 provided for a higher increase for rural hospitals in fiscal year 1988.

Changing the status of specific hospitals.

OBRA 86 expanded the number of rural hospitals eligible for rural referral status, disproportionate share adjustments and extended sole community hospital protections. OBRA 87 expanded the scope of these provisions and increased the number of rural hospitals eligible to qualify for the urban rate.

Assisting hospitals to plan for the future.

OBRA 87 established a rural hospital demonstration grant program to assist small rural hospitals in modifying the type

[46] Although the Office of Rural Health Policy was established administratively prior to legislative action, rural advocates credit Congressional pressure for this development. Subsequently, the Congress provided a statutory basis for the Office.

[47] A number of the background papers prepared for the Rural Research Agenda conference will be published in the February 1989 issue of the journal *Health Services Research.*

[48] The congressional committees with legislative jurisdiction over the Medicare program include the Senate Finance Committee, the House Ways and Means Committee, and the House Energy and Commerce Committee.

and scope of services they offer in response to changes in service population, clinical practice patterns and other factors.

The breadth of these statutory changes, which are outlined in the pages which follow, is reason for optimism and reflects the efforts of the authorizing committees to make the PPS system as equitable as possible.

As this chapter has demonstrated, however, a number of difficult decisions lie ahead. Several of the issues raised in this chapter involve redistribution of Medicare payments between urban and rural hospitals and within categories of rural hospitals. There is no question that achieving consensus for reform will be difficult.

RURAL HOSPITAL PROVISIONS, OMNIBUS BUDGET RECONCILIATION ACT OF 1986

1. All hospitals received a PPS rate increase of 1.15 percent effective October 1, 1986.
2. Created separate pools from which to pay urban and rural hospitals for outliers. Urban hospitals, having more outliers, are required to contribute larger amounts, while rural hospitals, having comparatively fewer outliers, contribute less.
3. Provides for case-weighted rural and urban averages in determining the average costs in setting PPS payment rates. Beginning fiscal year 1988, the average will be calculated on a case-weighted, rather than a hospital-weighted basis, thereby better reflecting the higher costs of higher volume hospitals (particularly rural hospitals).
4. Extends through cost reporting periods beginning in fiscal year 1988, the volume protection provision for sole community hospitals.
5. Excludes sole community hospitals from reductions in capital related costs.
6. Authorizes Secretary to set a minimum percentage of low income patients for rural hospitals with 500 or more beds. Hospitals that exceed the minimum percentage would qualify for payments on the same basis as urban hospitals with 100 or more beds.
7. Extends PIP payments for rural hospitals with fewer than 100 beds. Allows accelerated payments to PPS hospitals with significant cash flow difficulties.
8. Places criteria for rural referral center designations in statute and allows more hospitals to qualify.
9. Requires the Secretary to submit a legislative proposal by October 1988 that would improve PPS treatment of outlier cases and variations in severity of illness/case complexity.

RURAL HEALTH PROVISIONS, OMNIBUS BUDGET RECONCILIATION ACT OF 1987

1. Update

Fiscal year 1988:
Rural hospitals=3 percent
Large urban=2.5 percent
Other urban=1.0 percent

Fiscal year 1989:
Rural hospitals=market basket minus 1.5 percent
Large urban=market basket minus 2.0 percent
Other urban=market basket minus 2.5 percent
Fiscal year 1990: Market basket for all hospitals

2. Rural hospitals located near urban areas

A hospital located in a rural county adjacent to one or more urban areas will be treated as being located in the SMSA to which the greatest number of workers in the county commute if:

The rural county would otherwise be considered part of an urban area, under the standards for designating Metropolitan Statistical Areas (and for designating New England County Metropolitan Areas) published in the Federal Register on January 3, 1980, if the commuting rates used in determining outlying counties (or, for New England, similar recognized areas) were determined on the basis of the aggregate number of resident workers who commute to (and, if applicable under the standards, from) the central county or counties of all contiguous Metropolitan Statistical Areas (or New England County Metropolitan Areas). See, page 92 of Catastrophic Conference Report [101-166, House].

The rates paid to urban hospitals will be reduced to make up the increased payment for qualifying rural hospitals. The rates will also be adjusted in the aggregate to ensure that other rural hospitals will not have their rates reduced by this provision.

Effective Date: October 1, 1988.

3. Swing Bed Expansion

The swing bed program will be expanded to hospitals with under 100 beds (currently, the limit for participation is 50 beds). Hospitals with more than 49 but less than 100 beds will be required to discharge patients in need of skilled nursing facility services to a nursing home bed within 5 working days if a skilled nursing bed is available in a skilled nursing facility.

Effective Date: March 31, 1988.

4. Sole Community Hospitals

Under current law, sole community hospitals may receive a volume adjustment (an additional payment to maintain core required services) when volume falls by more than five percent in any year due to certain circumstances. These hospitals are reimbursed at 75 percent hospital specific/25 percent national PPS rates. In some cases, hospitals which would otherwise qualify as sole community providers and be eligible for volume adjustment payments do not seek this designation and these payments because they are better off under fully national rates.

The reconciliation legislation allows hospitals to continue to receive 100 percent national rates and also qualify for the volume adjustment.

The amount that may be spent for this provision is capped at $5 million in fiscal year 1988 and $10 million in fiscal year 1989.

5. Rural Referral Centers

Under current law, a hospital with 500 or more beds, located in a rural area qualifies automatically and is paid at the urban rate. Reconciliation lowers the bed size criterion to 275 and requires a study of the appropriateness of the other criteria hospitals may meet to be designated rural referral centers as well as a study of

the appropriateness of paying such hospitals at the urban rate or another, lower rate.

6. Rural Health Care Transition Grant Program

Fifteen million dollars a year for fiscal years 1989 and 1990 is authorized for grants to assist small rural hospitals and their communities in the planning and implementation of projects to modify the type and extent of services the hospitals provide in order to adjust for changes in service population, clinical practice patterns, and other factors. Only hospitals with less than 100 beds which are chartered as entities may qualify. Grant proposals are forwarded to HHS through the office of the Governor of the state. No grant may exceed $50,000 a year or be for a period of more than two years.

7. Outlier Report

Requires the Secretary to report on the impact of outlier payments for urban versus rural hospitals.

8. Appropriateness of Separate Urban and Rural DRG Rates

Requires ProPAC to evaluate the HHS study on the feasibility, impact, and desirability of eliminating or phasing out the urban/rural differential. The report and recommendations must be submitted no later than March 1, 1988.

9. Rural Health Medical Education Demonstration Project

Small rural hospitals would serve as 1- to 3-month residency training sites for physicians with at least 1 year of residency training.

10. Rural Physician Bonus Payments

Physicians or the employing facility will receive a 5 percent bonus for services provided to individuals in class 1 or class 2 health manpower shortage areas.

Effective Date: January 1, 1989.

11. New Physicians in Rural Areas

Under current law, new physicians' rates are at the 50th percentile of the prevailing charge in the area. Under the change, new physicians in rural health manpower shortage areas will be exempt from the change in the prevailing rate; the rates would be set at 80 percent of the prevailing rate.

12. Rural Health Clinics

Increases reimbursement for rural health clinics from $32.10 per visit maximum to $46 maximum and indexes the rate by the Medicare economic index.

Effective Date: March 31, 1988.

13. Rural Mental Health

Psychologists services in rural mental health clinics are made reimbursable, and direct reimbursement for psychologists services furnished at community mental health centers is authorized.

14. PRO provisions

a. Requires PRO's to take into account special problems associated with delivering care in remote rural areas, the availability of alternatives to hospitalization, distance from a patient's residence to site of care, family support, and patient's ability to carry out self-care regimens.

b. Requires on-site reviews for at least 20 percent of rural hospitals in the PRO's service area. Requires PRO to offer to hold meetings several times a year at a hospital or a regional meeting with medical and administrative staff and to publish at least on a yearly basis a report describing the PRO's findings with respect to the types of cases in which the organization has frequently determined that services were inappropriate or unnecessary, rendered in an inappropriate setting, or did not meet recognized standards of health care.

c. Requires the Secretary to consider educational activities when evaluating PRO's for contract renewal.

d. Requires pre-exclusion hearings before an ALJ for physicians in rural health manpower shortage areas to determine if the physician does in fact pose a serious risk.

15. Authorizes Office of Rural Health Policy and delineates responsibilities.

16. Requires impact analysis of Medicare and Medicaid Rules and Regulations on small rural hospitals, effective 30 days after enactment.

17. Sets aside not less than 10 percent of demonstration funds for demonstrations relating exclusively or substantially to rural health issues.

CHAPTER 4: MEETING THE CHALLENGE

The Rural Hospital Response

The driving force of change for all hospitals has been declining patient volume. Anecdotal evidence suggests that in the short-term, rural hospitals have responded by reducing the number of staffed beds, reducing total employees and, to the extent possible, shifting the mix of employees to include more part-time employees who do not require costly fringe benefit packages.

The data presented earlier on these relationships (Tables 9 and 16) suggest that to the extent that rural hospitals reduced beds and total employees, the major portion of these operating changes had already taken place by the time Medicare's Prospective Payment System was in place 1 year (1983–84). Since then, the data suggest a slowing in the number of staffed beds being eliminated and an increase in the number of total (FTE) employees beginning in 1986. This may reflect employees being allocated to swing beds, an inadequate response by rural hospitals or, as rural advocates argue, simply less fat in the system to cut in the short-term.

Longer term options include diversification, the most widely adopted strategy; affiliation with referral centers or alliances; joining a multihospital system; conversion to non-inpatient use or, if all else fails, closure.

Research is beginning to emerge in these areas and a review of the available literature was summarized in papers prepared for the Rural Health Services Reserch Agenda-Setting Conference, held in San Diego in December 1987.[49] Congress has slowly begun to provide additional funding for research in this area. For fiscal year 1989, the National Center for Health Services Research received $500,000 of the $10 million required to implement the rural health services research agenda developed at the San Diego conference. In September 1988, the Federal Office of Rural Health Policy awarded grants to five rural health services research centers to begin to build a long-term research capability for investigating a number of the questions raised in this report. This is just a sample of the projects underway, but clearly much more needs to be done.

1. DIVERSIFICATION

The range and breadth of diversification activities has been phenomenal since 1982.

Outpatient Visits. Between 1982 and 1985, the number of outpatient departments increased 48 percent at rural community hospitals.[50] As a result, by 1986 outpatient charges accounted for more

[49] The papers from this conference will appear in the February 1989 issue of the *Journal of Health Services Research.*

[50] American Hospital Association. *Environmental Assessment for Rural Hospitals: 1988.* (Chicago: American Hospital Association, 1988.)

than one-fifth of all rural hospital charges and, for the rural hospitals under 50 beds, outpatient charges accounted for nearly a quarter of all charges (Table 17).

Outpatient Surgery. In 1981, only 16 percent of surgery was performed on an outpatient basis in rural hospitals; by 1986, outpatient surgery accounted for 42.3 percent, an increase of 161 percent in just 5 years (Table 11).

Medicare swing-beds. The Medicare swing-bed program allows small rural hospitals to use their beds interchangeably for acute, skilled nursing care (Medicare and Medicaid) or intermediate care (Medicaid only). Thus, rural hospitals can temporarily reduce their excess acute care bed capacity while simultaneously increasing the number of available nursing home beds for Medicare patients. At the end of 1982, only 58 rural hospitals participated in the swing-bed program; by July 1986, 899 small rural hospitals were participating (Table 18).

The number of hospitals offering *outpatient rehabilitation services* increased from 428 in 1982 to 527 in 1985. *Home health care* programs at rural hospitals increased from 256 programs in 1982 to 678 in 1985, and *health promotion programs* grew from 605 programs to 814 over the same period.

In addition, rural hospitals have experimented with:

- all forms of day care
- hospice programs
- chemical dependency units
- distinct part skilled nursing (SNF) or intermediate care facilities (ICF)
- retirement communities
- meals on wheels programs
- ambulance services contracted with the county

Diversification can also serve to undermine the financial viability of a rural hospital if it is undertaken without sufficient planning. Rural hospitals need to assess the community's need for the proposed service, the level of community demand at various charge levels and the hospital's ability to produce the service at a cost which will guarantee a profit within a reasonable time frame. Anecdotal evidence provided to the Senate Aging Committee suggests that the most successful diversification activities have been based on a careful evaluation of community demand for the service, the potential for local competition by providers with lower overhead and an examination of current trends in reimbursement (to avoid moving into areas which are obvious targets for future cost containment activities).

In addition, Dr. Stephen Shortell at Northwestern University, in a study of 570 hospitals in 43 States, found:

- Nonprofits are more diversified than proprietary hospitals;
- The most popular types of services are not always the most profitable;
- The most profitable services include ambulatory surgery, chemotherapy/radiation therapy, general/cardiac rehabilitation, CT/MRI/outpatient diagnostic services; and
- The least profitable services are nursing home services, wellness programs, occupational health programs, geriatric day care, immunization or health screening.

2. ALLIANCES WITH OTHER PROVIDERS

Alliances or consortia represent a step short of joining a multi-hospital system and generally leave their members with much more independence to pursue their own interests. As many as a quarter of all hospitals participate in some form of an alliance, although accurate figures are difficult to obtain. While urban-based alliances often include rural hospitals as members, a 1986 National Health Advisers' report identified nine rural alliances, with a range between 4 and 25 participating hospitals.[51]

Alliances provide their members with a variety of services such as group purchasing, shared services, marketing campaigns or personnel, and training in negotiations. Alliances thus enable rural hospitals to overcome some of the disadvantages due to their small size and low patient volume. To the extent that alliances have drawbacks, they generally arise because of the difficulty in developing trust among potential or actual competitors.

Examples of alliances include the Rural Wisconsin Hospital Cooperative, the Vermont Rural Hospital Consortium and the oldest alliance, the Great Plains Health Alliance in Kansas.

3. MULTI-HOSPITAL SYSTEMS

The American Hospital Association reports that more than one-third of rural community hospitals are owned, leased, or contract-managed by multi-hospital systems.[52] In 1982, 710 rural hospitals were involved in a multi-hospital system (Table 19). By 1985, the number of participating hospitals had increased by 27 percent to 902.

Of the 902 rural hospitals participating in multi-hospital systems in 1981, 476 were voluntary, not-for-profit hospitals, 236 were publicly owned hospitals and 190 were proprietary hospitals. Such arrangements appear to be most heavily concentrated in the South Atlantic, the Mountain and Pacific census regions, where investor-owned systems have concentrated their efforts. There are some indications that system growth has leveled off, at least temporarily, as the largest proprietary hospital chains have been divesting a number of their rural hospitals. Even rural-based systems, such as Lutheran Hospitals and Homes Society of Fargo, ND, has ended its affiliation with some rural hospitals and is attempting to convert others to long-term care facilities.

At least one major proprietary system, Westworld, has declared bankruptcy in recent years.

4. CONVERSION TO NON-ACUTE CARE SERVICES

Statistics are not available on the number of rural hospitals that have converted their entire facilities to other health care uses. Anecdotal evidence, however, suggests that the three most common conversions include: (1) becoming an ambulatory care center, supplemented with some form of emergency medical systems (EMS) capability; (2) eliminating all inpatient services and concentrating on

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[51] American Hospital Association. *Environmental Assessment for Rural Hospitals: 1988.* (Chicago: American Hospital Association, 1988.)

[52] *Ibid.*

nonsurgical outpatient services or simply providing emergency services; and (3) converting to a long-term care center. A growing number of rural hospitals are also exploring areas such as specialized substance abuse services.

5. HOSPITAL CLOSURE

In some cases, despite the best efforts of a rural hospital and its community, it is simply not possible for the hospital to remain open. While this poses a major dilemma in areas where the hospital functions as a sole community provider, most of the rural hospitals which have closed to date have been in close proximity to other facilities.[53] In these cases, closure of one or more facilities can serve to strengthen the chances of the remaining hospitals to survive.

Ross Mullner, the leading analyst of hospital closure, has just completed a study of rural hospital failure from 1980 to 1987. He and his colleagues found:

- 161 rural community hospitals have closed in 36 States [Table 20].[54] Texas accounts for more than 20 percent of all closures during this period (34 hosptials) while Illinois, Minnesota, and Oklahoma each have experienced 7 closures [Table 21].
- Over 70 percent of hospitals closing their doors were small (i.e., fewer than 50 beds) [Table 22]. In absolute numbers, proprietary hospitals had the lowest number of closures (48); voluntary, not-for-profit hospitals accounted for the most closures (63) [Table 22]. However, taking into account the small percentage of rural hospitals which are proprietary (only 9.1 percent), they accounted for a disproportionate percentage of all closures (29.8 percent).
- Proprietary and nongovernment, not-for-profit hospitals are at a greater risk of closure. Other risk factors included proximity to other hospitals located in the county or the presence of a skilled or long-term care unit. By contrast, hospitals are more likely to avoid closure if they offer a broader array of services and facilities, have been accredited or belong to a multi-hospital system (for nonprofit hospitals).

PUBLIC-PRIVATE SECTOR INITIATIVES

Effectively meeting the challenge of maintaining access to health care for rural residents will be extremely difficult. The changes in clinical practice and the move from inpatient to outpatient provision of services represent a fundamental and permanent change in the way health care services will be delivered. When combined with the ongoing intractable problems faced by most rural hospitals—deteriorating physical plants, shortages of personnel, capital, and equipment and the inability to develop economies of scale—the challenge for rural communities is to reevaluate the configuration

[53] Of the 85 rural counties that experienced a rural hospital closure between 1980 and 1985, only 6 were left without a hospital.

[54] Mullner calculates the number of rural hospital closures on a different basis from the American Hospital Association. As a result, this figure is slightly different from AHA data presented earlier.

of their local health care system and to determine the optimal role of the local hospital.

The public and private sector initiatives outlined below are noteworthy because of the importance they place on: communication and cooperation among health care providers, communities accepting responsibility for the future of their health care system and the recognition that rural facilities cannot survive unless they can offer services of sufficiently high quality. The listing below is necessarily selective but is illustrative of the types of public-private sector initiatives now underway.

1. THE ARCH PROJECT (AFFORDABLE RURAL COALITION FOR HEALTH)

The ARCH project, funded by the W.W. Kellogg Foundation, is a joint effort of the University of North Dakota and the Lutheran Homes and Hospital Society in cooperation with 16 communities in Montana, Colorado, and North Dakota. The project is funded for 4 years and began in July 1985.

The ARCH project employs community organizing principles to assist rural communities in assuming responsibility for the evolution of their health care delivery system. ARCH organizers attempt to bring together key leaders in the health, education, commerce, government, and religious sectors of these small communities (9 of the 16 communities have fewer than 2,500 residents) so that all sectors of the community will be involved in these discussions. The aim is to demonstrate ways in which the small rural hospital can be preserved as a community resource within the framework of a communitywide, coordinated, and cost-effective health system.

2. THE HOSPITAL-BASED RURAL HEALTH CARE PROGRAM

Funded by the Robert Wood Johnson Foundation (RWJ), the aim of this 4-year grant program is to encourage rural hospitals to cooperate in strengthening local health care delivery systems. To help achieve this objective, RWJ refused to accept applications from individual hospitals and required that, at minimum, two hospitals must work together. The strategy worked: RWJ received applications from 180 alliances and the 13 projects funded represent 175 hospitals.[55]

One grantee, the Rural Wisconsin Hospital Cooperative (Sauk City), aims to demonstrate that rural hospitals can compete on the basis of quality of care. The Cooperative is developing a cooperativewide (20 hospital) quality of care management plan, developing the administrative and technical infrastructure to support a quality and utilization review program and will establish a physician

[55] The remaining projects include:
The Rural Health Care Partnership of Northeastern New York (Albany);
South Carolina Consortium For Rural Health Care (West Columbia);
The Nevada Rural Hospital Council (Reno);
North Carolina Rural Hospital Coalition (Raleigh);
Northeast Mississippi Rural Health Coalition (Tupelo);
Northeast Iowa Hospital Coalition (Decorah);
Ozarks Health Network (Springfield, Mo);
Synernet Research Foundation (Portland, Maine);
West Alabama Health Services;
West Texas Rural Health Care Providers (Lubbock); and
Health Care Foundation (Presque Isle).

credentialing process. The Cooperative will address two additional areas: strengthening governance and financial management of cooperative members.

Another example is the Northern Montana Health Care Alliance (Havre), which will develop coordinated physician recruitment activities, and shared service programs as well as a program to identify pregnant women likely to have high-risk pregnancies. A risk assessment service would then refer high-risk pregnancies to a tertiary-care hospital. This service is of particular importance in the Alliance's service areas as four of the five counties are without the services of an obstetrician.

3. THE MEDICAL ASSISTANCE FACILITY (MAF) PROJECT

In the summer of 1988, the Montana Hospital Research and Education Foundation (MHREF) received HCFA funding to develop its proposal for a low intensity, short duration inpatient facility for providing health care in "frontier" communities. Patients requiring more intensive treatment could be stabilized at the local MAF, but would be transferred to a full-service hospital as quickly as possible.

Designed as an option for failing "frontier" community hospitals, the Medical Assistance Facility (MAF) concept is a promising alternative to outright closure. Under Montana law, 17 of Montana's 56 hospitals meet the MAF criteria. To be recognized under State law as a MAF a facility must:

> Provide inpatient care to ill or injured persons prior to their transfer to a hospital, or inpatient medical care for a period of no longer than 96 hours;
>
> Be located in a county with fewer than 6 residents per square mile or more than 35 road miles from the nearest hospital.

Admissions would require physician approval, but much of the day-to-day care of patients would be carried out by nurse practitioners and physician assistants, consistent with their licensure requirements under State law. MHREF has stressed that the focus of the demonstration will be to address concerns regarding the ability of MAF's to render quality services.

HCFA will provide $100,000 in fiscal year 1989 in initial support to enable MHREF to refine its proposal and is expected to provide additional technical support. Meanwhile, the Montana State government will finalize regulations governing the application process for facilities seeking MAF status. If the MHREF demonstration is fully approved, the demonstration could begin in the fall of 1989.

4. THE WAMI PROJECT

The acronym WAMI comes from the names of the four States—Washington, Alaska, Montana, and Idaho—involved in this W.W. Kellogg-funded project. Funded in 1983, this 5-year demonstration program ends in 1988. This project aims to illustrate ways in which rural hospitals with fewer than 50 beds can assess and modify their financial structure and the types, quantity, and quality of the services they provide. The hospitals funded are located in six rural communities, with populations from 2,300 to 25,000.

5. THE COLORADO TRUST RURAL HEALTHCARE INITIATIVE

The Colorado Trust focuses its resources within the State, and has undertaken a Rural Healthcare Initiative that stresses the need for regionalization of services, systems to assure continuity of care (providing the incentive for rural residents seeking care in urban areas to enter the system locally), and high profile quality assurance programs.

CHAPTER 5: THE FUTURE OF THE RURAL HOSPITAL

Many rural leaders have been candid in their recognition that not all rural hospitals will survive. In many areas, consolidation, merger, or development of an alternative health care delivery system (such as Montana's Medical Assistance Facility) will represent a more appropriate response to the current forces of change than futile or misguided efforts to save an existing facility at all costs.

Those decisions, however, are appropriately made by the rural community itself. They should not result from discriminatory, inappropriate, or misguided Medicare reimbursement policies. While specific Medicare recommendations were outlined in chapter 3, there remains an overarching need for policymakers to be sensitive to the limitations of prospective payment systems which leave low-volume hospitals at great financial risk for fluctuations in admissions.

In considering the future of the rural hospital, it is heartening to recognize that there are positive developments. For example, several demonstration projects by major foundations, such as W.W. Kellogg, the Robert Wood Johnson Foundation, and the Colorado Trust, are working to assist rural communities in developing the capacity to identify local needs and to assess the most appropriate health care delivery system for meeting those needs. As noted in chapter 4, they are encouraging rural hospitals to work with one another and with other rural health providers. These projects are also bringing together the central elements of the rural community—business, education, religion, local government, and the local hospital—to make these decisions jointly.

The response of these communities has been particularly encouraging. Such local efforts can ensure the most appropriate use of scarce resources.

The Federal Government can play a vital role in nurturing these local initiatives in two important ways. First, most rural communities lack the necessary base of information that will enable them to rationally assess their options. The Federal Government can function as an honest broker in developing and disseminating such information.

This requires the development of a solid and credible health services research base that can assist rural communities to intelligently plan their strategies for hospital survival. Research needs to address those issues of vital importance to rural hospitals—such as questions of quality assurance and enhancement, the effectiveness of different diversification strategies and so forth—and the findings must be promptly disseminated to rural communities. If fully funded, the rural health services research agenda developed for the National Center for Health Services Research and outlined in chapter 15 of this report will do just that.

Second, the Federal Government needs to be more responsive to supporting innovative health care delivery approaches, such as Montana's Medical Assistance Facility and other innovations that might be developed. All too often, rural communities find the Federal Government indifferent or hostile to their need to develop unique approaches to health care service delivery. That will require additional funding for and flexibility by HCFA's Office of Research and Demonstrations.

The Congress should give careful consideration to the following long-term strategies.

Recommendations:

Provide full funding of $10 million for the rural health services research agenda outlined in chapter 15 of this report.

Provide statutory authority and funding for a clearinghouse for the dissemination of rural health services research under the auspices of the Office of Rural Health Policy.

A first priority should be to gather and disseminate evaluations of the innovative demonstration projects now underway, such as the foundation supported efforts outlined in chapter 4. The Office of Rural Health Policy has taken the first steps toward establishment of such a clearinghouse but statutory authority is essential to assure that the needed funding for this project will be available.

Funding for HCFA's Office of Research and Demonstrations needs to be reassessed to assure that they have the necessary funds to support innovative approaches to rural health care delivery.

Part II—Rural Health Care Professionals

CHAPTER 6: INTRODUCTION

Many rural advocates find the current attention to the plight of rural hospitals a mixed blessing. On the one hand, they welcome the attention of public policymakers to any aspect of the rural health care crisis. As Part I of this report has outlined, the plight of rural hospitals is particularly compelling and deserving of immediate attention. At the same time, there is concern that the current focus on the problems of rural hospitals may lead policymakers to ignore other aspects of the rural health care crisis, such as the very serious problems of attracting and retaining health care personnel and issues related to developing and maintaining a primary care infrastructure in these communities.

Many rural communities do not enjoy the luxury of a local hospital and, if present trends continue, even fewer rural communities will have a local hospital in the future. For these communities, the health care delivery system often centers around a rural community health center, rural health clinic, emergency medical network, or the local physician's office. More isolated communities may rely entirely upon the services of a mid-level health care professional, such as a nurse practitioner or physician assistant, or the local nurse or pharmacist.

Therefore, Part II of this report will focus on issues related to different types of rural health care personnel. In reviewing the chapters which follow, the reader should keep in mind that numbers of health care providers and ratios of providers to population provide only limited insight into the problems faced by rural residents in securing health care.[56]

These numbers cannot be appreciated without understanding the implications of the technological explosion that has affected medicine and health care delivery in the last few decades and the growing specialization by every type of health care professional that has followed in its wake. The discussion in Part I noted that the technological revolution in medicine served to concentrate "high-tech" tertiary care services in urban hospitals which could afford the technology and had the requisite patient volume to assure that it could be used cost-effectively. The ramifications of this development were significant in other ways. Even in rural areas, it shifted the focus of services and the delivery of health care from primary care sites, such as the local health center, clinic, or physician's office, to the hospital.

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[56] The discussion which follows draws on the analysis by Jeffrey Bauer in *An Overview of Health Care in Rural America: Problems, Promise and Policy Perspectives,* draft of a report prepared for The Public Policy Institute of the American Association of Retired Persons.

The growing complexity in medicine has had important implications for the delivery of health care in rural America. For example, it was not that long ago that securing the access of a general practitioner assured a rural community of full service health care. Today, as general practitioners retire, they are being replaced by family practitioners, whose training is far superior. At the same time, technological change and the growth of specialization mean that fewer family practitioners attempt surgical procedures and, for those who do, their repertoire of procedures is increasingly limited. Such specialization may well improve the quality of care afforded surgical patients; however, the changes in the scope of services provided by primary care physicians also suggests the danger in simplistic comparisons of historic and present primary care physician-to-population ratios in rural areas.

Specialization has become the norm for other types of health care personnel as well. Mid-level professionals such as nurse practitioners, are increasingly developing areas of specialization such as pediatrics. Similarly, there has been a proliferation in the number of occupations and specialities that are encompassed by the term "allied health professional."

At the same time, it is important to acknowledge several encouraging developments which have important implications for rural health care delivery. The first has been the gradual loosening of strictures governing the scope of practice of various health care professionals. These developments are reflected in Supreme Court antitrust decisions affecting the professions, the growing ability of nurse practitioners to function independently of a physician, and the current controversy in several States over the right of pharmacists to prescribe as well as dispense medications.

There have also been tremendous changes in the organization of health care delivery in rural areas: the replacement of solo practice by group practices, the growth of rural medical centers supporting a series of satellite clinics and increasing numbers of networks among hospitals and among clinics.

Driven by changes in reimbursement and technological change, the scope of services available to rural residents in their home counties is also beginning to increase. Developments, such as home dialysis, mobile diagnostic and treatment equipment (such as CT scanners or lithotripters), freestanding surgical centers and office-based lasers, have facilitated the movement of surgery and other medical procedures out of the hospital and into primary care settings or the patient's home. Other developments, such as EKG telephone networks are increasingly enabling isolated rural hospitals and practitioners to expand their services.

Taken together, these three developments have enabled increasing numbers of specialists to move into rural areas. In addition, group practices may provide the necessary critical mass of patients to enable these physicians to expand the array of technological procedures that were only available in larger rural communities in the past.

CHAPTER 7: RECRUITING HEALTH CARE PROFESSIONALS: AN OVERVIEW

The difficulties faced by rural communities in their efforts to recruit and retain physicians and other health professionals have been well documented by public and private commissions.[57] The frustration for these communities is that many of the impediments they face in recruiting and retaining health care professionals are simply outside of their control. As a result, it is not unusual for the local government, business community, and hospital to offer physicians willing to relocate financial bonuses and guaranteed annual earnings for 1 or more years until he or she can develop a financially viable practice. Unfortunately, even aggressive recruitment tactics do not always work due to geographic isolation, size, or unfavorable circumstances and the community remains dependent upon Federal or State programs to place a physician in or near their community.

Physicians willing to consider rural practice often find it difficult to develop an economically successful practice in rural settings. As a result of lower population density, lower rates or reimbursement by insurers (including Medicare) and the fact that fewer rural residents have insurance coverage, these physicians face the prospect of working longer hours simply to maintain the necessary volume of paying patients for a self-sufficient practice. In addition, services which urban physicians take for granted—clinical laboratories or diagnostic equipment—may not be readily available, forcing rural physicians to make greater investments in the acquisition and maintenance of expensive equipment.

There are professional concerns as well. Physicians fear that rural practice may leave them professionally isolated, unable to secure a local consultation on a difficult case, unable to keep abreast of current developments in the field, and unable to find other physicians to handle their patients while they attend professional conferences or take vacations. Combined with the higher number of patient visits necessary to maintain an economically viable practice, the prospect of professional "burnout" remains a serious concern.

Family, social, and cultural opportunities provide another set of impediments. The growth of dual career families is particularly evident among physicians. This development has increased the difficulty of rural community recruitment even among family practice physicians, who have generally been willing to establish rural practices. There is simply a keen awareness that rural communities

[57] For example, President Truman's Commission on the Health Needs of the Nation "Building America's Health", the 1966 National Commission on Community Health Services "Health Is A Community Affair", President Johnson's National Advisory Commission on Rural Poverty "The People Left Behind", and the 1970 Carnegie Commission report "Higher Education and American's Health".

often afford fewer employment opportunities for a physician's spouse and fewer cultural and educational opportunities for the entire family.

Midlevel health professionals—nurse practitioners, midwives, and physician assistants—confront a similar but not quite identical set of problems: professional isolation, a lack of opportunity for professional growth, legal barriers to the establishment of midlevel practices, problems of community acceptance, and marginal financial viability.[58] State licensing restrictions often limit the ability of these professionals to practice independent of a physician; many States still require practice under the same roof as a physician. Even when independent practice is possible, midlevel health professionals often remain dependent upon the cooperation of nearby physicians for consultations, referral arrangements, and backup. Given their lower relative salaries, mid-level and allied health care professionals are often limited in their choice of communities by an even more pragmatic consideration, the need for couples to maintain two incomes, thereby limiting their choices to those areas with sufficient employment prospects for both spouses.

Recent Trends

While increasing numbers of physicians are moving into nonmetropolitan counties, those small, rural counties most in need (with populations under 10,000) have benefitted the least from these changes. It appears that much of the increase in rural physician supply during the last decade has been concentrated in the larger nonmetropolitan counties, which seldom face significant physician recruitment problems. As a result, many communities within these small, rural counties have been identified as health manpower shortage areas and remain dependent upon physicians assigned to them by Federal and State programs.

The outlook for small rural counties threatens to get much worse before there is any chance of improvement. Consider the following developments:

- The financial viability of rural physician practices is being threatened by the growing numbers of rural hospital closures, uninsured, under-insured and homeless patients noted in Part I of this report. The current high level of rural resident migration to urban areas and the drought of 1988 can only add to the problems faced by rural physicians.
- A 1988 survey of rural physicians by Dr. David Kindig of the University of Wisconsin found that as many as 25 percent of rural physicians were considering retirement or relocation within the next 5 years.[59]
- Rural underserved areas now dependent upon the services of a National Health Service Corps (NHSC) physician will find it increasingly difficult to secure a replacement when their current physician has met his/her commitment. Following implementation of the Reagan Administration's health personnel

[58] Rosenblatt, R. and I. Moscovice. *Rural Health Care.* (New York: John Wiley & Sons, 1982), p. 125.

[59] Pinkney, Deborah. "Number of Rural MD's could drop 25 percent by 1990's", *AMA News,* June 3, 1988, p. 3, 34, 36.

proposals, the number of scholarship recipients available for service in medically underserved areas dropped from 1,400 in 1985 to an estimated 222 in 1989. No funding will be available for new scholarships in fiscal year 1989. Unless voluntary recruitment is unexpectedly successful, fewer rural areas will have access to an NHSC physician in the years ahead.

- The Nation's 357 rural community health centers and 117 migrant health centers are an important source of primary care for the non-poor as well as the poor in rural communities. In many communities, these centers are the only source of health care provided on the principle of ability to pay. For this integral part of the health care "safety net", Federal funding has not kept pace with inflation. In recent years the centers have experienced a dramatic increase in both the number of uninsured rural patients the centers are treating and their malpractice premiums. Many centers are also dependent upon NHSC doctors and will soon be scrambling for replacement MD's.
- Rising malpractice premiums have also resulted in an increasing number of rural counties losing all obstetrical services. [Florida is a dramatic example where obstetrical care is no longer offered in a majority of the State's rural counties.] While many obstetricians have limited the number of births they will handle, the problem in rural communities appears to be related to the loss of obstetrical services by family and general practitioners, who have provided the bulk of uncomplicated rural deliveries in the past. Since these physicians averaged few deliveries a year, high malpractice premiums have left them no option but to abandon obstetrical care.
- While few statistics are available regarding the impact of the nurse shortage in rural areas, more than nine percent of rural hospitals (and 18 percent of urban hospitals) were forced to close beds in 1987 because of the shortage of nurses to staff them. In addition, more isolated rural hospitals, community health centers, and rural health clinics have always faced significant recruitment problems because of their inability to offer competitive salaries, benefit packages or career ladders. As urban hospitals offer increasingly higher bonuses to recruit nurses, rural hospitals may find it increasingly difficult to compete for new nursing graduates.
- There has been increased demand in urban areas for family practitioners as a result of the growth of alternative delivery systems, such as HMO's and PPO's.

CHAPTER 8: A QUARTER CENTURY OF FEDERAL POLICY

Precisely a quarter century ago, the Federal Government provided its first direct support of medical education with the enactment of the Health Professions Educational Assistance Act of 1963. While the central focus of Federal policy has been on physician supply, Federal support has also encompassed a host of mid-level, nursing and allied health providers. Before turning to issues of the supply of rural physicians, nurses and other health providers, it is useful to briefly review the three very different emphases that have characterized Federal support for the health professions.

The first phase in Federal health manpower policy, beginning in 1963 and extending for more than a decade, was dominated by efforts to increase the total supply of physicians and, to a lesser extent, other health professionals in an effort to eliminate shortages. During this period, the Congress adopted a series of physician, nurse, and allied health training measures that increased the availability of student loans and scholarships and gradually offered medical, nursing, and other health professions schools financial incentives to increase enrollment.[60]

While these efforts were moderately successful, many schools resisted any dramatic expansion of their class size without assurances of stable Federal support. Congress provided such assurances in 1971 with the adoption of the Comprehensive Health Manpower Training Act (Public Law 92-157), which established a comprehensive and expensive annual subsidy program for nearly every type of physician, dentist, nurse, public health and allied health education school. Because these annual subsidies were closely tied to increases in enrollment, this form of institutional support became known as "capitation."

A second phase of Federal health manpower policy emerged in the early seventies. There was a growing recognition that the real issue was specialty and geographic maldistribution and not an overall shortage of physicians. Moreover, the policy of increasing physician supply did not appear to have the desired effect: few physicians were moving into rural or inner-city shortage areas, and decreasing numbers of students were entering primary care specialties. While it was not an explicit goal of Federal manpower policy, policymakers were surprised to find that increasing physician supply did not result in a reduction in physician charges.

As a result, Congress began to shift Federal strategy in two ways. First, there was an effort to develop a series of more targeted

[60] These measures include: Public Law 88-129, the Health Professions Educational Assistance Act of 1963; Public Law 88-654, Amendments to the Public Health Service Act of 1964; Public Law 89-290, the Health Professions Educational Assistance Act of 1965; Public Law 89-709, the Veterinary Medical Education Act of 1966; Public Law 89-751, the Partnership for Health Amendments of 1967; Public Law 90-490, the Health Manpower Act of 1968; Public Law 92-157, the Comprehensive Health Manpower Training Act.

initiatives to assure that physicians and other health professionals located their practices in underserved rural and inner-city areas. The chart at the end of this chapter provides a brief (but not comprehensive) overview of the major programs, which will be discussed in more detail in Part III of this report.

Second, with the passage of the Health Professions Educational Assistance Act of 1976 (Public Law 94-484), the Congress completely restructured the basis of Federal support, eliminating the emphasis on enrollment increases and instead focusing on the percentage of students entering primary care fields. This legislation greatly expanded the National Health Service Corps in an effort to improve access to physician services in rural and shortage areas. Because Federal efforts were no longer designed to encourage increases in physician supply, this legislation also restricted the opportunities for graduates of foreign medical schools to enter training programs or practice in this country. Despite this abrupt shift in Federal policy in 1976, record numbers of graduates continued to enter practice for the next 10 years due to the large numbers of students already in the educational "pipeline."

The beginning of the third and current phase in health manpower policy corresponds with the inauguration of the Reagan Administration and is characterized by an emphasis on market forces—reliance upon the growth in the total supply of physicians—to resolve the shortages in rural areas and inner cities. While a market emphasis matched the Administration's ideological leanings, it also found support in two major studies that were issued at that time.

The first was the Graduate Medical Education National Advisory Committee (GMENAC) report, issued in 1980, which predicted a surplus of 70,000 physicians by 1990 and 145,000 by the year 2000. The second study was the RAND Corporation study of "physician diffusion," which examined increases in the supply of physicians to communities with populations greater than 2,500. Their study suggested that diffusion was taking place and, although the authors carefully qualified their conclusions, the study was widely interpreted as proof that market forces would solve the problems of rural communities in attracting physicians.

These studies provided a foundation for the Reagan Administration's repeated requests to Congress to eliminate virtually all Federal funding for health professions training. Its most controversial proposal was the effort to phase out federally salaried National Health Service Corps physicians by abolishing the Corps' scholarship program. While Congress initially resisted the Administration, by the mid-1980's, the Congress acquiesced in the elimination of all but a handful of Corps scholarships per year. With the passage of the Fiscal Year 1989 appropriations bill in September 1988, the scholarship program was eliminated. Funds were appropriated, however, for a loan repayment program to attract physicians to the Corps at the end of their training, in contrast to the scholarship program which required a commitment as physicians entered their training.

While the Reagan Administration's efforts to eliminate all Federal training funds were generally unsuccessful, ongoing support for undergraduate medical education (the capitation program) was also eliminated. Most of the remaining initiatives of the 1970's have

been left in place, although these programs have been deemphasized and have experienced level or declining funding.

The Congress may find this anniversary year an opportune time to begin to re-evaluate a quarter century of Federal health manpower policy. As the next chapter will discuss, there is growing concern that physician diffusion has not brought physicians to small, rural communities and that there remains a large number of physician shortage areas in rural America. The situation may, in fact, grow worse. Many of these communities are dependent upon National Health Service Corps physicians and the pipeline of obligated physicians is rapidly declining. In addition, as noted in chapter 7, as many as 25 percent of rural physicians may be retiring or leaving their communities in the next 5 years.

The Senate Rural Health Caucus and a House Rural Health Coalition have expressed a concern regarding Federal policy in this area and will be pressing for a review of current strategy. Before setting in place a new array of Federal programs, it is important that Congress first evaluate the strengths and weaknesses of these early initiatives in an effort to build a more effective strategy for the future.

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PROMINENT FEDERAL RURAL HEALTH INITIATIVES OF THE SEVENTIES

1. *The National Health Service Corps.*—A program designed to place volunteers (1970) and subsequently scholarship recipients (added in 1972) in critical manpower shortage areas; in the 1976 amendments the role of the Corps was greatly expanded from the development of self-sufficient rural practices to include the assured staffing of other federal initiatives such as the Community and Migrant Health Centers programs.
2. *Community and Migrant Health Centers (C/MHC's).*—CHC's, federally sponsored primary health care clinics offering services on a sliding fee scale basis, were initially established in the sixties. Currently, 60 percent of the approximately 600 C/MHC clinics are located in rural areas (355 clinics).
3. *Area Health Education Centers (AHEC's).*—Federal assistance is provided to medical and osteopathic schools to decentralize medical training by requiring that at least 10 percent of undergraduate clinical training be provided in shortage areas.
4. *Rural Health Service Clinic Act.*—Expanded Medicare (and to a lesser extent Medicaid) reimbursement to certified rural health clinics for the services of physician extenders (nurse practitioners and physician assistants). This 1976 legislation eliminated the prior requirements that a physician be present and that Medicare pay the physician.
5. *Physician Assistant Training.*—A large percentage of physician assistants enter practice in counties with fewer than 10,000 (26 percent) and another 20 percent practice in small communities (10,000 to 50,000 residents).
6. *Family Practice Residencies.*—Federal support is provided to hospitals and medical and osteopathic schools to provide family practice residencies; family practitioners and general practi-

tioners, together, are 10 times more likely to practice in rural counties (without a town of 5,000) than were other specialties.

7. *Nurse Practitioners in Underserved Areas.*—Established in 1976, this program offers educational opportunities for nurses who reside in underserved areas to become nurse practitioners and return to their homes in shortage areas.

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CHAPTER 9: RURAL PHYSICIAN SUPPLY

A Brief Historical Review

While the number of rural physicians has been growing since 1970, it is important to recognize that this represents a departure from the historical pattern of nearly a century of decline.[61] The movement of rural physicians to urban areas, which found its origins in the rise of large cities in the last half of the nineteenth century, increased dramatically with the consolidation of medical schools in urban areas in the early twentieth century and became firmly entrenched with the rise of high technology medicine in recent years.

The impact of the publication in 1910 of the Carnegie Commission's now-famous "Flexner Report" is particularly striking. The report proposed standardization and consolidation of the Nation's medical schools in an effort to improve their quality. Within two short decades, the Flexner report was credited with influencing the closure of half of the Nation's medical schools (from 148 to 76), virtually eliminating rural medical education.

The Great Depression and World War II only accelerated the growing imbalance between urban and rural physician supply. With a mere 18.6 percent of physicians practicing in rural areas by 1940, geographical maldistribution of physicians became a major public policy concern. However, Congress delayed formulation of a concerted health manpower policy until the early 1960's.

Changes in Physician Supply Since 1960

Because most of the health manpower legislation of the 1960's was adopted in the latter part of that decade, there was little opportunity for this legislation to actually affect physician supply by 1970. It is very likely that many of the changes in rural physician supply between 1960–70 were the result of trends already underway. Not surprisingly, the results were mixed. On the one hand, overall physician supply statistics indicate that the total supply of rural [62] physicians did increase somewhat (11 percent) [Table 23]. While this growth was marginal at best when compared to the large increases taking place in urban physician supply (40 percent), it was nonetheless a positive sign.

It became clear, however, that this increase in the number of rural physicians was not well distributed. In fact, more than half of the counties in 25 States ended the decade with fewer physicians

[61] This overview is drawn from an excellent review of the period found in chapter 2 of Rosenblatt and Moscovice, *op. cit.*, footnote 58.

[62] While the text will use the term "rural," it is important to remember that all data sources report information in terms of metropolitan and nonmetropolitan counties. The terms rural and urban are employed solely for convenience. See footnote 1.

per capita than they had in 1960; moreover, policymakers were concerned that increasing numbers of rural practitioners would soon retire from practice (the average age of rural practitioners was 55 in 1970).[63]

Fortunately for rural America, the number of rural physicians continued to increase throughout the 1970's; especially noteworthy was the tremendous increase in the number of physicians under age 35. By 1978, it was apparent that the 8-year increase in the number of rural physicians was the largest in history (35 percent of all physicians). This trend was all the more striking because, for the first time, the increase in the percentage of urban and rural physicians was identical (Table 23). Nevertheless, given the tremendous imbalance in the geographical distribution of physicians (the ratio of physicians to population in urban areas is 2.3 times the rural ratio), equal rates of increase did nothing to narrow this urban-rural gap.

One of the difficulties in assessing the meager data that are available is that comparisons of urban and rural increases in the numbers of physicians are very sensitive to the choice of physician category (such as only looking at physicians actively engaged in patient care or including/excluding federally salaried physicians) and the time frame of the analysis. After examining data from 1970–86 on physicians actively engaged in patient care, the Council on Graduate Medical Education recently concluded that the growth in urban areas (79 percent) was continuing to outstrip rural gains (47 percent) by a sizable margin. The major conclusions of the Council include:

- There is a geographic maldistribution of physicians with shortages in many rural areas;
- The maldistribution is not as severe as in earlier years due to increase in the overall supply of physicians; and
- The maldistribution problem nevertheless remains serious and complex, requiring solutions more broadly based than those focusing solely on medical education.

Will the Marketplace Solve the Rural Physician Shortage?

As noted earlier, a series of studies released by researchers at RAND around 1980 found that increasing numbers of board-certified physicians were actually setting up practice in rural areas. Choosing just one of the specialties they examined, the number of board certified internists, demonstrates the type of results they found (Table 24). This table outlines the percentage of communities that had at least one board-certified physician (internists in this case) in 1960 and then in 1977.[64] The data demonstrates a tremendous increase in the proportion of small to moderate size communities with board-certified internists.

Although the RAND researchers were careful to qualify their results and the limitations of their data, these reports were often

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[63] Report of the Senate Labor and Public Welfare Committee accompanying S. 3239, Health Professions Educational Assistance Act of 1976, Senate Report 94-887, p. 195.

[64] Schwartz, W., J. Newhouse, and A. Williams. "Do Board Certified Specialists Diffuse: Facts, Theory and Implications," *The New England Journal of Medicine*, October 30, 1980, pp. 1032-1038.

heralded as empirical support by the Reagan Administration for their efforts to dramatically reduce and restructure health professions funding. While the study did prove that board-certified physicians were moving to smaller cities, this data was often misinterpreted to mean that rural citizens had better access to health care.

An analysis of this data by HHS staff demonstrates the importance of the RAND researchers' qualifications regarding the data.[65] The example the HHS staff developed was a hypothetical rural community with two general practitioners, one internist, one obstetrician, and one general surgeon. If the two general practitioners retired and a board-certified internist moved into the community, the RAND study would add this community to its "successful" list of communities which had attracted at least one board-certified physician. In fact, for the rural residents of this community, the total number of physicians in the community had actually been reduced by one physician. Thus, data on the number of board-certified physicians moving into rural communities have only limited value unless it is weighed against losses of existing community physicians through death, retirement, or relocation.

The most current analysis of rural physician supply was recently prepared by Professor David Kindig of the University of Wisconsin under contract with the National Rural Health Association.[66] Kindig's focus was on small rural counties, those with fewer than 10,000 residents. By contrast, RAND had focused on towns (rather than counties) with populations greater than 2,500. It is also important to note that Kindig looked at Federal and non-Federal physicians, who were actively engaged in direct patient care, while RAND focused only on non-Federal physicians.

Although Kindig's data confirm RAND's general thesis that increasing numbers of physicians are moving into rural counties, his findings (Table 25) illustrate that the marketplace has not provided an adequate level of physicians to the smaller, more isolated rural counties and is unlikely to do so.

First, physician availability in counties with fewer than 10,000 residents in 1985 (53 physicians per 100,000 population) is approximately one-third of the U.S. average (163.3 physicians per 100,000 population). Comparing counties with fewer than 10,000 residents to all nonmetropolitan counties, Kindig found that small, rural counties had only one-half the physician availability of larger rural counties (91.8 physicians per 100,000 population).

Second, comparing rates of growth in physician supply from 1975 to 1985, Kindig found that physician supply increased 32.5 percent in the entire country, 47.8 percent in large rural counties, and 14.2 percent in small rural counties. Separating small rural counties into three different size groups, he found the following rates of increase in physician supply: 11.7 percent in counties with 5,000 to 10,000 residents, 26.9 percent in counties with 2,500 to 4,999 residents and a 13.7 percent increase in counties with fewer than 10,000 residents.

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[65] Bureau of Health Professions. *Diffusion and the Changing Geographic Distribution of Primary Care Physicians.* (Washington, DC: U.S. Department of Health and Human Services) November 1983.

[66] Kindig, D., and H. Movassaghi. "Is Physician Availability Adequate in Small Rural Counties in the United States?" Unpublished manuscript, November 1987.

Third, Kindig found that doctors of osteopathy (DO's) played an important role in providing care in these counties, averaging 15.3 percent of total physician supply (Table 24).

In summary, although physician supply in small rural counties has increased from 1975–85, those increases have been minimal (14.2 percent) compared with larger rural counties (47.8 percent) or the entire country (32.5 percent). As a result, rural counties with more than 10,000 residents now have physician to population ratios that are three times those of the smallest rural counties (with less than 2,500 residents)—a gap that has grown significantly over the last decade. Clearly, as Dr. Kindig concluded, Federal and State physician placement programs are still needed to assist these small rural counties.

These conclusions are buttressed by the most recent HHS data on health manpower shortage areas. The Health Professions Educational Assistance Act of 1976 directed the Department to develop and periodically update a list of the communities with the most severe physician shortages. The lists were designed to guide placements of National Health Service Corps physicians.

Greatly simplified, the Health Manpower Shortage Area (HMSA) designation can be based upon: (1) population to physician ratios in a geographic area that are greater than 3,500 to 1; (2) identification of specific population groups which may not be served by nearby medical providers; or (3) facilities with special problems in securing physician coverage (such as prisons which face chronic shortages of medical staff).[67]

As of March 31, 1988, HHS had designated a total of 1,931 primary care HMSA's, of which 1,292 HMSA's (73 percent of the total) were located in rural areas (Tables 26–32). The tables for dental and psychiatric manpower show that rural counties also account for 7 out of every 10 of these designated shortage areas as well. Tables for earlier years (not presented here) demonstrate that the number of rural manpower shortage areas has remained virtually unchanged during the 1980's, despite the continuing increase in the total number of rural physicians.[68]

Taken together, these data suggest the following conclusions. Market forces and past Federal policy have made significant progress in increasing the supply of physicians in larger rural communities. Existing policy is not successful in meeting the needs of smaller or more isolated rural communities. In view of the radical decline in the number of National Health Service Corps scholarship recipients, who are traditionally assigned to these small, more isolated communities, the problem only threatens to grow worse (Table 33).

At a minimum, Congress should review in more detail the physician needs of these smallest rural communities to determine whether they should be addressed by Federal health manpower policy. In addition, the data on larger rural communities should be examined more closely to determine whether there are specific pop-

[67] The full criteria were established by the Department in the *Federal Register*, November 17, 1980, pp. 75996–76010.

[68] The number of physicians needed to fill these shortage areas (referred to as the number of physicians necessary for designation of a HMSA) has declined, however.

ulation groups that remain underserved in communities which would normally be considered to have acceptable physician to population ratios. An in-depth analysis of rural HMSA's designated on the basis of population groups might provide important insights regarding this potential.

In conclusion, a major impediment to analysis in this area has been the failure of the Department of Health and Human Services to develop disaggregated data on the supply of health professionals in nonmetropolitan counties. The Congress may want to consider directing the Department to routinely develop such analyses as part of the currently mandated studies.

Recommendation:

Direct the Secretary of Health and Human Services to develop a specific rural health professions analysis for submission later this year. In addition, the Congress may want to amend the statutory language of Title VII of the Public Health Service Act, directing the Department to include in all future reports a specific rural analysis covering the categories of health professions for which such data is available.

CHAPTER 10: MID-LEVEL HEALTH PRACTITIONERS

There are four categories of health professionals that have played a crucial role in extending physician services in rural areas where routine access to physician services has not always been available. Three of these professional groups—physician assistants (PA's), nurse practitioners (NP's) and certified nurse midwives (CNM's)—are essential providers of primary and obstetrical care. The fourth group, certified registered nurse anesthetists (CRNA's), deliver the bulk of anesthesia services in rural hospitals where the services of anesthesiologists are often unavailable. As a result, CRNA's have enabled many rural hospitals to maintain both emergency and routine surgical services.

While there has been an apparent decline in the number of nurse practitioners locating in rural areas in recent years,[69] historically all four of these professional groups have been willing to locate in rural and underserved areas to a far greater extent than physicians. As a December 1986 Office of Technology Assessment (OTA) report noted, these professionals have also expanded access to care for minority populations which were underserved despite acceptable physician-to-population ratios.[70] For example, nurse practitioners expand access for children in school settings and the elderly in nursing homes and nurse midwives provide maternity care for underserved, low-income women and adolescents.

Physician Assistants

There is often a great deal of confusion regarding the distinctions between physician assistants (PA's) and nurse practitioners (NP's). The confusion stems in part from the fact that the functions of PA's and NP's are dependent upon the setting in which they work and, in some cases, there are few observable differences. In theory, however, and quite often in practice, there are significant differences. While nurse practitioners perform the full scope of nursing services as well as medical tasks, PA's are licensed to perform only medical tasks. Few PA's have nursing backgrounds and always work under the supervision of physicians while nurse practitioners often are able to secure more autonomy in the performance of their roles.

The background of PA's has changed over time. In the 1960's and early 1970's, students entering PA training programs were often white males with more than 7 years of experience in health care,

[69] While the reasons for the decline in nurse practitioners working in rural areas are not clear, the decline has paralleled the rise in urban managed care systems (HMO's and PPO's) which offer alternative employment opportunities and the rise in specialization by nurse practitioners.

[70] U.S. Congress, Office of Technology Assessment, *Nurse Practitioners, Physician Assistants, and Certified Nurse-Midwives: A Policy Analysis* (Health Technology Case Study 37), OTA-HCS-37 (Washington, DC: U.S. Government Printing Office, December 1986).

generally as a medical corpsman in the military. By the early 1980's, women constituted more than 40 percent of PA's and fewer students had military experience (Table 34).

Physician assistants are licensed to provide medical services under the supervision of a physician in 49 States and the District of Columbia. New Jersey permits PA's to practice only in Federal facilities. At least 18 States have granted PA's the authority to prescribe certain classes of drugs. PA training programs have generally been 2 years in length but a number of schools are adding a third year, expanding the number of baccalaureate degree programs. Masters of science degree programs have also begun to appear.

In 1987 there were nearly 20,000 PA's; 80 percent are clinically active and two-thirds work in primary care. Rural States have high physician assistant-to-population ratios (Table 35) and, of these four professional groups, PA's are most likely to locate in rural areas. In 1984, nearly 20 percent of PA's practiced in communities with a population of 10,000 or less and 4 out of 10 PA's were in communities under 50,000 (Table 36). Male PA's are more likely to practice in rural, medically underserved, satellite, or remote clinics than female PA's.

The Rural Health Clinic Act of 1977 expanded Medicare and, to a more limited extent, Medicaid reimbursement of PA's practicing in certified rural health clinic settings. Payment is determined on the basis of reasonable costs and is paid directly to the clinic (not the PA); the act eliminated the requirement for direct physician supervision. Similarly, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) provided for Medicare reimbursement of PA's in Health Maintenance Organizations (HMO's) settings without the direct personal supervision of a physician. The Omnibus Budget Reconciliation Act of 1986 (OBRA 86) further expanded the options for Medicare reimbursement of physician assistants working under the supervision of physicians in hospitals, nursing facilities and as assistants during surgery. The OBRA 86 provision provides for indirect reimbursement of PA's (payment is sent to the PA's employer and not to the PA) and was effective January 1, 1987. Approximately half of the State Medicaid programs exercise their option under Federal law to reimburse PA services.

The average PA salary in 1984 was $25,500.

Nurse Practitioners

Nurse practitioners are nurses who have completed advanced training through a certificate (minimum of 9 months of training) or masters degree program (requiring 1–2 years of full-time study). Seven out of 10 NP's currently in practice received their training through certificate programs but masters degree programs now comprise a majority of NP training programs.

The Department of Health and Human Services reports that 25,000–30,000 nurse practitioners have been trained, although OTA only identified 15,400 NP's employed in their field of training.

As noted above, nurse practitioners have a broad scope of practice, including both the full range of nursing services as well as medical tasks. While they nominally work under physician supervi-

sion, NP's enjoy considerable autonomy in some States and their relationship with physicians is more collegial than that of PA's. It is not unusual for a nurse practitioner to independently manage a patient who has not seen a physician but the management generally takes place under jointly established protocols with ongoing consultation and referral.

The OTA report notes that in 1977, 22 percent of NP's worked in rural areas and 23 percent in inner-city settings; however, by 1980 the proportion of NP's in rural areas had declined to 9.4 percent while 47.3 percent of NP's were practicing in inner-city areas. In both settings, more than half of their patients had annual incomes under $10,000. In part, this decline of rural NP's may reflect the diffusion of physicians into these communities, especially those counties with populations over 10,000, the trend toward increasing levels of specialization by NP's and increasingly rewarding opportunities for nurse practitioners in managed care systems as the authorizing agent for hospital admission.

The Rural Health Clinic Act of 1977 and the TEFRA HMO provisions (outlined under PA services) also apply to nurse practitioner services. Approximately half of the State Medicaid programs also cover NP services as well as PA services.

The median salary for NP's in 1983 was $23,500.

Certified Nurse Midwives

Certified nurse midwives (CNM's) are licensed registered nurses who have received advance training in midwifery. Training is similar to that of nurse practitioners: through certificate or masters degree programs. CNM's are trained to provide care for normal expectant mothers, referring abnormal, high-risk cases to physicians or managing them jointly.

Nurse midwives practice extensively in underserved areas, such as the rural South, Indian reservations, and inner cities. In 1977, approximately 10 percent of nurse midwives practiced in the smallest communities with populations under 10,000 according to OTA.

Much less information is available regarding nurse midwives than PA's or NP's, who have been studied more extensively. In response to a 1982 survey, slightly more than a third of nurse midwives reported working in hospitals, 14 percent in private practice and the remainder with public health agencies or prepaid group practices.

Medicare's policies governing nurse midwives are essentially the same as those governing PA's and NP's. The Rural Health Clinics Act does not count nurse midwives toward the requisite number of PA's and/or NP's required by a rural health clinic for certification but, once certified, nurse midwives are reimbursable. In addition, the Omnibus Reconciliation Act of 1980 (OBRA 80) required nurse midwife services to be a mandatory benefit under Medicaid and did not permit the States to require physician supervision as a condition of reimbursement. By 1986, all but four States and the District of Columbia were in compliance. In the Consolidated Budget Reconciliation Act of 1985 (COBRA), Congress directed that birthing centers operated by nurse midwives did not need to be administered by physicians to qualify for Medicaid reimbursement.

The average salary for nurse midwives in 1983 was $24,800.

Certified Registered Nurse Anesthetists (CRNA's)

Approximately 24,000 CRNA's provide anesthesia services to more than 50 percent of all patients undergoing surgical or medical treatment requiring an anesthetist. In rural areas, CRNA's provide 70 percent of anesthesia care.

Unlike nurse practitioners and physician assistants, the nurse anesthetist profession has existed for more than a century. Nurse anesthetists receive 24 to 36 months of full-time training. Applicants must hold a baccalureate degree in nursing or a related field, be currently licensed as a registered nurse, and have at least 1 year experience in critical care nursing.

While information was not available to the Committee regarding the distribution of CRNA's by size of community, the high proportion of rural anesthesia services provided by CRNA's suggests a strong concentration of CRNA personnel in smaller rural communities. A State-by-State breakdown of CRNA's is provided in Table 37.

The average salary of CRNA's in 1986 was $45,000-$50,000.

CHAPTER 11: THE NURSE SHORTAGE

There are three categories of nursing personnel: registered nurses (RN's), licensed practical/vocational nurses (LPN's) and nurses' aides. Formal educational programs exist to train RN's and LPN's and both groups must pass national licensure exams. Nurses' aides are not licensed and some receive on-the-job training while others become certified after class training.

In most States, there are three types of educational preparation: diploma, associate degree, or baccalaureate degree programs. Graduates of these programs currently take the same national licensure exam.

Until the early 1970's, the diploma programs, located in hospitals and lasting 3 year in length, were the most common. Since the early 1970's, associate degree programs (based in community colleges and lasting 2 to 2.5 years) have trained the largest number of nurses. The number of baccalaureate graduates has generally remained stable during the 1970's and 1980's. Leaders of many nursing organizations have promoted the 4 year baccalaureate program as the most appropriate training for the "professional" nurse. The combined graduate total from all three programs is at its highest level (Table 38).

LPN training programs are generally 12 months long but range from 9 to 18 months in length. More than half are located in adult vocational education programs; a third are located in community colleges. Both the number of LPN training programs and graduates have been falling in recent years (Table 39).

Registered nurses are generally known as "professional" nurses, with a greater scope of practice and higher average incomes ($23,565) than LPN's (Table 40). By contrast, LPN's are generally classified as "technical" nurses with a far more restricted range of functions and much lower salaries ($14,395) (Table 41).

The national distribution of RN's and LPN's by State are outlined in Tables 42 and 43. According to data prepared by the Department of Health and Human Services, 18 percent of all nurses are located in nonmetropolitan areas. In the Mountain States, 29 percent of nurses are located in rural areas, compared to 32 percent in the West North Central States. When the data are broken out by type of nurse, 19 percent of RN's and 32 percent of LPN's are located in rural areas. This distribution is reflected in the greater mix of LPN's and nurses aides employed in rural hospitals.

The current nurse shortage has dominated recent public policy discussions and will be the focus of this section. Unfortunately, little data are available describing the severity of the shortage in rural areas. Indeed, much of the analysis of the nurse shortage in general appears equally applicable to urban and rural environments. There are, of course, some unique aspects of the rural nurse shortage and they will be identified when applicable.

One final introductory point is worth noting. While nurse shortages have been a recurring phenomenon, they have generally been self-correcting and, to some extent, aspects of the current crisis may fit that pattern. What appears to be unique this time is that the current crisis has focused attention on long-term demographic and socioeconomic trends that may significantly reduce the supply of new nurses in the near future at the very time that there is a long-term increase in demand. As a result, the nurse shortage requires careful consideration by public policymakers.

Vacancy Rates

The most common measure of the need for nurses is the vacancy rates at institutions which employ nurses. However, such measures, because of their institutional bias, pay little attention to the need for nurses in primary care settings. Hospitals reported a budgeted RN vacancy rate of 11.3 percent in 1987, which translates into a need for an additional 122,000 full-time equivalent (FTE) RN positions. The reported vacancy rate has tripled since 1983 when the reported vacancy rate was 4.4 percent. In addition, the number of hospitals reporting no vacancies has continued to decline from 35 percent of hospitals (1985) to 27 percent (1987).

The average vacancy rates for LPN's was 6.2 percent in 1987, with 57 percent of hospitals reporting no vacancies. Vacancy rates for nurse aides/orderlies that same year was 3.9 percent, with 71 percent of hospitals reporting no vacancies.

While the impact of the nurse shortage has been more pronounced in urban areas, rural areas have been affected as well. Information presented to the HHS Secretary's Commission on Nursing notes that 18 percent of large urban hospitals and 9.5 percent of rural hospitals closed beds in 1987 because of the nurse shortage. At the same time, roughly comparable numbers of rural and urban hospital administrators reported that it was difficult or very difficult to recruit RN's for medical-surgical positions (Table 44).

In an April 1988 survey of its members, the Wisconsin Hospital Association discovered an overall vacancy rate (5.96 percent) that was half of the national level. But the RN vacancy rate in rural hospitals (7.85 percent was considerably higher than the urban rate (5.29 percent).

Nursing homes, which employ 8 percent of all nurses, report an 8 percent vacancy rate (6,500 RN's). These RN's are needed simply to meet the existing minimum staffing standards. With the passage of legislation requiring higher staffing levels by 1990 in Medicare and Medicaid certified nursing homes, an additional 6,200 RN's will be needed. Anecdotal evidence suggests a continuing chronic staffing problem in rural nursing homes.

One study conducted for the National Association for Home Care indicates that 56 percent of all home health agencies are experiencing difficulties in recruiting and retaining RN's. Data are not available on vacancy rates in ambulatory care settings (HMO, ambulatory surgical centers or clinics) but estimated RN employment has been increasing at 20 percent per year in these settings since 1984.

Increasing Utilization of RN's

Since 1981, hospitals have significantly changed their nursing utilization patterns (Tables 45 and 46). In 1986, RN's represented 65 percent of hospital nursing personnel, an increase of 9 percentage points since 1981. At the same time LPN's and auxiliary nursing personnel declined from 44 percent to 35 percent.

The intensity of RN utilization is up dramatically. In 1972, the typical staffing pattern was 50 RN's per 100 patients. By 1984, staffing reached 86 RN's per 100 patients and, by 1986, it was 96 RN's per 100 patients (Table 47).

In nursing homes, the increase in RN personnel has been much less dramatic. From 1981 to 1986, the RN per 100 patient ratio increased from 5.2 to 5.7 RN's. The utilization of LPN's in nursing homes has actually been more dramatic over this period: 6.5 to 8 LPN's per 100 patients.

The increased utilization of RN's by hospitals and the tremendous substitution of RN's for non-RN's has been attributed to a number of factors (Table 48):

- The widespread belief that increased RN utilization is a cost-effective substitution;
- Increasing patient acuity following introduction of the prospective payment system (i.e., only sicker patients remain as inpatients);
- Increasing utilization of intensive care units (which require four times the number of RN's per bed) as a result of shorter lengths of stay and increasing financial incentives for hospitals to operate such units;
- Increasing complexity of medical technology;
- Patient mix changes (AIDS epidemic, increasing proportion of elderly); and
- The need for increased flexibility that RN's afford in assigning duties.

Rural hospitals have generally maintained a broader mix of LPN's and nurses aides than their urban counterparts. This reflects both the mix of nursing personnel living in rural areas as well as the fact that many rural hospitals simply cannot afford to offer competitive salaries.

Economics

Despite the fact that the nurse shortage has been growing for several years, hospitals have been slow to increase nurse salaries. The mean average hourly compensation for nurses rose only 4 percent between 1985 and 1987 ($12.17 to $12.70/hour). Anecdotal evidence suggests that while hospitals significantly increased their recruitment budgets during these 3 years, these funds were targeted toward one-time bonuses, advertising, or employment fairs while few hospitals increased basic RN salaries.

As a result, the average maximum salary was only $7,000 higher than the average starting salary. It has not been unusual to find nurses with 15 years experience earning only $5,000 more than the average least-experienced nurse.

This pattern may be changing, however. In September 1988, the Hospital Compensation Service, a Hawthorne, NJ-based consulting firm, released a study of 680 hospitals nationwide, which found that the median RN salary rose 9.8 percent in 1988, double the average of the last 2 years.[71]

Supply

Currently, there are 2 million licensed RN's (35 percent more than 1977) and 1.6 million are currently employed in nursing, the largest number of RN's in history. While the nurse population has been continuously increasing over the last two decades, there have been recurrent shortages in hospitals.

Not surprisingly, there appears to be a relationship between hospital nurse vacancy rates and nurses' relative incomes as reflected in Table 49. While nurses may leave hospital jobs as a result of low incomes, they clearly do not leave nursing. The labor force participation of RN's has increased from 72.7 percent in 1977 to 79.7 percent in 1984; this is one of the highest participation rates of any professional group.

The future supply of nurses is less bright. There has been a significant decline in enrollment in undergraduate programs in nursing (29 percent since 1983) reflecting the shifting demographic patterns (fewer high school graduates), enhanced economic opportunities elsewhere and growing concerns regarding the lack of professional respect accorded nurses in a hospital setting. For a woman with an interest in clinical work, medicine often is a far more logical choice than nursing, where salaries on average are only 17 percent of a physician's pay (Table 50).

Conclusion

The magnitude of the current nurse shortage is difficult to assess. For example, budgeted hospital vacancy rates do not always reflect a job unfilled. To the extent that a hospital simply refuses to increase its pay scale, a nurse could very well leave a hospital, go to work for a temporary nurse staffing agency and return to work at the same hospital at a higher wage while the hospital officially carries a vacancy. Similarly, budgeted vacancies are often used as an administrative tool by nursing administrators to retain discretionary funds for staff development.

Nonetheless, this does not detract from the fact that a shortage does indeed exist, that the future supply of nursing graduates will be decreasing (reflecting demographics and alternative job opportunities), that demand is likely to remain high and that there is not a large supply of inactive nurses waiting in the wings (in light of the high labor force participation of nurses.)

There is good reason for caution in formulating a Federal response, however. Until 1988, there was little evidence that hospitals were responding to the nurse shortage with all of the tools at their disposal. These include increased wages, improved working conditions, increased career mobility, and simply increased respect.

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[71] "Median R.N. salary rose 9.4 percent in 1988, report shows," *Modern Healthcare*, September 16, 1988, p. 40.

Such strategies are important in the short-term and may relieve much of the current problem.

However, we are also on the verge of a longer term shortage, given the current (higher pay) career alternatives for women and the declining number of high school graduates. Without efforts to increase the financial attractiveness of the profession in the long-term, Federal efforts to subsidize nursing education may accomplish little at the margin. Unless graduating high school seniors can see nursing as financially as well as professionally rewarding (issues over which hospitals have direct control), it is unlikely that sufficient students can be attracted.

While recent increases in nurse salaries are an appropriate and welcome response by the hospital industry to the nurse shortage, these developments will undoubtedly exacerbate the shortages in rural areas. Because there are few unemployed nurses in their local communities, rural hospitals increasingly find themselves competing in the same regional and statewide labor markets for nurses with larger, more prosperous institutions. Rural hospitals have seldom been able to offer competitive salaries and it is unlikely that they can keep pace with the salary increases reported for the first half of 1988.

One approach to this problem would be to develop a targeted approach for increasing the local supply of nurses. Loans and/or scholarships could be provided in communities with perennial nurse shortages to residents willing to pursue a career (or a second career) in nursing. While the number of potential applicants may not be large, those residents who pursued this option would have a high probability of practicing in their community. In the past the Federal Government supported funding for nurses living in manpower shortage areas to return to school to become a nurse practitioner and there is no reason why this approach could not be adapted to basic nurse training.

Recommendations:

Development of a pilot program to support rural nurse training. Funds should be targeted to rural community residents from nurse shortage areas seeking financial support for a second career in nursing. In return, there should be partial loan repayment for each year of practice in a rural nurse shortage areas. The National Health Service Corp, which has the statutory authority to support nurse training, may be an appropriate program in which to house and test this pilot program.

Develop linkages between schools of nursing and local community colleges to expand the options for rural residents to complete at least a portion of their nurse training in rural communities.

CHAPTER 12: ALLIED HEALTH

Nearly a decade ago, the Congress directed the Public Health Service to develop a report on what was rapidly becoming known as the allied health professions. Then, as now, there was no consensus regarding the appropriate professions to classify under the rubric of allied health. At that time, the Public Health Service identified at least 100 occupations and specialties that could be considered allied health professions under various definitions.[72]

As a result, estimates of the number of allied health professionals are often provided in ranges. Current estimates range from 1.33 million allied health professionals (employing a somewhat restrictive definition developed by the Department of Health and Human Services) to estimates over 3 million (employing a much broader definition of the American Society of Allied Health Professionals in its written testimony submitted to the Committee). Table 51 from the Secretary's Sixth Biennial Report on the Health Professions provides a useful overview of the growth of allied health personnel since 1970.

Allied health professionals, however they are defined, constitute the largest segment of the health care workforce and have been one of the fastest growing segments of the entire labor force. The allied health professionals have evolved as a result of the delegation of work that once was the responsibility of other health care professionals as well as the evolution of health care technology, such as heart/lung machines, and the need for new categories of skilled personnel to assist in the operation of that technology.

The Institute of Medicine Report on Allied Health Personnel

In the Health Professions Training Act of 1985 (Public Law 99-129), Congress directed HHS to contract with the Institute of Medicine (IOM) for a new examination of the allied health professions. That report is expected to be released by the National Academy Press in the fall of 1988 but a prepublication print was made available to the Senate Aging Committee.

The report concludes that there is little benefit to be gained from developing a rigid definition of the professions that should be encompassed by the term "allied health" and recommends that the field be permitted to further evolve before definitional questions are addressed. Because many of the distinct allied health providers are actually subspecialties of more traditional allied health fields, the IOM examined 10 well-established and well-recognized categories of allied health professionals in their report. The categories of health personnel they chose to examine closely parallel the catego-

[72] U.S. Department of Health, Education and Welfare. *A Report on Allied Health Personnel.* (Washington, DC: U.S. Government Printing Office, 1979.)

rization employed by the Department of Health and Human Services in the Secretary's Sixth Report on the Health Professions. Both reports identify nine common categories of allied health professionals: clinical laboratory personnel, physical therapists, occupational therapists, respiratory therapists, medical records personnel, dietetics personnel, radiologic personnel, speech-language-hearing personnel, and dental personnel. The IOM study also includes emergency medical technicians and identifies emerging professions, such as perfusion and cardiovascular technologists, as candidates for inclusion in the allied health category.

The IOM report identified four areas of current and potential shortage: physical therapy, occupational therapy, radiologic technology, and medical records services. In addition, the report notes the instability of forces affecting both the supply and demand for clinical laboratory technology and dental hygiene. Their report also stresses a theme that has been echoed throughout this report: the need for better data on all aspects of health care personnel, their practice locations, and the forces of change that may affect both their supply and demand. The recommendation contained on the final page of chapter 9 to develop an assessment of health professionals practicing in rural areas is clearly intended to cover allied health as well.

Allied Health Professionals in Rural Areas

Table 52 from the IOM report provides some insights into the geographic distribution of allied health professionals in rural areas but, as the IOM report makes clear, the available data base is too limited to develop any sweeping generalizations. Anecdotal evidence from rural hospitals, nursing homes, and home health agencies consistently suggest that the major focus has been on the shortage of physical therapists in rural areas and, somewhat more selectively, shortages of occupational therapists.

While most rural communities cannot support the more highly specialized groups of allied health professionals, the trend toward increasing professional autonomy for the more established allied health professions should be of great assistance to rural communities. To assure an adequate supply of all types of allied health care personnel to rural areas, the IOM report notes a series of options: increased training of students from rural areas (who are more likely to return to practice in rural areas), increased numbers of rural clinical training sites (with increased use of telecommunications technology and circuit-riding faculty), cooperative hiring of staff by several hospitals or agencies (employer-initiated job-sharing rather than an allied health professional piecing together part-time jobs) and the development of multi-competent personnel.

The development of multi-competency personnel is an approach that would appear to have great promise for rural areas, and it is a concept that has great appeal to policymakers. A small number of programs currently exist which offer dual certification (such as Southern Illinois University at Carbondale or the University of Alabama at Birmingham), but for reasons that are not completely

clear, such programs have not been widely adopted. This is an area that deserves further exploration.

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BRIEF PROFILES OF NINE ALLIED HEALTH PROFESSIONS

Clinical Lab Technologists and Technicians.—Clinical lab work varies from the routine automated tests that require little training to complex and delicate assessments that require great precision and skill.

The Bureau of Labor Statistics (BLS) estimated that there were approximately 239,400 clinical lab technologists and technicians in 1986 and BLS estimates a 24 percent growth rate by the year 2000 to 296,300. Specialties include:

(1) Medical technologists who are highly skilled and capable of training/supervising other laboratory personnel; there are 174,000 active medical technologists and entry level is the baccalaureate or masters degree;

(2) Medical technicians who perform routine tests under supervision; there are 16,000 technicians with associate degree or certificate program training but 96,000 additional clinical lab workers with little or no training; and

(3) Cytotechnologists who prepare samples of cells for microscopic examination and assist pathologists; a minimum of 1 year of clinical education is required in addition to academic prerequisites in biological sciences.

Five States require that medical technologists and technicians are licensed; other States require registration.

Physical Therapists (PTs).—There are approximately 63,000 active PT's: 40 percent of whom work in hospitals, 15 percent in independent or group PT practice, and the remainder in a variety of rehabilitative and long-term care settings. Independent practice is growing: 14 States permit PT's to initiate treatment without referral from a physician.

Licensure is required by all States. Three avenues for licensure: baccalaureate programs, certificate programs for those with a bachelor's degree in another field, and a 2-year masters degree. Hospitals face increasing difficulty in recruiting and retaining PT's: starting salaries of $30,000 for those without experience are becoming more common with $5,000 bonuses being offered to PT's willing to change jobs. BLS reports that PT's and OT's have the lowest unemployment rates (1 percent) of any classification of salaried health worker.

Occupational Therapists (OT's).—There were 32,400 registered OT's in 1986: 35 percent work in hospitals, 17 percent in schools, 10 percent in rehabilitation facilities and the remainder in long-term care facilities or home health agencies. While only 6 percent of OT's are in private practice, nearly 20 percent are now fully or partly self-employed. Nearly 95 percent of OTs are women.

In 1987, 34 States and the District of Columbia have OT licensure laws. Avenues for training are similar to PT: a baccalaureate degree, post-baccalaureate certificate and masters level program for a "professional education" to be an OT. Associate degree "technical" training is available for those becoming OT assistants

(nearly 8,000 as of 1986). Despite the reported shortages, salaries have risen very little: the average salary was $26,000 in 1986.

Respiratory Therapists (RT's).—RT's provide services such as emergency care for stroke, drowning, heart failure, and shock to temporary relief for emphysema and asthma. There were 56,300 RT's in 1986, 88 percent of which are in hospital settings, with the remainder in nursing facilities and home health agencies. Two-thirds of RT's are under 30 years of age and 40 percent are men.

A significant percentage of the workforce has only had on-the-job training but the number of accredited therapist programs has increased by 34 percent from 175 in 1980 to 235 in 1986. There are some shortage areas and BLS predicts a 34 percent increase in RT jobs.

Speech-Language Pathologists and Audiologists.—The total size of the workforce is unclear although the American Speech-Language-Hearing Association estimates that there are 83,000 jobs in the field. Fewer than half of these jobs are filled by those with a professional entry-level masters degree; the remainder have bachelors degrees. Those with a bachelor's degree work primarily in educational programs and face restrictions in the 36 States with licensure requirements. Those with masters degrees work in education (64 percent), health services (28.6 percent) or their own practice (13.6 percent).

Medicare, Medicaid, and other third-party payers will reimburse for the services of licensed practitioners. In 1987, audiologists earned slightly more ($28,000) than speech-language pathologists ($25,000). The workforce is 89 percent female and 95 percent white.

Medical Records Personnel.—BLS estimates there were 40,000 medical records jobs in 1986. The American Medical Record Association estimates 8,240 medical record administrators and 14,690 accredited technicians (the remaining jobs are probably filled by those with only on-the-job training). AMRA's membership is 98 percent female and 95 percent white. The percentage of the workforce employed by hospitals (61.5 percent in 1985) is declining as jobs shift to ambulatory, outpatient services or HMO's or PPO's.

Half of medical records department heads have a degree; the remainder are registered technicians. Between 1981 and 1986 the starting salary for medical records administrators increased by 45 percent, substantially more than other hospital personnel. BLS estimates a 75 percent increase in demand by the year 2000.

Dietetic Personnel.—BLS estimates that there were approximately 40,000 jobs in 1986; 37 percent of which were in hospitals. To become a registered dietician, a bachelor's degree is required, specified coursework must be completed, and a national registration exam must be passed; after registration, continuing education requirements must be met. Currently, 14 States license dieticians.

The American Dietetic Association membership is 87 percent white, 97 percent female, and 99 percent have a bachelors degree.

Radiological Technicians.—Radiologic technology covers areas such as sonoigraphy, fluoroscopy, mammography, CT/MRI/PET scanning and radiation therapy. There were approximately 143,000 radiologic health service workers of all types in 1986.

There are at least three distinct specialists:

(1) Radiographers (formerly known as X-ray technicians)—licensed in 18 States, radiographers receive 2-3 years training and operate X-ray equipment and fulfill physician's requests for images of various body structures;

(2) Radiation therapists—licensed in 15 States (another 10 have enabling legislation but no licensure requirement), radiation therapists receive 2-4 years training and work primarily in oncology, preparing patients, and administering doses of ionizing radiation;

(3) Nuclear medicine technologists—licensed in 7 States (another 10 have enabling legislation), nuclear medicine technologists receive 1 year of technical training and work with radiopharmaceuticals in diagnosis and treatment.

These personnel are primarily employed by hospitals (60 percent); but this is expected to decline with the growth of imaging/diagnostic centers and incentives of PPS. BLS projects a 45 percent growth rate in the field by 1990 (23 percent for nuclear medicine technologists).

Dental Hygienists.—Dental hygienists are oral health clinicians and educators (not to be confused with dental assistants) who operate under a dentist's supervision.

There were approximately 86,700 jobs for dental hygienists in 1986. Training requirements are gradually increasing from 2 to 3 years. Hygienists are licensed throughout the States to practice under a dentist's supervision, but in 1986 Colorado became the first State to permit them to perform certain procedures without supervision. Another 10 States are considering similar proposals.

[These data are drawn from the Secretary's forthcoming Sixth Report on the Status of Health Personnel and the Institute of Medicine report, *Allied Health Services: Avoiding Crises,* scheduled for release in the fall of 1988.]

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CHAPTER 13: ISSUES OF SPECIAL CONCERN

Part II of this report has focused exclusively on rural health care providers, however, there are at least three cross-cutting issues which deserve consideration: (1) Medicare reimbursement policies for rural health care personnel; (2) malpractice costs and their impact on access to services in rural areas; and (3) the availability of mental health services in rural areas.

1. Medicare Reimbursement Policies

CUSTOMARY, PREVAILING, AND REASONABLE

Medicare reimburses physicians the lowest of: (a) their customary charge; (b) the prevailing charge in their area; or (c) their actual charge. A physician's customary charge is what he/she charges for the same service in the majority of cases; in practice, the customary charge is based upon charges more than a year old. The prevailing charge is essentially set at the 75th percentile of the customary charges of all physicians in the local payment area for that service. Since physicians have little incentive to restrain increases in their charges under the system, increases in the prevailing charge limit are also restricted by the growth in the Medicare Economic Index, which is based upon increases in the general earnings level of workers and changes in physician office practice expenses since 1973. For a growing number of procedures, the prevailing charge as limited by the Medicare Economic Index actually determines what Medicare considers the physician's "reasonable charge" for the service. Medicare then pays 80 percent of the reasonable charge and the Medicare beneficiary is responsible for the remaining 20 percent (or even more if the physician refuses to accept Medicare's reasonable charge as full payment). Collectively, the system is known as CPR, based upon the determination of customary, prevailing, and reasonable charges.

Because this system is so heavily dependent upon the historical charge patterns of a physician and his/her colleagues in any of Medicare's 240 payment areas, tremendous variation in reimbursement levels has been built into the system. Further complicating the payment system is the fact that Medicare's payment agents (known as carriers) recognize different payment levels for the same service based upon the site of care (services provided in a hospital are paid at a higher rate than services provided in a physician's office). Further, the carriers establish their own policies regarding the recognition of physician specialties and subspecialties for payment purposes. Thus, in some payment areas a specialist will receive a higher rate of reimbursement than a nonspecialist providing the same service. However, the carrier in a neighboring payment area may not recognize physician specialists in determining payment and would pay all physicians the same for a given service.

Unlike hospital DRG's, Medicare does not explicitly incorporate an urban-rural differential into its physician payment system. The carrier payment areas were not established on an urban-rural basis nor are they always contiguous with county lines. In an effort to induce Blue Shield plans to serve as Medicare's payment agents for physicians when the program was first enacted, Medicare simply agreed to allow Blue Shield plans to use the payment areas they had already established for their commercial business. Over time there has been some consolidation of payment areas and in practice, many payment areas today are predominantly rural or urban. Since the system simply built upon the existing differences in payment levels (and the differential rates of increase in urban and rural physician charges since then) three- to four-fold differences in payment levels have been reported by the Office of Technology Assessment and the Congressional Budget Office.[73]

VARIATION IN MEDICARE PAYMENTS

In contrast to earlier reports, which identified only a maximum and minimum prevailing charge for a procedure, the second annual report of the Physician Payment Review Commission (PPRC) has provided important information on the distribution of Medicare charges for specific procedures by percentiles.[74] This permits a better assessment of the significance of earlier findings of four-fold variations in prevailing charges. As Tables 53 and 54 demonstrate, the degree of variation is substantial but not as extensive as expected. For 9 of the 13 listed procedures, 60 percent to 90 percent of prevailing charges fell within 20 percent of the mean (average) charge [i.e., from 80 percent to 120 percent of the mean charge]. Variation was slightly greater for office and hospital visits by internists and even greater for visits with family practitioners. The PPRC report also notes that it is difficult to characterize payment areas as uniformly high or low in the level of prevailing charges; there is great variation in a given area in the charge levels for individual procedures.

Table 55 displays prevailing charges for the same procedures aggregated into small and large urban counties (greater or lesser than 1 million population) and small and large rural counties (greater or lesser than 10,000 population). As expected, large urban areas have the highest prevailing charges; small rural areas, the lowest.

It is important to recognize that even a high level of variation in Medicare payments for the same procedure does not necessarily imply that payment levels are inequitable. Concepts of equity are linked to Congressional intent: does Congress intend to use physician payments as a policy tool? If so, the standard for evaluation is different. For example, if Congress does not want to use physician payments as a policy measure, then Medicare payments should be geographically "neutral" (neither encouraging nor discouraging

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[73] U.S. Congress. Office of Technology Assessment. *Payment for Physician Services: Strategies for Medicare.* (Washington, DC: U.S. Government Printing Office, February 1986.) U.S. Congress. Congressional Budget Office. *Physician Reimbursement Under Medicare: Options for Change.* (Washington, DC: Congressional Budget Office, April 1986.)

[74] U.S. Congress. Physician Payment Review Commission. *Annual Report to the Congress: March 1988.* (Washington, DC: Physician Payment Review Commission, March 1988.)

practice in any location). In this case, payment levels should only differ to the extent that practice costs differ; anything more or less would be inequitable.

On the other hand, Congress may see Medicare payments as an instrument for other public policy goals, such as encouraging physicians to join the participating physician program or to encourage physicians to provide primary care services in underserved and rural areas. In such cases, payments may be increased beyond the level justified by practice cost variation and still be considered equitable.

From the limited perspective of geographic equity, then, the ideal is to assess the cost of producing a given procedure or service and adjust the payment level accurately for variations in the local cost of practice. Further adjustments such as higher payments to encourage physicians to move to underserved or rural areas are separate policy judgments.

DEVELOPMENT OF A RELATIVE VALUE SCALE

The Congress will have an opportunity in the 101st Congress to address questions of payment equity quite explicitly. In October 1988, the Congress received the results of a multi-million dollar contract by the Federal Government with Dr. William Hsiao of the Harvard School of Public Health (on which the American Medical Association was a subcontractor). Rather than attempting to modify the existing CPR payment system any further, the Hsiao study provides the basis for development of a Medicare fee schedule.

Technically known as a Resource-Based Relative Value Scale (RVS), Dr. Hsiao and his colleagues developed a system of relative weights to be assigned to each of the nearly 7,000 medical procedures and services which Medicare reimburses. The RVS is resource-based because the weights are being developed based upon a review of physician time, effort, and input costs necessary to perform each procedure or provide each service. Evaluation of the physician component of resource costs (which accounts for roughly half the cost) were prepared in conjunction with the medical specialty societies. While rankings of procedures within specialties have reportedly been developed with a high level of consensus, integrating these procedures across specialties onto a single scale has been more controversial.

The Congress will find the results of the Hsiao study quite controversial for two reasons. First, the results suggest a significant redistribution of Medicare physician payments, with some specialities gaining or losing as much as 40 percent. Thus, the economic stakes of a fee schedule developed from the Hsiao study are quite high. Second, this study is the first time that researchers have ever attempted cross-specialty integration into a single relative value scale and any pioneering effort such as this will engender legitimate debate regarding the appropriate techniques to employ. In addition, the study involves a great deal of extrapolation from limited data. Because of the time necessary to develop a resource-based RVS, the study is only examining resource costs for approximately 500 so-called "index" procedures and will then extrapolate these

findings to related procedures so that an RVS for all 7,000 Medicare-recognized procedures can be developed.

HCFA and PPRC are just beginning their analyses of the Hsiao study and will report their findings to the Congress in early 1989. In considering the Hsiao study and their critiques, a number of equity issues will need to be addressed: the appropriateness of the weights as developed, the development of an adjustment for variations in the local cost of practice, whether to include specialty differentials (should specialists providing the same service, which GP's and FP's are qualified to perform, receive higher payment because of their training?), the level of the dollar conversion factor (multiplying the RVS weights by the conversion factor results in the actual fee schedule) and whether a transition period is necessary (since an RVS will significantly lower the Medicare revenue for certain specialties).

From a rural perspective, a key element is the development of a cost-of-practice index and whether it is appropriate to incorporate such an index into a relative value scale. Rural advocates have argued quite strongly that practice costs are equal, if not higher, than urban practice costs. They argue that while office space or employee salaries may be lower in rural areas, rural physicians (without nearby referral laboratories or diagnostic clinics) must often purchase additional equipment. In addition, rural practices may face higher costs to bring in equipment repair personnel, longer down time (while waiting for repair personnel) and an inability to develop economies of scale because of low volume.

There has been increasing support for that position from prominent members of the American Medical Association as well as the Reagan Administration. As Dr. David Sundwall, Administrator of the Health Resources and Services Administration, testified before the Senate Aging Committee's July 11, 1988 hearing:

> I see no justification for physician reimbursement to be less in a rural area than in an urban area. I think justification has been made based on labor costs and what have you, but I think there is increasing evidence that the cost of living in rural areas really is not as different as it is in some urban areas.

Unfortunately, the available studies are not conclusive and, depending upon their methodology and assumptions, they have led to conflicting results according to the OTA report. The March 1988 PPRC report has provided an extremely helpful outline of the conceptual issues involved in developing a cost of practice index as well as issues requiring further work. While the PPRC report concluded that urban practice costs were higher, their report acknowledges that additional work is necessary for refining a cost of practice index and that they will be developing alternative formulations in the months ahead. HCFA's Office of Research has also been asked by the Congress to develop a practice cost index for use with the present payment system and one for use with a relative value scale. Given the concern that the results of a practice cost index are very sensitive to the assumptions underlying its formulation, PPRC and HCFA should provide the Congress with alternative formulations of a practice cost index rather than a single formula. The Congress will want to look very carefully at the underlying assumptions of the indexes that are developed by ProPAC and HCFA before reaching a decision in this area.

Recommendations:

The Congress should give serious consideration to elimination of geographical distinctions in Medicare payments for physician services.

It is very likely that efforts to establish and refine a practice cost index will ultimately be unsuccessful. Many of the disadvantages of rural practice are difficult to quantify and will not be fully reflected in such an index. Given the historic attractiveness of urban practice and the difficulty in recruiting physicians to rural practice, any relative value scale should be implemented without a geographical practice cost adjustment.

HCFA and ProPAC should be directed to provide alternative formulations of a practice cost index to permit the Congress to assess the implications for actual payment of different assumptions.

HCFA and ProPAC should also identify the nonquantitative factors that the Congress may want to consider in establishing a practice cost index.

2. Malpractice Costs

The General Accounting Office (GAO) reported to the Senate Special Committee on Aging that from 1983 to 1985 total medical malpractice insurance costs for physicians and hospitals had risen from $2.5 billion to $4.7 billion.[75] During that same period, the Consumer Price Index and the Medical Care Index rose 8 percent and 13 percent, respectively, while the increase in physician malpractice costs was 100 percent and the increase for hospitals was 57 percent. The impact of rising malpractice premiums has been quite uneven: high-risk specialties such as obstetrics-gynecology and some surgical specialties have been hard hit as have certain States such as Florida, Michigan, Illinois, and New York as well as the District of Columbia.

The most meaningful measure of malpractice costs is to consider malpractice expenses as a percentage of a physician's gross revenue. The GAO reported that medical malpractice costs for all physicians rose from 7 percent of gross revenue in 1983 to 9 percent in 1985. But for high risk specialties such as OB-GYN, malpractice costs rose from 10 percent to 16 percent of gross revenue (Table 56). It is important to remember that the 16 percent figure is a national average with States such as New York well over 20 percent and OB-GYN's in Texas paying only 5 percent of revenue for malpractice insurance premiums.

It is still not clear why the range in premiums among and within States is so dramatic. Prodded by State medical societies, nearly every State has enacted some modification and, in some cases, dramatic modifications of State tort laws governing malpractice lawsuits. While the growth in malpractice premiums in 1988 has moderated in most States, the changes appear to be independent of tort reform initiatives.

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[75] U.S. General Accounting Office. *Medical Malpractice: Insurance Costs Increased but Varied Among Physicians and Hospitals.* GAO/HRD-86-112. (Washington, DC: U.S. General Accounting Office, September 1986.)

From a rural perspective, there are two important aspects to the malpractice crisis. First, increasing malpractice premiums are threatening the access of rural residents to important medical services, such as obstetrical care. Smaller rural communities have traditionally been dependent upon general and family practitioners (GP's and FP's) for obstetrical services while large rural communities often have access to OB–GYN's as well. While most public attention has focused on the decision of increasing numbers of OB–GYN's to restrict, or eliminate, their obstetrics practice, a similar trend is taking place among rural GP's and FP's. In most cases, general and family practitioners simply do not handle the volume of deliveries to enable them to carry high premium surcharges for obstetrical work. As a result, increasing numbers of rural counties have no obstetrical coverage available from any type of physician. Florida faces an extreme situation in which more than half of its rural counties are now unserved.

Second, the combination of patient volume decline and increases in malpractice premiums have been especially harmful to small hospitals with fewer than 50 beds (the majority of which are located in rural areas). Table 57 presents data developed by GAO on the increases in malpractice insurance costs per inpatient day from 1983 to 1985. Approximately 21 percent of these small hospitals experienced increases over 200 percent. Of the 438 hospitals that faced increases of 200 percent to 299 percent, 169 hospitals (38 percent) had fewer than 50 beds.[76]

The most pressing need at this point is to develop data regarding the impact of malpractice costs on the access of rural residents to services such as obstetrical care. Information on unserved counties is mostly anecdotal and has not been systematically collected by physician groups or Federal officials.

Recommendations:

An analysis should be conducted by GAO of the impact of malpractice costs on the access of rural residents to obstetrical care.

3. Mental Health Services in Rural Areas

It has long been recognized that there is a large unmet need for mental health services by rural residents. A University of Kansas study, cited by the American Psychiatric Association in testimony before the Committee, found that 3–5 million rural elderly were in need of mental health services, yet less than 1 percent of the rural elderly were able to secure treatment. Information provided to the Committee does not suggest a higher incidence of mental illness among rural residents. There is, however, a longstanding shortage of rural-based mental health care providers and there may be less of an informal social support in rural areas than many had assumed.

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[76] As a class, these hospitals experienced a 69 percent increase in malpractice insurance costs per inpatient day from 1983 to 1985. By contrast, hospitals with 300 to 399 beds experienced the highest overall increase (127 percent).

THE FARM CRISIS

There has been a dramatic 30 percent increase in the utilization of outpatient mental health services in recent years as farm families in record numbers have faced financial distress and foreclosure. While only a small percentage of rural residents are involved in farming or related occupations, an increasing number of studies have documented that these families are suffering in disproportionate numbers from stress. In an effort to identify the scope of the problem and review the existing literature, the National Institute of Mental Health convened a special Policy Forum on Rural Stress in April 1987. Researchers at that conference identified a problem of crisis proportions which would not be easily resolved given the meager mental health resources in rural areas. A few of the research findings follow: [77]

- A University of Minnesota study of three Minnesota communities documented stress, depression and suicides in the adolescent population. Two key findings of that study: (1) *Out of every 100 adolescents (15–19), 3 had attempted suicide within the last month* compared with a national average of 2 out of every 1,000 adolescents; and (2) *depression among rural adolescents was twice the national average.*
- A study of 42 Missouri farm families found evidence of depression in one-half of the men and two-thirds of the women even after the financial troubles facing the farm had been resolved.
- A study of community mental health centers (CMHC's) in 12 States by the University of Missouri School of Social Work found that *20–50 percent of rural clinician's caseload was related to the farm crisis,* 64 percent of CMHC's reported moderate to very large increases in patients having trouble in performing daily functions.

Similar findings appear in the "rural homeless" section of the Institute of Medicine report on the homeless and their health care needs.[78] Site visits to rural farm communities in preparation of that report elicited widespread agreement from those interviewed that there had been dramatic increases in suicide attempts in farm communities (but that there was consistent misreporting of actual suicides as "accidents"), increases of spouse and child abuse as well as growing substance abuse.

AVAILABILITY OF MENTAL HEALTH PROVIDERS

There are approximately 30,000 psychiatrists, 45,000 licensed psychologists, and 300,000 social workers in the United States. The majority of the Nation's psychiatrists and psychologists practice in urban areas. In fact, a 1982 study by the American Psychiatric Association concluded that predominantly rural States had lower numbers of active psychiatrists per 100,000 population; rural States are consistently clustered at the bottom of State by State rankings (Table 58). The RAND study of physician diffusion cited earlier noted that only 17 percent of rural communities with a population

[77] These examples are drawn from an undated summary of the proceedings of the Policy Forum on Rural Stress provided to the Committee.
[78] Patton, *op.cit.,* footnote 18.

of 5,000–10,000 had a psychiatrist available while half of these communities had access to an internist. Specialists, such as child psychiatrists, are in even shorter supply: fewer than 5 percent practice in communities with populations under 50,000.

Similarly, many rural communities do not have access to the services of a psychologist either. In the northeast, over 75 percent of the 952 rural counties with fewer than 100 persons per square mile had no registered psychologist while 98 percent of counties with a population of more than 400 persons per square mile had at least one registered psychologist. In western frontier counties, the "catchment area" of a community mental health center may cover an area as large as 5,000 square miles.

As a result, many rural counties are dependent upon other types of mental health personnel, such as social workers or nurses. The National Academy of Social Workers submitted to the committee a study completed this year of the availability of mental health personnel in six States: Michigan, Illinois, Oklahoma, Texas, Florida, and West Virginia. Licensed social workers were the only providers of mental health services in one-fourth of the counties in these States (Table 59). These counties tended to be poor, with per capita incomes 25 percent below the statewide average.

Attempts to recruit psychiatrists and psychologists face many of the same problems outlined in earlier sections of this report; it is simply difficult to make a rural practice economically self-sufficient. In addition, mental health providers face unique obstacles: the individualistic ethos of rural residents, the difficulty of securing confidential treatment, the increased difficulty of establishing the more traditional long-term therapist-patient relationship, and the potential need for mental health professionals to treat members of their immediate family or relatives because of the scarcity of other providers of care.

The major Federal initiative designed to address the shortage of mental health providers was the Community Mental Health Centers Act. From 1963 until 1981, when it was folded into the Alcohol, Drug Abuse and Mental Health (ADAMHA) Block Grant in 1981, the Community Mental Health Centers Act supported the development of a network of community mental health centers (CMHC's) across the country. In June 1973, 76 of the then-500 CMHC's served all-rural service (or "catchment" areas), which is just over 15 percent of all centers. By 1981, the last year of the Act, only 97 of 768 CMHC's, less than 13 percent, served all rural areas.[79] While the number of CMHC's currently serving rural areas is unclear, it is unlikely to have grown given the restrained Federal funding for the ADAMHA block grant. In fact, a recent survey of State mental health directors found that rural mental health services ranked 62d out of 63 areas identified as priorities by the directors.

CURRENT DEVELOPMENTS

The Rural Crisis Recovery Program Act of 1987 (Public Law 100–219) took two important steps toward helping farmers who are

[79] *Report of the National Action Commission on The Mental Health of Rural Americans.* (Alexandria, VA: National Mental Health Association, 1988.)

facing stress as a result of the farm crisis: (1) It provided support for education, retraining, and counseling assistance to dislocated farmers and those in financial distress; and (2) it encouraged cooperation between USDA's Agricultural Extension Service's Crisis Counseling program and State mental health systems. Currently, the crisis counseling program is operating in eight States.

In fiscal year 1987, the Congress provided $1.2 million in initial funding for a 4 year rural mental health initiative by the National Institute of Mental Health (NIMH). Four States (out of an eligible 13) are receiving annual grants under this initiative to develop comprehensive mental health services, job retraining, employment, and related services for rural Americans experiencing emotional and/or behavioral problems. The four States receiving funds are Nebraska, Minnesota, North Dakota, and Iowa.

Recommendations:

The States should be provided with incentives to develop additional community mental health centers in rural counties.

With Federal funding of the ADAMHA block grant constrained, States have few incentives to expand the number of rural CMHC's. The Congress should consider allocating up to $20 million in funds to States willing to develop rural CMHC's.

Rural community health centers should expand their role in providing mental health services.

Community health centers offer the potential for a rapid and cost-effective expansion of mental health services in rural areas since all funds can be allocated for service provision rather than "bricks and mortar." The Congress should consider allocating up to $10 million to support rural CHC's willing to offer mental health services.

The Congress should give serious consideration to expansion of the NIMH Rural Mental Health Initiative.

Funding for USDA's Agricultural Extension Service's crisis counseling program should be expanded from its current eight States.

The National Mental Health Association estimates the cost of this initiative at $12.5 million.

Community mental health agencies should establish formal relationships with university-based schools of psychology, social work and nursing, along with medical school departments of psychiatry for the purpose of serving as residency training sites.

The private sector should seek opportunities to collaborate with ADAMHA to develop a partnership and provide consultation and education and prevention programs to rural America.

A number of national mental health organizations, along with Pioneer Hi-Bred International, Inc., and the National Rural Health Association, have voiced their enthusiastic support for utilizing the satellite network link of the Rural Electric Cooperative Association to disseminate information about mental illness to rural America. ADAMHA should work to help create and foster these types of public-private sector linkages.

Part III—Federal Rural Health Initiatives

CHAPTER 14: BUILDING UPON EXISTING PROGRAMS

Having outlined in Parts I and II of this report the two major elements of the rural health care challenge—the plight of the rural hospital and the difficulty of recruiting and retaining health care personnel in rural areas—Part III now turns to the elements that will be central to a Federal response to the unfolding rural health care crisis. As this report has demonstrated, there are a host of issues for which data and research central to the formulation of good public policy are simply unavailable. Thus, it is not enough for Federal policymakers to develop short-term responses to the current crisis. There is a pressing need for a dual strategy that includes a long-term investment and commitment to developing a solid health services research base to inform the policy decisions of the next decade.

This chapter will provide a program-by-program review of the major Federal initiatives that have had, and continue to have, great potential for improving the flow of health care personnel to rural areas and improving the primary care delivery system. While the discussions which follow are program-specific, readers should keep in mind that these programs are often closely related. For example, community health centers, a mainstay of the rural South, are highly dependent upon National Health Service Corps physicians and will be significantly affected as the Corps' field strength continues to decline. Efforts to increase the number of rural health clinics are intricately linked to the availability of nurse practitioners and physician assistants in rural counties.

Chapter 15 will then focus on the rural health services research agenda that was developed in December 1987 by nearly 200 public policymakers, rural researchers, and rural practitioners, at the request of the Congress.

National Health Service Corps (NHSC)

PROGRAM DESCRIPTION

The National Health Service Corps, established in 1970, is designed to provide health personnel to designated health manpower shortage areas. Over the years the law has been amended to permit placement of dentists and nurses in addition to physicians, although the authority for nurse placement has rarely been used.

The primary recruiting tool of the Corps during most of its existence has been its scholarship program: providing medical and dental students with tuition assistance in return for service in a designated shortage area after completion of their residency training. Physicians were obligated to spend 1 year in service for each year of tuition support with a minimum 2-year obligation. Until

1980 these contracts included a guarantee of a federally salaried position (often with community health centers); in subsequent years, the contracts simply required service in these areas. This change reflected a conscious decision to reduce the number of federally salaried positions and provide NHSC assignees with three options (Table 60):

- Private Practice Option (PPO).—Physicians ready to fulfill their obligation, known as assignees, were given the option of entering private practice or accepting private employment in specific shortage areas. Shortage areas selected for PPO placements were areas determined to have a sufficient economic base to support a physician practicing privately.
- Private Placement Assignment (PPA).—In areas where community health centers were able to compete for a physician in the private market, the private placement assignment was offered. In these situations, the Department provided the CHC with funds and gave the CHC freedom to hire an NHSC-obligated physician (through direct negotiation) or a non-NHSC physician, if one could be recruited.
- Private Salaried Arrangement (PPS).—In this case, the hiring entity pays the NHSC-obligated physician's salary from non-Federal funds.

Following radical reductions of the Corps or scholarship program in the early 1980's, Corps strength remained high because of the long educational pipeline. That supply of scholarship recipients (Table 33) is now radically declining. Corps placements in the next few years will come from:

- The remaining scholarship obligated physicians;
- A newly enacted (the NHSC Amendments of 1987) loan repayment provision which permits the Corps to sign up physicians at the conclusion of their medical training; physicians are offered up to $20,000 in loan repayment per year in exchange for a minimum of 2 years service; and
- A one-time amnesty program for the approximately 1,100 physicians estimated to be in default of their obligations to serve in a shortage area; in an effort to encourage participation, rather than prosecuting defaulting physicians in court, defaulters will be offered a broader (ostensibly more desirable) array of shortage sites in which they may practice to fulfill their obligation. In exchange, they will be required to remain for 150 percent of their remaining obligation period.

Authorization Levels for Fiscal Year 1989

Field Placement—$65 million.
Scholarships—Such sums as necessary.
Loan Repayment—Such sums as necessary.
State demonstrations—$1 million, fiscal year 1989; such sums as necessary, fiscal years 1990 and 1991.

Appropriations Levels for Fiscal Year 1989

Field Placement—$39.866 million.
Scholarships—$0 million.
Loan Repayment—$7.906 million.

RECENT DEVELOPMENTS IN THE NHSC PROGRAM

In the last 2 years alone, the number of Corps assignees in rural areas dropped by nearly 400 to approximately 1,450 rural placements. This reduction has taken place in spite of evidence which suggests that physician diffusion has done little to relieve the shortages of the most isolated rural communities. In fact, the Department's own data identified nearly 1,300 rural shortage areas. The Congress will clearly want to consider an expansion of the National Health Service Corps' field strength.

In reaching a decision regarding the appropriate size of the Corps of the future, the Congress will have to bear in mind two additional facts. The President's AIDS Commission has suggested an increase of several hundred in Corps strength solely to meet the growing needs of AIDS patients. In addition, the fiscal year 1989 Labor-HHS-Education Appropriations Bill adopted by the Congress in September 1988 also contains an infant mortality initiative which includes several hundred physician and obstetrical nurse positions to target high infant mortality areas, particularly those which have lost all obstetrical care services.

The major options for increasing Corps strength—scholarships (as students enter medical school) or loan repayment (as they complete their education)—have advantages and disadvantages. Scholarships, which are offered to physicians at the beginning of their undergraduate medical school training, guarantee a steady supply of physicians and permit better manpower planning although the long lead time does not permit rapid adjustments in policy planning and increases the likelihood that physicians may not fulfill their obligations (default). Loan repayment, which takes place when a physician has finished his/her residency and is ready to begin practice, permits the Corps to better match its recruitment efforts to current needs for particular types of physicians at the expense of long-term policy planning. The difficulty in assessing the loan repayment option is that it has not been in place long enough to prove its effectiveness. The program began late in the 1988 recruitment cycle and, as a result, few physicians have been recruited.

Recommendations:

- To address critical health care personnel shortages, the Congress should provide at least $8-$10 million in funding for NHSC scholarships.
- To increase the likelihood that the loan repayment program is successful, more of an emphasis should be placed on targeting physicians who have received part of their training in rural areas. A highly successful program to do just that is the AHEC program. A number of States have expressed an interest in developing AHECs but Federal funding has not been available. The need for increased AHEC funding is discussed later in this chapter.

COMMUNITY HEALTH CENTERS (CHC's)

PROGRAM DESCRIPTION

Located primarily in rural areas, Community Health Centers (CHC's) offer an array of prevention-oriented primary care services to low-income and medically underserved populations. In fact, 357 (65 percent) of the Nation's 540 community health center grantees are located in rural areas (Table 61). Many rural grantees maintain multiple clinic sites so that the actual number of locations providing services is much greater.

Community health centers served 5.25 million Americans in fiscal year 1988. Surveys have shown that 60 percent of community health center patients are poor, 48 percent lack any form of health insurance, over one-third are children under the age of 14 and one-third are women of child-bearing age. These patients generally have complex health programs and often face barriers to health care access as a result of language difficulties or socio-economic factors.

The Federal subsidy to CHC's covers less than half (48.3 percent) of the cost of providing care to this population; the remaining costs are covered through payments from Medicare, Medicaid, or fee-for-service charges. (Table 62). In providing health care services, CHC's rely upon National Health Service Corps assignees or they are provided funds with which to hire physicians with NHSC obligations.

RECENT DEVELOPMENTS IN THE CHC PROGRAM

The most isolated, rural areas (so-called "frontier" areas) comprise at least 382 counties in 20 Western States. These areas are sparsely populated (with fewer than 6 persons per square mile). However, despite the fact that most CHC's are located in rural areas, only 17 CHC's were located in "frontier" areas and only 38 NHSC assignees were serving in these underserved areas in fiscal year 1986. The CHC Reauthorization Act (Public Law 100-386) requires the Secretary to give special consideration to the unique needs of "frontier" areas in developing new centers.

Malpractice costs are becoming a matter of increasing concern for CHC's. While NHSC assignees are covered by the Federal Tort Claims Act, CHC's must cover malpractice for physicians they hire. This has emerged as a major issue, particularly in rural counties which have already lost all obstetrical services from private sector physicians. When CHC's hire non-NHSC physicians they often assume the responsibility for paying a physician's malpractice premiums as an essential part of their physician recruitment efforts. Because pregnant low-income patients seeking last-minute attention at a CHC or migrant center are often the highest risk patients, the centers have been increasingly burdened with skyrocketing malpractice premiums.

Another issue has been the extent to which Medicare Part B reimbursement, which varies by Medicare carrier, and Medicaid reimbursement, which varies by State, effectively meet the costs which CHC's face in treating Medicare and Medicaid patients. A number of centers have complained that their Section 330 grant dollars which are intended to subsidize the care of the uninsured

and underinsured patients are also being used to subsidize patients for whom Medicare and Medicaid reimbursement has been inadequate. Because CHC's treat Medicare and Medicaid patients who are poorer and very often have had less frequent access to health care than private sector patients, the extent to which CHC's are accurately compensated under these programs deserves review.

Community health centers have taken part in the new congressional infant mortality initiative. In fiscal year 1988, $20 million has been allocated, and a comparable amount is proposed for fiscal year 1989 to provide demonstration grants to develop innovative approaches to comprehensive management of pregnancy through the first year of life for high-risk mothers and infants.

The Reagan Administration has viewed CHC's as a low-cost provider of services to special target populations in rural areas: AIDS patients, the homeless and substance abusers. CDC data suggests that at least 20 percent of AIDS patients are located in rural communities. A comparable percentage of the homeless are located in rural areas.

Authorization Levels

Public Law 100-386 reauthorized the Community Health Center program (section 330 of the Public Health Service Act) through September 30, 1991:

Fiscal year 1989, $408 million.
Fiscal year 1990, $423 million.
Fiscal year 1991, $437 million.

Appropriations Levels for Fiscal Year 1989

Community Health Centers, $414.8 million.
Infant Mortality Initiative, $20.55 million.

Recommendations:

- To determine whether the current CHC model is the most appropriate tool for serving underserved "frontier" areas and, if so, if special funds should be allocated for a specific CHC initiative in these areas, the Congress should request the Department of Health and Human Services to prepare a detailed review of the experiences of the 17 CHCs now operating in "frontier" areas.
- To address malpractice concerns of CHC's, the Congress should seriously consider extending the Federal Torts Claims Act protections to CHC's and migrant centers for the civilian physicians they hire. This would eliminate a growing burden faced by the centers and, in fact, enable centers to address the severe shortage of obstetrical services in rural counties. The Federal Government already has expanded Federal Tort Claims Act protections to civilian physicians working in IHS clinics and contract physicians when they treat Indian patients.
- In recent years, the CHC's report dramatic increases in the number of patients unable to pay their medical bills, resulting in large numbers of patients seeking subsidized care or simply not paying the bill and increasing the Center's level of bad debt. If this is correct, CHC appropriations need to be adjusted accordingly since CHC's are the health care safety net, particu-

larly in States with inadequate Medicaid coverage. To make a sound policy decision in this area, the Congress should direct the Department to assess trends in bad debt and subsidized care provided by CHC's.

- The costs of treating Medicare and Medicaid patients at CHC's needs to be reviewed to determine whether CHC's are adequately reimbursed under both programs. One option for the Congress would be to consider reimbursement of CHC's under a cost-based approach rather than the current charge-based reimbursement system.

Migrant Health Centers (MHC's)

PROGRAM DESCRIPTION

The migrant health center program supported the delivery of health services to a total of 470,000 migrants and seasonal farmworkers in fiscal year 1988. Services were provided by 117 MHC grantees to the target population through primary care clinics, birthing centers, and in hospitals reimbursed by HCFA through an interagency agreement.

Funded centers must be in areas with at least 4,000 seasonal and migrant farmworkers for at least 2 months each year. Project emphasis has been focused on increasing the capacity of the community to provide services to migrants, utilizing volunteers in the private sector.

Authorization Levels

Public Law 100-386 reauthorized the Migrant Health Center Program (section 329 of the Public Health Service Act) through September 30, 1991:

Fiscal year 1989, $46 million.
Fiscal year 1990, $48 million.
Fiscal year 1991, $50 million.

Appropriations Level for Fiscal Year 1989

Fiscal year 1989, $45.646 million.

RECENT DEVELOPMENTS IN THE MHC PROGRAM

The Migrant Health Center program operates almost exclusively in rural areas but has often been a political stepchild since it addresses the problems of individuals who seldom are community residents in the areas where the clinics are located. Throughout the 1980's, the migrant program has addressed the needs of less than 20 percent of its target population. It is important to note that transient workers may face much higher risk of AIDS, for example, and that prevention efforts may be an essential element in eliminating the spread of this disease in rural communities.

With the close of the alien amnesty program, the States now become eligible for nearly $1 billion in assistance under the State Legalization Impact Assistance Grant (SLIAG) program, to assist those communities in which eligible legalized aliens have settled. The funds are to be used for public assistance, health and education costs associated with this population. However, there is some

concern that these funds may not be channelled to the most cost-effective programs.

Recommendations:

- Because 80 percent of the target population of the MHC program is not being served, the Congress should direct the program to concentrate additional resources to improving outreach.
- The States have great discretion in the use of SLIAG funds and that discretion should be maintained. One area for consideration, however, is to encourage the States to contract, where possible, with migrant and community health centers for meeting the health care needs of this population. Repeated studies have shown community and migrant health centers to be cost effective alternatives to traditional providers and by contracting with these programs, which have substantial experience with this population, the funds under this program can be stretched even further.

Area Health Education Centers (AHEC's)

PROGRAM DESCRIPTION

The AHEC concept evolved from a 1970 Carnegie Commission report on Health Education which proposed linking academic medical centers with actual clinical training in underserved areas. The program was authorized a year later in the Comprehensive Health Manpower Training Act of 1971 and implemented in late 1972.

AHEC programs, which are designed to serve both the student and the surrounding areas, includes continuing education for physicians, clinical instruction of undergraduate medical students, training of physician assistants and nurse practitioners, as well as programs to encourage their utilization. In addition, they support continuing education or clinical instruction of other health personnel, primary care residencies and multidiscriplinary training and practice in underserved areas.

In fiscal year 1988, 45 projects have been funded: 18 regular AHEC grants and 27 special initiatives. 43 regional AHEC centers now serve 247 counties in 19 States (Table 63). Special initiative funding is available to schools which had previously received AHEC funding to develop programs responsive to regional needs related to minority recruitment/retention and geriatrics. 19 of the first 21 AHEC's are still in operation despite the fact that they are no longer eligible for Federal assistance.

Advantages of AHEC's include that they:

- Provides additional physicians to shortage areas;
- Increases sensitivity of health providers to needs of shortage areas;
- Decreases the professional isolation of existing providers in the area, increasing opportunities for referrals, consultations, and an overall improvement in clinical care;
- Can encourage local youth to consider clinical careers;
- AHEC's have been successful in areas of minority recruitment as well, particularly black and hispanic; and
- Work with NHSC to place physicians in underserved areas.

Authorization Levels

Public Law 100-607 reauthorizes the Area Health Education Centers (section 781 of the Public Health Service Act) through September 30, 1991:

Fiscal year 1989, $18.7 million.
Fiscal year 1990, $20.0 million.
Fiscal year 1991, $20.0 million.

Appropriations Level for Fiscal Year 1989

Fiscal year 1989, $17.026 million.

Recommendation:

- The Congress should direct the Department of Health and Human Services to survey the States to determine the number of States with an interest in developing an AHEC program and report to the Congress on the funding necessary to initiate each AHEC. In light of the universal praise AHEC's have received, it is important to determine the number of States willing to move ahead with AHEC's and increase program funding accordingly.

Rural Health Clinics Act

PROGRAM DESCRIPTION

The Rural Health Clinic Services Act of 1977 (Public Law 95-210) developed from a growing realization that isolated rural communities often could not support a physician. In many cases, the only types of primary care and emergency care that were available in these communities were provided by practitioners not eligible for Medicare reimbursement.

As a result, the Rural Health Clinics Act expanded the options for Medicare and Medicaid reimbursement for nurse practitioners and physician assistants providing services in rural, medically underserved areas. Thus, unlike the community health centers program, by which the Federal Government supports the establishment of actual clinics to provide health care, the Rural Health Clinics Act is merely a mechanism for expanding the Medicare and Medicaid reimbursement available to any type of public or private sector physician practice or clinic that meets the criteria outlined below.

Certification required: (1) The clinic be located in a rural, medically underserved area; (2) The clinic must employ at least one nurse practitioner or physician assistant 60 percent of the time; and (3) The clinic must be under the general direction of a physician who must be present at least once every 2 weeks.

In addition, clinic staff are required to furnish diagnostic services (including clinical laboratory services) and therapeutic services, including the ability to administer biologicals necessary for the treatment of emergency cases. The clinic must also have arrangements in place with one or more hospitals for referral and admission of patients requiring inpatient services.

There are currently 438 rural health clinics certified by HCFA (Table 64) although most rural experts believe that there is substantial room for expansion of the rural health clinic program.

There have been a number of problems linked to the implementation of the rural health clinic legislation that have undermined the track record of this valuable initiative:

- Congress addressed one of the major issues last year in OBRA 1987 (Public Law 100–203, section 4067) by increasing the maximum reimbursement rate for rural health clinics, to $46. In addition, Congress required a report from the Secretary on the adequacy of the rates to be submitted no later than March 1, 1989.
- A second problem with rural health clinics had been the failure from its inception of the Department to promote the program effectively. There have been few efforts by the Department to publicize the program since its initial notification following the passage of the law in 1977.
- Third, the paperwork burden for certification has been overwhelming for some clinics and they have simply chosen not to participate. Some rural clinics have hired certified public accountants to do the paperwork necessary for Medicare and Medicaid reimbursement but in some cases the cost of these outside professionals offset the advantage of certification.

Rural health clinics have demonstrated both their cost-effectiveness and their ability to serve rural residents effectively. For example:

- A 1982 GAO report outlining problems of implementation also found that 95 percent of clinic patients were satisfied with the quality of care they received.
- Another study by the Mississippi Medicaid Commission Rural Health Clinics Project found clinic users "significantly more satisfied with the cost of delivered services than . . . the patients of private physicians" in 75 percent of service areas.
- A study by Dr. Ronald Deprez of Medical Care Development of Augusta, ME demonstrated that rural health clinic users had significantly fewer hospital admissions and lower hospital expenditures than non-clinic users. The study suggests that there may be significant cost savings to the Federal Government by promoting rural health clinics.

Authorization/Appropriation

Because clinics are reimbursed directly through the Medicare program, the Congress does not need to approve annual appropriations.

Recommendations:

- *HCFA should transfer funds to the Office of Rural Health Policy to promote Rural Health Clinic Act to certification to eligible rural providers.*

  Many rural providers who might seek certification are neither aware of the benefits of certification nor have they had anyone willing to walk them through the application process. Since HCFA has neither the staff nor the experience in such efforts, funds should be transferred to the Office of Rural Health Policy to carry out this task.

- *Rural community and migrant health centers eligible for designation as rural health clinics should receive automatic certification.*
- *The eligibility and certification process should be streamlined and updated to reflect the current availability of mid-level health professionals.*

For example, the current shortage of nurse practitioners in rural areas suggests that the current requirements for 0.6 FTE of a nurse practitioner should be eased to 0.4.

- *The options currently available to the States for reimbursement of RHC's for ambulatory services which are not reimbursed by Medicare are too confusing and a single approach should be substituted.*
- *Incentives should be provided to the States to assist in the development of additional rural health clinic act participation.*

Physician Assistants

PROGRAM DESCRIPTION

This program provides grants and contracts to schools of medicine or osteopathy to develop or maintain physician assistant training programs. Priority is given to programs which provide substantial portions of their training in health personnel shortage areas and sharing resources with training programs for primary care physicians.

Physician assistants have high productivity; productivity of a practice may increase as much as 50 percent with the addition of a PA. As of 1984, 3 out of 10 PA's set up practice in smaller communities (under 25,000) and nearly 19 percent set up practice in communities with fewer than 10,000 people. In fiscal year 1988, 2,200 PA's were in training in the 40 projects funded under this authority.

Authorization Levels

Public Law 100-607 reauthorizes the Physician Assistants program (section 783 of the Public Health Service Act) through September 30, 1991:

Fiscal year 1989, $4.5 million.
Fiscal year 1990, $5.2 million.
Fiscal year 1991, $5.4 million.

Appropriations Level for Fiscal Year 1989

Fiscal year 1989, $4.541 million.

Recommendations:

- Given the increasing trend toward specialization among physician assistants and nurse practitioners, Federal support should be more clearly targeted to PA's and NP's training in primary care fields or specializing in family practice. To assure a supply of practitioners for rural areas, a portion of funding should be targeted to schools enrolling PA and NP students from rural areas because of the likelihood that they will ultimately practice there.

NURSE PRACTITIONERS/NURSE MIDWIVES

PROGRAM DESCRIPTION

This program provides:

Grants or contracts to public/private schools of public health and nursing, hospitals and other entities to develop, maintain, or expand programs to develop nurse practitioners; and

Traineeship funds to individuals enrolled in such programs full-time in exchange for a commitment to work in a health manpower shortage area or a public health facility.

This program was originally targeted toward nurses residing in health manpower shortage areas who wanted to become a mid-level health professional, capable of independent practice. In this way, the chances for retention of nurse midwives and nurse practitioners—precisely the types of mid-level professionals needed in rural areas would be enhanced.

Authorization Levels

Public Law 100-607 reauthorizes the Nurse Practitioner/Nurse Midwife program (section 822 of the Public Health Services Act) through September 30, 1991:

Fiscal year 1989, $12 million.
Fiscal year 1990, $17 million.
Fiscal year 1991, $21 million.

Appropriations Level for Fiscal Year 1989

Fiscal year 1989, $11.856 million.

Recommendation:

See Physician Assistant section above.

FAMILY PRACTICE RESIDENCIES/GENERAL DENTISTRY

PROGRAM DESCRIPTION

This program provides grants and contracts to hospitals, medical and dental schools to develop residency programs and provides financial assistance to students in family medicine. Federal support is justified on the following grounds: Family practitioners are often seen as the most appropriately trained health practitioners to serve in rural underserved areas. Family practice residencies often require external subsidy since they do not earn sufficient fee-for-service dollars to cover their costs. Rural areas have experienced a large number of retirements of general practitioners in the eighties and one-third of current GP's and family practitioners are beyond age 55.

The program has spurred development of programs and departments of family medicine in 138 of the Nation's medical schools. The number of family practice programs has increased from 107 in 1972 to 382 operational programs in 1987. Current funding (fiscal year 1988) supports 3,779 residency positions.

Authorization Levels

Public Law 100-607 reauthorizes the Family Practice/General Dentistry program (section 784 of the Public Health Service Act) through September 30, 1991:

Family Practice Residencies:

Fiscal year 1989, $37.9 million.
Fiscal year 1990, $40.0 million.
Fiscal year 1991, $40.0 million.

General Dentistry:

Fiscal year 1989, $4 million.
Fiscal year 1990, $6 million.
Fiscal year 1991, $8 million.

Appropriations Level for Fiscal Year 1989

Fiscal year 1989, $34.98 million.

CHAPTER 15: A RURAL HEALTH SERVICES RESEARCH AGENDA

This report has outlined a number of ways in which the Federal Government can provide direct and immediate assistance to rural communities in meeting the acute care and primary care needs of their residents. As important as these steps are in the short-term, there is also a need for a complementary long-term Federal rural health services research strategy.

The importance of a rural health services research strategy rests upon the realization that the rural health care crisis may well persist for many years. Additional rural communities will need to face difficult questions regarding the most appropriate and affordable health care delivery system that will best meet their needs. An appropriate Federal role is to develop and disseminate information that will address key questions regarding: (1) differing approaches to health care delivery in rural areas, (2) the cost-effectiveness of these alternative approaches, and (3) their implications for quality of patient care. In short, rural communities need to know what works and what doesn't and under which conditions, before they commit time and resources to implement new strategies. Answers to such fundamental questions will also assist Federal policymakers to develop rural health care policy for the 1990's.

The discussion throughout this report has demonstrated that information of critical importance to policymakers and rural communities has simply not been available because of the unwillingness in the past to invest in health services research. To assure that the necessary data and evaluations will be available to develop public policy and rural community initiatives in the 1990's, a major investment in health services research is necessary today.

The foundation for such a research agenda was developed at the congressionally mandated Rural Health Services Research Agenda Conference, held in December 1987 in San Diego. That invitational conference of 150 of the Nation's foremost rural health services researchers, practitioners, and policymakers assessed current knowledge regarding rural health services, identified gaps in the current knowledge base and developed a series of high priority research recommendations which serve as the core of the research agenda which follows.

Funding for this research agenda has proceeded slowly. The fiscal year 1989 Labor-HHS-Education Appropriations Bill has allocated only $500,000 of the necessary $10 million to the National Center for Health Services Research (NCHSR) to implement the research agenda. Full funding of the research agenda remains a high priority of rural advocates and is considered an important adjunct to the short-term interventions outlined throughout this report.

As the discussion in chapter 5 noted, it is crucial that the research that is developed under this agenda be perceived by its in-

tended users—rural communities, rural health care providers, and policymakers—as credible and objective. The research results must not be seen as extensions of Federal budget or program policy; otherwise, it will be distrusted by at least some of its intended users.

To assure that this research agenda is carried out in a way that is perceived by all sides of the issue to be objective, the National Center for Health Services Research should be designated as the lead research agency. While there are other agencies that might appropriately pursue several lines of research identified in this agenda, no other agency has the universal reputation for dedication to peer-reviewed research and credible research findings.

Finally, it is essential that the research results be promptly disseminated to rural communities. To accomplish this goal, a clearinghouse should be established and operated under the auspices of the Office of Rural Health Policy. As the Federal agency which is perceived as best understanding the needs of rural communities, it is the most logical agency to serve this role.

Rural Health Services Research Conference Preliminary Report

SUMMARY

This preliminary report outlines the primary recommendations of the Congressionally mandated Rural Health Research Conference held December 13–15, 1987. The conference proceedings—including the commissioned papers, a summary of the conference deliberations and the complete research agenda—will be published as a special issue of the journal *Health Services Research* in February 1989.

In developing the research recommendations in this report, two goals were paramount: (1) to provide research questions on issues important to Federal policymakers, and (2) to propose an agenda which could be implemented with only modest budget increases.

It is estimated that implementation of this agenda will require an additional $10 million annually to the National Center for Health Services Research and Health Care Technology Assessment (NCHSR), beginning in Fiscal Year 1989. Without these new dollars, NCHSR will have limited ability to implement the research agenda.

BACKGROUND

Public Law 99–500 directed NCHSR to develop a rural health services research agenda to be submitted to the House and Senate Appropriations Committees during the Fiscal Year 1989 appropriations cycle.

In response to that Congressional mandate, the Center awarded a grant to the National Rural Health Association (NRHA) and the Foundation for Health Services Research (FHSR) to conduct a national conference charged with three primary tasks: To summarize research on key health care issues facing rural Americans; to identify the gaps in our knowledge base; and to develop a rural research agenda relevant to the needs of Federal policymakers.

CONFERENCE ORGANIZATION

To develop this research agenda, NRHA and FHSR co-sponored a national invitational conference attended by nearly 200 health services researchers, health care practitioners, and policymakers. The participant list is included as Appendix A. A conference advisory committee assisted NRHA and FHSR in outlining the issues to be addressed, and identifying paper authors and conference participants. A list of Advisory Committee members is attached as Appendix B.

Six issue areas were identifed by the committee for priority attention at the conference. Background papers, which summarized current knowledge about the issue and discussed directions for future research, were prepared for each issue.

The topics addressed were:

- Rural Primary Care and Emergency Medical Services,
- Rural Elderly and the Continuum of Long Term Care Services,
- Maternal and Child Health,
- Rural Poor and Uninsured,
- Rural Hospitals, and
- Alternative Delivery Systems.

Several additional background documents were prepared for conference participants. The first summarized the views of numerous Federal officials who were interviewed about each of the above issues. Another paper discussed the interrelationships between rural health and rural development. The final document was a Fact Book of Tables on Demographic Characteristics, Health Status and Health Services Utilization of Rural Americans.

It should be noted that this conference, and the proposed research agenda, made no attempt to cover the entire array of rural health issues important to the Congress. In fact, such critical areas as Indian health care, migrant health care and mental health services were explicitly omitted from the agenda.

Given the complex charge of the conference, time and resource constraints dictated that the focus be narrowed to a manageable set of issues. This was in no way meant to demean the importance of the issues omitted.

It should also be noted that even within the topics selected, this agenda does not represent a comprehensive review of the issues, but rather outlines highlights of what was discussed at the conference.

Finally, it should be stated that nonmetropolitan and rural are used interchangeably in this report, although, as discussed below, their official definitions are many and varied.

CROSS-CUTTING THEMES

As conference participants deliberated the various issues, a series of cross-cutting themes and research questions emerged. They provide a framework for reviewing the agendas of each topic area.

1. The Need for an Improved and Consistent Federal Definition of "Rural":

Definitions of "rural" are both unstandardized and too broad, causing confusion and lack of precision for researchers and policymakers. Because Federal agencies employ a plethora

of definitions of rural and nonmetropolitan, much of the data now being collected are not comparable and cannot be used effectively.

Conference participants emphasized the need to standardize the Federal definition of rural to permit better coordination of Federal data collection efforts and to improve the comparability and usability of the data for health services research and policy analysis.

They also discussed the need to develop a definition which better reflects the great diversity of rural America, from sparsely populated, remote rural areas like most of Montana to more populous places such as those found in rural Florida. The definition should recognize a continuum of rurality—from more remote "frontier" areas to larger rural communities adjacent to urban areas.

2. The Need for Additional Secondary Data Analysis of Existing Federal Surveys and New Efforts to Conduct Small Area Studies in Rural Areas:

While major national surveys, like the National Health Interview Survey and the National Medical Care Expenditures Survey, collect data by place of residence, published reports rarely include place of residence in their analyses. Special analyses can sometimes be conducted upon request, but those analyses are often expensive and they are not readily accessible to researchers or policymakers.

Furthermore, the analyses that are available aggregate data to the metropolitan/nonmetropolitan level, masking differences within and across nonmetropolitan communities. There is some indication that when small area studies are conducted, problems hidden in aggregate data become apparent. For example, in the case of injuries, national data do not show large differentials among metropolitan and nonmetropolitan areas. However, using smaller geographic analyses, major differences in injury related deaths have consistently been found across rural communities and between rural and urban areas.

Expanded analysis of existing data bases, together with increased emphasis on small area studies, would greatly improve our understanding of the health care system in rural areas.

3. The Problems Related to Recruitment, Retention and Training of Health Professionals in Rural Areas:

The problems of recruiting and retaining health providers—including physicans, nurses, and allied health professionals—to rural communities were discussed repeatedly throughout the conference. While the Nation may be faced with a physician "surplus," many rural communities continue to find it difficult to recruit and retain health professionals.

Much has been learned about the impact of medical school and residency training programs on where physicians choose to practice, but little is understood about nurse and allied health training programs.

In addition, some believe that changes in the overall health delivery system, such as financing reforms and increased opportunity for salaried practice in urban areas, are exacerbating

the problems of attracting physicians to rural communities. These issues need to be explored further.

4. The Impact of the Professional Liability Crises on the Rural Health System:

Problems created by the professional liability crisis was another recurring theme. Increases in malpractice insurance and fear of lawsuits have caused many obstetricians and family physicians to stop delivering babies and/or refuse to take Medicaid patients, yet little is known about the impact of this trend in rural areas. How significant is the problem? What alternative sources of care are available? What is the impact on maternal and infant mortality and morbidity rates?

The spillover effects of the liability crises on the range of services provided by local hospitals and the concomitant impact those changes may have on the financial viability of rural hospitals was another area of concern.

5. Transportation Barriers in Rural Areas:

Transportation, particularly for old and high-risk populations, is another area that deserves special attention. Geographic distances, difficult terrain, inadequate or nonexistent public transportation systems, and poor roads can all be barriers to access to health services.

As the health care system becomes more regionalized, the need to better understand how to develop and run cost-efficient transportation systems for the spectrum of patient needs, from emergency medical care to preventive services, becomes more acute.

6. The Need for a Rural Perspective on the Issue of Quality:

The issue of quality of health care is of paramount importance and enormously complicated. Clearly it could not be addressed adequately at this conference. However, concern was raised that while quality assessment and assurance are receiving growing national attention, little of the research and policy focus addresses the problem from a rural perspective.

Issues such as whether quality measures developed in urban medical centers were being inappropriately applied to small, rural hospitals; the extent to which resource intensity affects health outcome; and whether current severity of illness measures which are based on resource inputs are biased against rural hospitals are examples of the questions raised.

Overall, participants emphasized the need for a rural perspective in the broad array of health outcomes and quality measurement research.

NEED FOR A BALANCED AGENDA

The remainder of this report reviews the primary research recommendations of the conference participants and paper authors. The order in which the topics are addressed and research recommendations are listed is not intended to indicate any sense of priorities. In fact, there was a broad consensus that the Federal rural research agenda should be balanced in its support of the issue areas outlined in this report.

Research Agenda

RURAL HOSPITALS

Rural hospitals are facing a series of challenges which threaten their survival. Cost containment efforts by public and private insurers, increased competition from urban providers, and declining occupancy rates combined with a severe economic recession plaguing much of rural America threaten the continued viability of many rural hospitals, particularly those with fewer than 50 beds.

The closure of a rural hospital can jeopardize a community's access to affordable medical services and often undermines its economic vitality. In many communities, the hospital is not only one of the area's largest employers, it is also its key to attracting and retaining physicians and other medical providers as well as community business and industry.

Priority areas for research include:

1. *Economic areas for research include:*

   Some rural hospitals succeed while others struggle and even fail. What are the factors that account for this difference in outcome? Are these factors the product of a hospital's location and economic environment, its size, its organization and management or some other factor(s)?

   Do rural residents bypass their local hospitals for more distant, larger institutions? If so, what is the extent, the trends and causes of this patient outflow?

   What is the impact of rural hospital closure on access to care, physician availability, unemployment and local economic development? Are there cases where hospital subsidies may be appropriate to assure access in remote rural communities?

   How significant is the impact of a local economic recession on the financial stability of a rural hospital? Has an increased amount of uncompensated care been a major burden to rural hospitals?

   How do rural hospitals compete with each other and with their urban counterparts?

2. *Impact of Medicare's Prospective Payment System:*

   Does the current payment methodology accurately reflect differences in patient demographics and health status?

   How can current labor market areas be refined to improve measurement of wage rate difference among areas within a State?

   Has there been an increase in rural hospital closures since the implementation of the PPS system? Does PPS add to the risk of closure and if so, can its impact be separated from other possible factors, such as inefficiency?

3. *Cost of Rural Hospitals:*

   Why do rural hospitals have lower costs than urban facilities? What factors contribute to the cost differential (e.g., service intensity, physician practice styles, patient case mix or severity, wages, teaching programs, etc.)?

   Do rural hospital costs vary by degree of rurality? How significant are "stand-by" costs in isolated rural hospitals?

4. Quality of Care:

Research increasingly suggests a direct correlation between volume of surgery and patient outcomes. What implications does this data have for surgical care in rural hospitals? What are the factors which contribute to the quantity/quality relationship? Are these factors more significant for some types of surgeries than for others? How limiting should these factors be on rural surgical practice?

Would regionalization of services improve quality of care? What are the factors that should be used to identify those procedures which should be regionalized?

Can systematic differences in quality of care be identified between urban and rural hospitals and across rural hospitals? What are the factors which contribute to these differences?

What factors should be used in defining an appropriate mix of services for rural hospitals?

5. Diversification of Services:

How successful has diversification of services been as a survival strategy for rural hospitals? What are factors which contribute to a successful or unsuccessful program of diversification?

What are the benefits and drawbacks for a hospital and its community of developing linkages with larger health care systems?

ALTERNATIVE DELIVERY SYSTEMS AND MANAGED CARE

The development of alternate delivery systems—such as Health Maintenance Organizations (HMO's), Preferred Provider Organizations (PPO's), and primary care case management programs—is being encouraged by both public and private payors. Existing studies on rural alternative delivery systems have focused almost exclusively on HMO's so that little is known about the presence or functioning of PPO's, primary care case management programs or other alternative delivery systems in rural communities.

There appear to be three types of HMO's operating in rural America: (1) urban-based systems which have expanded into rural areas; (2) rural-based Independent Practice Associations (IPA's); and (3) HMO's which are expansions of rural-based multi-specialty group practices. Even though the literature on rural HMO's is beginning to expand, there is little research on comparative costs of differing HMO types, similarities and/or differences in their impact on the medical care delivery system or the quality or access to care they provide for rural residents.

There is also a need for research identifying other types of and market penetration rates for the broad range of managed care/alternative delivery systems operating in rural areas.

Other priority areas for research include:

1. Costs and Utilization:

Do rural HMO's deliver care at a lower cost than traditional insurance plans? Do rural-based HMO's deliver services at a lower cost than urban-based HMO's that have expanded to rural communities. How are these savings achieved? What impact do these savings have on health care costs for the rural community at large?

Are the utilization patterns for hospital, ambulatory and emergency room care different for rural alternative delivery system patients than they are for those with traditional insurance coverage?

2. *Quality of Care:*

Does enrollment in alternative delivery systems improve the quality of health care for the enrollees?

Has beneficiary satisfaction been measured in rural HMO's? Does beneficiary satisfaction vary by type of HMO or other alternative delivery system?

Is quality of care a basis for competition between rural alternative delivery systems and between rural-based and neighboring urban-based alternative delivery systems. Are rural-based systems successful in competing with urban-based systems on the basis of quality?

3. *Access to Care:*

How do utilization levels change for rural residents who enroll in alternative delivery systems? Does enrollment in an HMO enhance or restrict access to care? Does this vary between urban and rural-based alternative delivery systems?

How many, what type and what percentages of the total rural providers participate in alternative delivery systems? Do participation rates vary by type of alternative delivery system?

How available are alternative delivery system insurance mechanisms to rural residents? Do rural alternative delivery systems rely more heavily on individual enrollment (versus employer enrollment) than their urban-based counterparts? Are enrollment criteria more or less restrictive for rural-based than for urban-based alternative delivery systems and are there systematic differences between the two sets of standards?

4. *Impact of the Rural Medical Care System:*

In the long range, do rural alternative delivery systems enhance or diminish the health care services available in rural communities? What impact do they have on the number of physicians and other providers in their areas? Is their effect on hospital costs, revenues, and daily census measurable?

How do rural alternative delivery systems' referrals for speciality care differ from traditional fee-for-service providers? Is there an increase in rural to urban referrals for specialty care and what is the impact of this on access to services, quality of care, patient outcomes and the cost of health care? Are there significant variations in the referral patterns of urban-based and rural-based alternative delivery systems?

Does the introduction of an urban-based alternative delivery system have an impact on the prevailing practice style of a rural community? What are the implications of such changes for quality of care, patient outcomes, and cost?

Do rural alternative delivery systems compete successfully with traditional insurers in premium prices? Does the impact of this competition produce lower health care insurance rates for the rural community?

5. The Rural Alternative Delivery System and Medicare and Medicaid:

What percentage of rural alternative delivery system enrollees are Medicare and Medicaid patients? How successful are rural alternative delivery systems in participating in Medicare and Medicaid waiver programs? What financial factors must be considered in assessing the feasibility of rural systems' Medicare and Medicaid participation? Do these factors differ substantially from those which an urban-based system must consider?

How do Medicare beneficiary utilization levels differ between the general program and those participating in a rural alternative delivery system?

Does Medicare's AAPCC methodology accurately reflect the costs of rural alternative delivery systems?

What is the impact on beneficiaries if rural HMO's withdraw from a risk-based Medicare contract?

POOR AND UNINSURED

The rural economy has been significantly damaged by the recession of the eighties. For the first time in decades, the unemployment rate is higher in rural than in urban areas; the result is the highest rural poverty rate in nearly 20 years.

Historically, rural residents have had limited access to employer-based health insurance because the rural employment base is predominantly small business, self-employment, agriculture, or service sector. In addition, Medicaid coverage is often less generous in rural States and more likely to discriminate against intact, two-parent families who are the largest component of the rural poor.

While the impact of the recession has left an increasing number of rural residents uninsured, their numbers, their health status and their access to health care have been inadequately defined by existing studies.

Priority areas for research include:

1. Cost, Financing, and Coverage:

What are the health insurance coverage rates for rural residents and how do these rates vary by demographic indicators such as income levels, work status, age, and household type? What are the differences between rural and urban coverage rates and between differing rural geographic locations? Have these rates changed over time?

While lower levels of Medicaid coverage in rural areas are often attributed to the predominance of intact families, other reasons, such as social and moral values and a traditional dislike for welfare programs, should also be explored.

Do rural residents with health care insurance tend to be "over-insured" or "under-insured?"

Is the level of uncompensated care increasing for rural hospitals? Does the level of uncompensated care in rural areas vary with the type of hospital (i.e., public, private nonprofit, proprietary)? What is the difference in these levels and those experienced in urban areas?

2. Health Status:

What is the health status of the rural poor and near-poor and how does this status differ by demographic variables?

What are the health status differences between the rural and urban poor? If differences in health status are identified among sub-groups of the rural and urban poor, these differences need to be systematically examined.

Does access to care and/or health insurance coverage improve health status among the rural poor?

3. Access and Quality:

What are the differences in health care access and utilization patterns between urban and rural poor and near-poor populations? Are there changes in these differences over time? What factors influence these changes?

Do rural residents delay seeking medical care longer than residents of urban areas. If so, are their reasons related to cultural, financial, geographic, or other barriers?

What are the differences in utilization and access to care for rural manpower shortage areas and nonshortage areas?

Where do the rural uninsured and poor seek outpatient treatment services (i.e., hospital outpatient, emergency room, outpatient clinic, or physicians' office)? Does this pattern differ significantly from that of the urban uninsured and poor?

4. Health Professionals:

How have recent cutbacks in the National Health Service Corps affected access to care for the rural poor?

How much uncompensated care is provided by rural physicians? Does this level vary significantly from that provided by urban physicians? Does the willingness to provide uncompensated care differ between older and younger rural physicians?

MATERNAL AND CHILD HEALTH CARE

Children in nonmetropolitan areas are most likely to be poor, white, residing in the South, living in two-parent families and uninsured than their urban counterparts. Nearly 5 million rural children live in poverty.

However, with the exception of perinatal care, the research literature on rural maternal and child health is very limited and out-of-date. Additionally, much of the published data are not broken into useful age groupings for children. Furthermore, national health survey data is aggregated to a level which masks potential health status differences between rural and urban children.

There is a need to build a basic data base about the health status and utilization patterns of rural children and to conduct small area analyses which will provide information about the health problems of sub-groups of rural children.

Other priority areas for research include:

1. Financing:

What are the health insurance coverage rates for rural families with children and how do these rates vary by socioeconomic indicators such as income levels, work status, health status, education, age, and household type? Are there coverage differences based on knowledge about insurance, complexity, and accessibility of private insurance programs and/or acceptability of public programs?

To what extent are rural children under-insured, as defined by part-year coverage, high out-of-pocket liabilities, and inadequate preventive and primary care benefits?

How have changes in Medicaid eligibility and coverage effected the availability and quality of health care for rural families with children? What expansions or marketing techniques would assist in making these changes more effective? Are these changes sufficient for the health care needs of rural families with children?

What innovative models of public and/or private financing for rural families with children who are ineligible or do not have access to public or private insurance could be developed? These might include multiple employer/employee trusts, school health insurance, or Medicaid buy-in programs.

2. *Health Status:*

Do small area studies show any variations as compared to national survey data in the following areas: perinatal mortality, morbidity, disability, psychosocial problems (such as family violence and suicide), injuries, chronic childhood illness, and adolescent pregnancy?

Why are the fetal death rates higher in rural areas? What are the major causes of fetal death, when in pregnancy do they occur and how do these data vary between rural and urban residents? Are there systematic differences in fetal death rates between rural whites and nonwhites?

What new small area, population-based data collection methods, such as sentinel health indices and anthropological interviews, might be employed to better understand the health problems of rural children?

3. *The Delivery of Care:*

How have changes in medical practice, liability, and health care financing effected the delivery of perinatal care in rural areas? Have these changes had a particular impact on the use and practice of nurse midwives?

What impact has the medical liability problem had on the availability, use and quality of perinatal care in rural areas?

What are the differences in practice patterns between family practitioners, general practitioners, and pediatricians in rural areas? Are differences in quality of care and utilization measurable? Do continuing education programs for rural physicians lead to changes in practice patterns or improvements in quality of care?

What financing, organization, delivery, and education policies will ensure the ongoing support of regionalization of perinatal care?

What are the critical elements of successful models of regionalization of perinatal care? Can these elements be applied to other maternal and child health areas (i.e., emergency medical services, adolescent care, chronic childhood illness)?

What rural health care strategies have been effective in the prevention or reduction of perinatal mortality, morbidity, and disability, of psychosocial problems and of adolescent pregnancy? Can these strategies be replicated in other rural areas?

RURAL ELDERLY AND CONTINUUM OF LONG-TERM CARE SERVICES

A disproportionate share of the elderly live in rural areas and they constitute an increasingly larger proportion of the rural population. The rural elderly have higher rates of poverty, lower median incomes, and poorer health status than their urban counterparts. Limited physical mobility and inadequate transportation systems add to the problems of providing accessible and affordable health care to the rural elderly.

In addition, little attention has been paid to the issue of long-term care for rural residents. For example, while anecdotal evidence suggests the informal support systems in rural communities make a significant contribution to the well-being and inhome care of their elderly residents, limited systematic information is available on this and other facets of the long-term care issue.

Overall, there is a need for systematic research to assess the health status of the rural elderly, their access to health care providers and their long-term care needs.

Priority areas for research include:

1. *Health Status:*

   Health status differences need to be examined to determine if they are due to socio-economic variables or environmental influences.

   Is the presence or absence of a local health care delivery system significantly related to health status or access differences?

   To what extent is poor health status for those over age 65 related to prior health problems?

2. *Cost of Providing Services:*

   To what extent does the nature of the rural delivery system increase the cost of care?

   What is the relationship between the cost of care for the rural elderly and the benefit coverage provided by Medicare? Are provider costs covered? Is supplemental insurance needed and available?

3. *Access to Acute Care Services:*

   To what extent are providers of Medicare services available to the rural elderly?

   Are out-of-pocket burdens greater for the rural elderly due to transportation barriers and the need to travel to urban areas for specialized care?

   Do physician participation rates in Medicare vary between urban and rural areas?

   Are there differences in access to care between the rural and urban elderly with varying levels of functional limitation?

4. *Access to Long-Term Care Services:*

   To what extent are informal support systems providing care to the rural elderly? How does this support system differ from that available to the urban elderly population? Are there differences in health status that can be attributed to differences between the two systems?

   How significant is family care-giving in the provision of health care to the rural elderly? Does the family role differ substantially between rural and urban areas?

What community strategies are needed to support informal care-giving and support systems in rural areas?

How do the long-term care needs of the rural and urban elderly differ? Are long-term care services more available in urban areas than in rural areas? What are the differences in the types of services available?

What kinds of services are needed in rural communities to maintain the autonomy of the elderly? What role does transportation play in maintaining the rural elderly in their own communities?

How adequate is the provision of long-term nursing home care? Long-term in-home care?

5. *Health Care Personnel:*

What are the continuing education and training needs of health care personnel working in rural areas? What technologies can enhance the availability and effectiveness of this education and training?

What are the differences in orientation that should be included in the education and training of health care personnel who work in rural areas?

To what extent do State practice acts restrict the utilization and availability of nonphysician health care personnel in rural areas? What is the impact of these limitations on the quality and accessibility of health care services in rural areas?

PRIMARY CARE

During the seventies, a variety of Federal programs supported the development of primary health care services and resources for rural areas. In many instances, programs augmented existing providers and facilities. In others, they supported new programs and providers where none had previously been available. In many communities these programs became an integral part of the community's economic and employment base.

As the amount of Federal funding and the direction of Federal primary care programs changed in the eighties, little attention was given to documenting the impact of diminished Federal support on the continued viability of primary health care services in rural communities. The additional impact of the rural economic recession must be taken into account as well.

While research has begun to gather data on the problem of rural hospitals, limited focus has been placed on collecting information about primary health care rural areas. Issues such as the relationship between health status and access to primary care, the appropriate mix of primary care and emergency medical services and the economic viability of rural primary care practices also deserve more attention.

Priority areas for research include:

1. *Epidemiology of Medical Care:*

What is the health care status of rural populations and rural population sub-groups? What are the health care utilization patterns of these populations? How available are needed health services in rural communities?

What is the impact of access to health services and health status?

2. *Relationship to the Local Community:*

What role do primary care clinics and group practices play in the rural community's health care services structure?

What is the relationship between the primary health care services provided and the vitality of the local economy?

3. *Cost and Financing:*

How do the costs of rural medical practice differ from the costs of medical practice in other areas?

What is the effect of Federal financing reforms on the availability and stability of the primary health care system?

4. *Effective Models:*

What are the differing health care organizational models servicing rural areas? Are there more effective models for providing primary care responsive to the specific health care needs of local rural communities, such as Community Oriented Primary Care?

5. *Health Personnel:*

What techniques can be used to more effectively recruit, retain and stabilize the number of health care providers in rural primary care clinics and group practices?

A P P E N D I X

Table 1

Average Length of Stay, Registered Community Hospitals, 1986

	Superdivisions				All Regions
	North East	North Central	South	West	
TOTAL U.S. HOSPITALS	8.0	7.4	6.7	6.2	7.1
SMALL OR RURAL HOSPITALS	8.2	8.1	6.5	6.8	7.2
BED SIZE					
Rural Hospitals	7.8	8.0	6.4	6.6	7.1
6–24	4.8	5.3	4.4	5.4	5.0
25–49	6.0	5.9	4.9	5.8	5.5
50–99	7.3	8.4	5.9	7.2	7.0
100–199	7.7	8.6	6.9	6.1	7.4
200 or more	8.5	7.9	7.0	8.4	7.5
Small Urban Hospitals	9.0	8.5	6.7	7.0	7.5
6–24	5.4	6.6	4.6	3.7	4.5
25–49	5.9	5.3	5.5	5.1	5.4
50–99	7.5	6.4	5.9	5.3	6.1
100+ with 4,000 or fewer admissions	11.6	11.6	7.7	10.1	9.6

Source: American Hospital Association, Annual Survey of Hospitals, 1986.

Average Daily Census, Registered Community Hospitals, 1984–1986

	Average Daily Census	Percentage change over period		
	1986	1980–1984	1984–1985	1985–1986
TOTAL U.S. HOSPITALS	111	–4.7%	–7.4%	–1.8%
SMALL OR RURAL HOSPITALS	46	–10.5%	–7.8%	–2.1%
BED SIZE				
Rural Hospitals	47	–13.3%	–7.7%	–2.1%
6–24 Beds	6	–22.2%	0.0%	–14.3%
25–49	14	–15.8%	–6.3%	–6.7%
50–99	37	–10.9%	–9.8%	0.0%
100–199	81	–9.2%	–6.7%	–2.4%
200 or more	179	–8.8%	–7.1%	–1.6%
Small Urban Hospitals	44	+2.1%	–4.2%	–4.3%
6–24 Beds	6	–11.1%	–12.5%	–14.3%
25–49	16	–19.0%	–5.9%	0.0%
50–99	38	–12.5%	–7.1%	–2.6%
100+ with 4,000 or fewer admissions	72	+2.4%	–6.0%	–8.9%

Source: American Hospital Association, Annual Survey of Hospitals, 1986.

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Table 2

Net Patient Margin, Registered Community Hospitals, 1984 and 1986

	1984	1986
TOTAL U.S. HOSPITALS	-1.7%	-2.0%
URBAN HOSPITALS	-1.8%	-2.0%
SMALL OR RURAL HOSPITALS	-1.1%	-2.2%
BED SIZE		
Rural Hospitals	-0.9%	-1.5%
6-24	-13.8%	-20.7%
25-49	-6.5%	-8.6%
50-99	-1.9%	-2.9%
100-199	+0.5%	+0.3%
200 or more	+0.8%	+0.9%
Small Urban Hospitals	-1.6%	-3.4%
6-24	-14.6%	-6.6%
25-49	-11.2%	-14.8%
50-99	+0.1%	-2.0%
100+ with 4,000 or fewer admissions	-1.9%	-2.8%

Source: American Hospital Association, Annual Survey of Hospitals, annual data.

Distribution of Net Patient Margin by Urban/Rural Bed Size, Registered Community Hospitals, 1986

	6%+ Deficit	3.0-5.9% Deficit	0.1-2.9% Deficit	0.0-2.9% Profit	3.0-5.9% Profit	6%+ Profit
TOTAL U.S. HOSPITALS	29%	12%	12%	19%	14%	14%
SMALL OR RURAL HOSPITALS	37%	13%	12%	16%	11%	11%
Rural Hospitals	38%	13%	12%	16%	12%	10%
Under 50 beds	57%	9%	7%	9%	10%	8%
50-99 beds	36%	15%	15%	17%	10%	8%
100 or more beds	18%	15%	14%	23%	16%	15%
URBAN HOSPITALS	22%	11%	13%	21%	15%	18%
Small Urban Hospitals	34%	12%	13%	18%	10%	14%
Under 50 beds	48%	10%	11%	14%	5%	13%
50-99 beds	29%	10%	15%	21%	12%	14%
100+ beds with 4,000 or fewer admissions	33%	16%	12%	15%	11%	13%

Percentages may not add to exactly 100% due to rounding.

Source: American Hospital Association, Annual Survey of Hospitals, 1986.

Table 3

Distribution of rural and urban hospitals by census region and bedsize, 1985

Bedsize characteristic	Census region									
	(1) New England	(2) Mid-Atlantic	(3) South Atlantic	(4) East North Central	(5) East South Central	(6) West North Central	(7) West South Central	(8) Mountain	(9) Pacific	U.S. total
Number of hospitals										
Rural	85	99	322	347	301	568	394	233	137	2,486
Urban	150	437	409	491	148	179	325	101	426	2,666
Rural as percent of total	36	18	44	41	67	76	55	70	24	48
Mean number of beds[1]										
Rural	104	149	113	104	99	71	65	65	66	75
Urban	259	314	273	290	263	282	222	242	201	256
Rural as percent of urban	40	47	41	38	38	25	29	27	33	29
Percent distribution of hospitals by number of beds[1]										
Rural	100	100	100	100	100	100	100	100	100	100
Under 50	20	9	20	18	25	46*	49*	51*	49*	35*
50-99	49*	27	33*	40*	39*	32	33	29	32	34
100-199	18	41*	33*	32	29	18	16	7	19	24
Over 200	13	22	14	9	7	3	3	3	1	7
Urban	100	100	100	100	100	100	100	100	100	100
Under 50	2	2	4	4	3	6	8	5	9	5
50-99	15	8	12	10	20	18	22	12	18	14
100-199	23	20	26	24	26	20	30	25	31	25
Over 200	61*	70*	58*	61*	52*	56*	41*	59*	41*	56*

[1] Short-term beds only. Excludes beds in distinct long-term care units. Percentages may not add to 100 due to rounding.
* Modal category.

SOURCE: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, 1988, compiled from AHA 1985 data, AHA nonrespondents excluded.

Table 4

Medicare: Number and Percent Distribution of Urban and Rural Hospitals by State (Federal FY 1984 PPS Recalibration File)

State	Total Number	Urban		Rural	
		Number	Percent	Number	Percent
U.S.	5,821	3,041	52.2%	2,780	47.8%
ALABAMA	129	56	43.4	73	56.6
ALASKA	22	3	13.6	19	86.4
ARIZONA	72	36	50.0	36	50.0
ARKANSAS	96	19	19.8	77	80.2
CALIFORNIA	486	425	87.4	61	12.6
COLORADO	80	33	41.3	47	58.8
CONNECTICUT	35	33	94.3	2	5.7
DELAWARE	7	3	42.9	4	57.1
D.C.	11	11	100.0	0	0.0
FLORIDA	217	177	81.6	40	18.4
GEORGIA	166	68	41.0	98	59.0
HAWAII	19	9	47.4	10	52.6
IDAHO	45	2	4.4	43	95.6
ILLINOIS	240	149	62.1	91	37.9
INDIANA	118	59	50.0	59	50.0
IOWA	130	26	20.0	104	80.0
KANSAS	145	21	14.5	124	85.5
KENTUCKY	106	30	28.3	76	71.7
LOUISIANA	144	69	47.9	75	52.1
MAINE	45	19	42.2	26	57.8
MARYLAND	53	46	86.8	7	13.2
MASSACHUSETTS	110	104	94.5	6	5.5
MICHIGAN	204	124	60.8	80	39.2
MINNESOTA	171	55	32.2	116	67.8
MISSISSIPPI	118	15	12.7	103	87.3
MISSOURI	151	73	48.3	78	51.7
MONTANA	63	4	6.3	59	93.7
NEBRASKA	99	13	13.1	86	86.9
NEVADA	24	13	54.2	11	45.8
NEW HAMPSHIRE	27	13	48.1	14	51.9
NEW JERSEY	94	94	100.0	0	0.0
NEW MEXICO	49	11	22.4	38	77.6
NEW YORK	260	202	77.7	58	22.3
NORTH CAROLINA	134	51	38.1	83	61.9
NORTH DAKOTA	54	8	14.8	46	85.2
OHIO	194	126	64.9	68	35.1
OKLAHOMA	132	44	33.3	88	66.7
OREGON	75	34	45.3	41	54.7
PENNSYLVANIA	228	181	79.4	47	20.6
RHODE ISLAND	14	14	100.0	0	0.0
SOUTH CAROLINA	73	33	45.2	40	54.8
SOUTH DAKOTA	63	5	7.9	58	92.1
TENNESSEE	147	69	46.9	78	53.1
TEXAS	471	241	51.2	230	48.8
UTAH	39	16	41.0	23	59.0
VERMONT	16	2	12.5	14	87.5
VIRGINIA	102	56	54.9	46	45.1
WASHINGTON	105	56	53.3	49	46.7
WEST VIRGINIA	66	19	28.8	47	71.2
WISCONSIN	145	68	46.9	77	53.1
WYOMING	27	3	11.1	24	88.9

Table 5

Selected characteristics of rural and urban hospitals, by census region, 1985

Characteristic	Census region								
	(1) New England	(2) Mid-Atlantic	(3) South Atlantic	(4) East North Central	(5) East South Central	(6) West North Central	(7) West South Central	(8) Mountain	(9) Pacific
Number of persons per square mile									
Rural	140	89	77	71	64	27	33	11	28
Urban	1933	6767	1085	1815	459	743	767	715	1394
Percent of rural hospitals in MSA-adjacent county	87	91	63	72	47	31	61	29	78
Number of other hospitals—									
In same county									
Rural	2.5	1.7	.6	.8	.7	.7	.8	.8	1.9
Urban	10.0	10.1	6.9	19.2	5.0	5.0	12.9	10.5	44.9
In adjacent counties									
Rural	20.3	17.2	9.0	10.4	9.6	9.0	11.4	11.2	19.0
Urban	50.6	40.8	24.1	43.8	15.6	21.3	30.9	27.0	112.9
Percent of small hospitals with large hospital[1]—									
In same county									
Rural	40	28	2	6	4	1	1	4	6
Urban	84	82	61	61	32	51	57	88	91
In same or adjacent county									
Rural	98	100	73	77	63	37	56	50	69
Urban	100	100	95	96	100	95	99	100	97

[1] "Small" and "large" are defined here as under 100 beds and over 200 beds, respectively.

SOURCE: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, 1988, compiled from AHA and ARF 1985 data.

Table 6

Percent of rural and urban hospitals by ownership and control characteristic and bedsize, 1985

Ownership or control characteristic	Number of beds				
	U.S. total	Under 50	50-99	100-199	Over 200
State or local government owned					
Rural	42	53	44	29	20
Urban	15*	27*	23*	13*	13*
Privately owned, not-for-profit					
Rural	49	38	48	59	77
Urban	70*	51*	50	63	80
Privately owned, for-profit					
Rural	9	8	9	11	3
Urban	15*	21*	28*	24*	7*
Part of multihospital system					
Rural	23	20	23	28	26
Urban	36*	29*	31*	38*	37*
Contract-managed					
Rural	19	21	22	14	9
Urban	9*	21	22	10*	4*
JCAH-accredited					
Rural	62	34	66	89	99
Urban	91*	61*	81*	90	97
Residency AMA-approved					
Rural	2	0	0	2	15
Urban	30*	1	1	7*	50*

* Urban/rural difference statistically significant at the 0.01 level using a two-tailed t-test.

SOURCE: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, 1988, compiled from AHA 1985 data.

Table 7

ADMISSIONS AND MEDICARE ADMISSIONS TO U.S SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986.

	1981	1982	1983	1984	1985	1986
Average Number of Admissions						
RURAL						
All	3079	3052	2993	2850	2603	2457
Under 50 beds	1058	1051	1036	978	881	814
50 to 99 beds	2398	2341	2302	2172	1951	1849
100 to 199 beds	4846	4839	4725	4506	4118	3899
Over 200 beds	10088	10066	9872	9528	8911	8421
URBAN						
All	9859	9877	9810	9606	9253	9094
Under 50 beds	1226	1234	1244	1195	1160	1115
50 to 99 beds	2752	2787	2792	2719	2588	2528
100 to 199 beds	5417	5422	5386	5243	4995	4912
Over 200 beds	14565	14587	14479	14199	13708	13478
Average Number of Medicare Admissions						
RURAL						
All	1057	1102	1126	1097	999	961
Under 50 beds	420	426	446	421	375	353
50 to 99 beds	856	886	910	873	781	744
100 to 199 beds	1613	1701	1713	1699	1559	1521
Over 200 beds	3202	3356	3436	3383	3161	3044
URBAN						
All	2802	2923	3078	3070	2956	2894
Under 50 beds	425	433	469	454	444	421
50 to 99 beds	904	930	972	963	919	906
100 to 199 beds	1627	1704	1778	1785	1685	1664
Over 200 beds	4061	4237	4470	4456	4308	4211
Medicare Admissions as a Percentage of All Admissions						
RURAL						
All	36.2	37.8	39.6	40.2	40.0	40.7
Under 50 beds	39.7	40.5	43.0	43.1	42.6	43.4
50 to 99 beds	35.7	37.9	39.5	40.2	40.0	40.3
100 to 199 beds	33.3	35.2	36.3	37.7	37.8	39.0
Over 200 beds	31.7	33.3	34.8	35.5	35.5	36.1
URBAN						
All	29.5	30.5	32.3	33.0	32.9	32.9
Under 50 beds	34.7	35.1	37.7	38.0	38.3	37.7
50 to 99 beds	32.8	33.4	34.8	35.4	35.5	35.9
100 to 199 beds	30.0	31.4	33.0	34.1	33.7	33.9
Over 200 beds	27.9	29.0	30.9	31.4	31.4	31.2

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska.

Table 8

INPATIENT DAYS AND MEDICARE INPATIENT DAYS IN U.S. SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986

	1981	1982	1983	1984	1985	1986
Average Number of Acute Care Inpatient Days:						
RURAL						
All	18784	18625	18063	16176	13989	13323
Under 50 beds	5747	5641	5531	4877	4175	3966
50 to 99 beds	13768	13429	13024	11393	9569	9055
100 to 199 beds	29697	29695	28636	25757	22441	21270
Over 200 beds	68765	68766	66949	61320	54130	52234
URBAN						
All	75028	74823	73186	68839	62865	61454
Under 50 beds	6939	7020	6930	6201	5720	5556
50 to 99 beds	16717	16752	16701	15388	13917	13535
100 to 199 beds	36420	36228	35514	32912	29978	29297
Over 200 beds	114345	114045	111428	105148	96087	93955
Average Number of Medicare Acute Care Inpatient Days						
RURAL						
All	.	9309	9390	8264	6951	6709
Under 50 beds	.	3127	3185	2666	2120	2002
50 to 99 beds	.	7015	7156	5957	4891	4664
100 to 199 beds	.	14522	14711	13222	11160	10884
Over 200 beds	.	32449	31984	29632	25962	25192
URBAN						
All	.	31014	31520	29537	26923	26321
Under 50 beds	.	3369	3539	3019	2622	2488
50 to 99 beds	.	7973	8074	7355	6461	6295
100 to 199 beds	.	15936	16410	15147	13496	13289
Over 200 beds	.	46545	47202	44422	40706	39766
Medicare Days as a Fraction of All Days						
RURAL						
ALL	.	52.1	54.5	52.6	50.5	50.9
Under 50 beds	.	55.4	57.6	54.7	50.8	50.5
50 to 99 beds	.	52.2	54.9	52.3	51.1	51.5
100 to 199 beds	.	48.9	51.4	51.3	49.7	51.2
Over 200 beds	.	47.2	47.8	48.3	48.0	48.2
URBAN						
All	.	42.9	44.6	44.3	43.8	43.8
Under 50 beds	.	48.0	51.1	48.7	45.8	44.8
50 to 99 beds	.	47.6	48.3	47.8	46.4	46.5
100 to 199 beds	.	44.0	46.2	46.0	45.0	45.4
Over 200 beds	.	40.8	42.4	42.2	42.4	42.3

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska. Medicare days were not reported in 1981.

Table 9

ACUTE CARE BEDS, NUMBER OF EMPLOYEES, AND TOTAL EXPENDITURES IN U.S. SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986.

	1981	1982	1983	1984	1985	1986
Average Number of Acute Care Beds Set Up and Staffed						
RURAL						
All	78	79	79	78	75	73
Under 50 beds	31	32	32	32	32	31
50 to 99 beds	62	62	62	62	59	58
100 to 199 beds	119	120	120	118	115	111
Over 200 beds	247	249	250	242	230	225
URBAN						
All	262	265	265	263	255	252
Under 50 beds	36	37	38	39	39	41
50 to 99 beds	72	73	74	75	76	76
100 to 199 beds	141	143	144	144	141	141
Over 200 beds	389	392	392	388	374	368
Average Number of Full-Time-Equivalent (FTE) Employees						
RURAL						
All	199	219	200	190	183	185
Under 50 beds	64	72	64	62	61	61
50 to 99 beds	148	162	148	139	133	134
100 to 199 beds	311	344	312	296	284	288
Over 200 beds	714	779	721	692	671	686
URBAN						
All	860	942	881	860	861	874
Under 50 beds	81	93	87	84	91	94
50 to 99 beds	185	213	196	193	194	197
100 to 199 beds	395	432	404	393	392	399
Over 200 beds	1322	1445	1353	1321	1322	1342
Average Total Expenditure (in Millions of Dollars)						
RURAL						
All	4.98	5.84	6.36	6.65	6.81	7.28
Under 50 beds	1.49	1.74	1.92	2.01	2.05	2.15
50 to 99 beds	3.67	4.20	4.63	4.76	4.83	5.17
100 to 199 beds	7.87	9.40	10.18	10.66	10.89	11.59
Over 200 beds	18.25	21.46	23.21	24.57	25.56	27.55
URBAN						
All	26.81	31.09	34.49	36.37	38.74	42.17
Under 50 beds	2.19	2.63	3.05	3.28	3.76	4.15
50 to 99 beds	5.60	6.70	7.59	8.17	8.60	9.31
100 to 199 beds	12.32	14.36	15.90	16.73	17.72	19.22
Over 200 beds	41.30	47.79	52.98	55.85	59.53	64.83

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska.

Table 10

INPATIENT EXPENDITURE AND INPATIENT LABOR INPUT PER ADMISSION IN U.S. SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986.

	1981	1982	1983	1984	1985	1986
Average Total Inpatient Expenditure per Admission						
RURAL						
All	1377	1606	1794	1922	2074	2262
Under 50 beds	1164	1366	1528	1650	1799	1954
50 to 99 beds	1281	1490	1670	1783	1922	2085
100 to 199 beds	1391	1627	1823	1954	2104	2279
Over 200 beds	1573	1831	2028	2173	2345	2600
URBAN						
All	2352	2720	3038	3248	3506	3813
Under 50 beds	1500	1769	2056	2250	2514	2787
50 to 99 beds	1749	2040	2309	2507	2662	2890
100 to 199 beds	1946	2260	2505	2662	2850	3094
Over 200 beds	2457	2839	3171	3391	3666	3988
Average Inpatient Payroll Expenditure per Admission						
RURAL						
All	668	773	852	904	956	1023
Under 50 beds	560	646	715	769	834	893
50 to 99 beds	613	710	781	832	880	933
100 to 199 beds	674	780	859	909	955	1015
Over 200 beds	778	901	992	1049	1108	1208
URBAN						
All	1179	1350	1491	1575	1668	1772
Under 50 beds	684	785	899	958	1044	1132
50 to 99 beds	796	916	1014	1083	1134	1196
100 to 199 beds	899	1031	1137	1187	1244	1310
Over 200 beds	1249	1429	1579	1670	1770	1883
Average Inpatient FTE Personnel per Admission						
RURAL						
All	0.056	0.061	0.057	0.056	0.057	0.058
Under 50 beds	0.051	0.057	0.052	0.052	0.054	0.056
50 to 99 beds	0.053	0.059	0.055	0.053	0.055	0.055
100 to 199 beds	0.056	0.061	0.057	0.055	0.056	0.057
Over 200 beds	0.062	0.067	0.064	0.062	0.062	0.066
URBAN						
All	0.076	0.083	0.078	0.077	0.078	0.080
Under 50 beds	0.055	0.063	0.059	0.057	0.061	0.063
50 to 99 beds	0.058	0.065	0.061	0.059	0.060	0.061
100 to 199 beds	0.063	0.069	0.064	0.063	0.064	0.065
Over 200 beds	0.079	0.086	0.081	0.080	0.081	0.083

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska. Inpatient costs and inpatient FTEs were calculated by multiplying total hospital costs and personnel by the fraction of hospital charges accounted for by inpatient charges. Data used in constructing this table were weighted by the number of hospital discharges.

Table 11

TOTAL NUMBER OF SURGICAL OPERATIONS, NUMBER OF OUTPATIENT SURGICAL OPERATIONS, AND OUTPATIENT SURGERY AS A FRACTION OF ALL SURGERY, IN U.S. SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986.

	1981	1982	1983	1984	1985	1986
Average Number of Surgical Operations						
RURAL						
All	1274.3	1291.2	1291.8	1303.3	1319.8	1339.6
Under 50 beds	240.3	246.5	242.5	244.7	245.8	254.5
50 to 99 beds	813.6	816.6	823.0	833.2	844.1	868.2
100 to 199 beds	2168.8	2200.5	2220.7	2235.2	2281.3	2301.6
Over 200 beds	5464.7	5554.2	5483.5	5533.8	5553.6	5600.8
URBAN						
All	5552.1	5657.7	5715.0	5728.2	5800.4	5940.4
Under 50 beds	566.0	532.4	553.6	556.7	596.9	700.3
50 to 99 beds	1341.4	1407.7	1456.2	1510.5	1600.4	1674.8
100 to 199 beds	2992.9	3054.0	3050.1	3116.6	3177.0	3344.4
Over 200 beds	8293.6	8443.7	8535.0	8514.6	8591.2	8739.0
Average Number of Operations Done on an Outpatient Basis						
RURAL						
All	202.6	239.7	281.5	342.9	460.4	566.5
Under 50 beds	43.6	43.5	52.5	61.6	86.0	107.0
50 to 99 beds	126.4	160.5	193.3	230.3	295.0	371.0
100 to 199 beds	307.3	364.5	441.2	559.1	797.9	972.3
Over 200 beds	979.8	1137.2	1263.5	1505.6	1926.7	2355.0
URBAN						
All	1055.0	1195.0	1385.7	1619.6	2018.8	2371.8
Under 50 beds	174.9	142.0	176.6	209.5	266.7	342.3
50 to 99 beds	253.0	316.3	382.4	484.3	626.2	770.7
100 to 199 beds	547.8	646.0	760.8	926.1	1193.0	1453.1
Over 200 beds	1579.2	1775.3	2048.2	2367.3	2926.9	3403.4
Outpatient Surgical Operations as a Fraction of All Surgical Operations						
RURAL						
All	16.2	18.4	22.0	26.2	34.9	42.3
Under 50 beds	18.1	17.7	21.7	25.2	35.0	42.0
50 to 99 beds	15.5	19.7	23.5	27.6	34.9	42.7
100 to 199 beds	14.2	16.6	19.9	25.0	35.0	42.2
Over 200 beds	17.9	20.5	23.0	27.2	34.7	42.0
URBAN						
All	19.5	21.6	25.0	29.4	36.2	41.5
Under 50 beds	30.9	26.7	31.9	37.6	44.7	48.9
50 to 99 beds	18.9	22.5	26.3	32.1	39.1	46.0
100 to 199 beds	18.3	21.2	24.9	29.7	37.6	43.4
Over 200 beds	19.0	21.0	24.0	27.8	34.1	38.9

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska.

Table 12

Distribution of Hospitals, Discharges, and PPS Payments, by Hospital Type (In Percent)+

Hospital Type	Hospitals	Medicare Discharges	Total PPS Payments	Teaching Payments	Disproportionate Share Payments	Outlier Payments
All hospitals	100%	100%	100%	100%	100%	100%
Urban	51	75	83	96	96	90
Rural	49	25	17	4	4	10
MSA > 1 million	25	38	46	64	56	54
Other urban	25	37	38	31	40	36
Rural referral	3	4	4	2	*	2
Sole community	6	2	2	*	*	*
Other rural	41	19	12	3	4	8
Major teaching	3	7	11	51	27	18
Other teaching	15	32	37	49	37	43
Non-teaching	82	61	52	0	36	40
Disproportionate share:						
MSA > 1 million	9	13	17	35	56	25
Other urban	9	14	16	19	40	18
Rural	5	2	2	2	4	3
Non-disproportionate share	78	71	65	43	0	54
New England	5	6	7	10	3	10
Middle Atlantic	9	14	17	26	21	32
South Atlantic	14	16	15	12	15	15
East North Central	16	19	19	23	15	14
East South Central	9	9	7	3	8	5
West North Central	14	9	8	7	4	5
West South Central	15	11	9	5	11	6
Mountain	7	4	4	3	2	2
Pacific	12	12	15	12	23	10
Urban <100 beds	12	5	4	*	1	3
Urban 100-249 beds	19	21	21	9	27	19
Urban 250-404 beds	11	24	26	23	29	26
Urban 405-684 beds	6	19	23	41	27	29
Urban 685+ beds	1	6	8	23	10	13
Rural <50 beds	23	5	3	*	*	1
Rural 50-99 beds	15	7	4	*	1	1
Rural 100-169 beds	7	7	4	*	1	2
Rural 170+ beds	4	7	5	4	3	6
Voluntary	55	71	73	76	67	75
Proprietary	15	11	10	2	8	10
Urban government	8	9	10	18	21	10
Rural government	22	9	8	2	3	4

* =less than 0.5 percent.

+ PPS payments simulated using OBRA 1987 policy rules under a fully phased-in system. Columns may not add to 100 due to rounding.

SOURCE: ProPAC estimates based on data from the U.S. Department of Health and Human Services, Health Care Financing Administration.

Table 13

Third-Year PPS Operating Margins: Means and Percentiles, by Hospital Type*

Hospital Type	Mean	Percentile				
		10th	25th	Median	75th	90th
All hospitals	8.2	-18.5	-4.6	5.1	12.7	19.4
Urban	8.9	-8.3	0.2	7.8	14.7	21.3
Rural	4.6	-28.5	-9.1	1.3	9.9	17.7
MSA > 1 million	7.8	-10.0	-1.0	6.6	13.7	21.0
Other urban	10.2	-6.4	1.8	8.9	15.5	21.3
Rural referral	15.3	-4.7	2.9	9.1	14.8	18.9
Sole community	3.1	-31.2	-7.5	1.8	13.6	21.2
Other rural	0.9	-30.0	-10.9	0.4	8.8	16.9
Major teaching	11.0	-7.9	1.6	10.4	20.2	25.9
Other teaching	10.2	-5.3	1.7	8.7	15.1	21.0
Non-teaching	6.4	-21.0	-5.9	4.2	11.9	18.8
Disproportionate share:						
MSA > 1 million	7.2	-12.0	-0.6	6.6	14.1	21.3
Other urban	10.2	-3.7	2.7	9.8	16.8	22.4
Rural	6.2	-26.4	-5.8	4.6	13.6	21.4
Non-disproportionate share	8.0	-20.6	-5.9	4.4	11.9	18.8
New England	8.6	-12.0	-2.2	6.5	12.9	17.4
Middle Atlantic	8.3	-4.4	2.6	8.8	14.2	20.5
South Atlantic	5.0	-18.1	-6.7	3.5	10.4	17.9
East North Central	10.1	-9.3	-1.4	6.6	13.1	18.8
East South Central	4.8	-11.6	-4.5	3.0	10.2	19.2
West North Central	11.8	-27.0	-5.8	4.9	12.3	20.3
West South Central	8.0	-37.3	-10.4	2.9	12.6	19.4
Mountain	11.9	-22.4	-5.5	6.1	15.5	23.5
Pacific	6.3	-16.1	-3.1	6.0	13.8	20.9
Urban <100 beds	6.8	-16.8	-3.2	7.1	16.0	25.1
Urban 100-249 beds	7.4	-7.6	0.0	7.5	14.2	20.6
Urban 250-404 beds	8.3	-4.6	2.5	8.5	13.8	19.2
Urban 405-684 beds	10.0	-4.0	2.3	9.2	16.1	21.1
Urban 685+ beds	13.1	-8.0	3.9	10.4	19.2	27.8
Rural <50 beds	-0.7	-44.7	-18.5	-1.0	10.3	19.3
Rural 50-99 beds	2.6	-18.5	-6.6	2.5	9.2	16.2
Rural 100-169 beds	2.5	-13.9	-5.6	1.7	8.5	15.7
Rural 170+ beds	10.5	-8.5	-2.9	4.2	11.1	18.2
Voluntary	9.0	-12.2	-1.6	6.6	13.5	19.7
Proprietary	6.6	-13.9	-4.7	4.8	13.1	22.5
Urban government	6.1	-12.3	-1.1	6.9	14.2	21.5
Rural government	5.5	-37.4	-14.1	-1.1	8.2	16.4

* Excludes hospitals in Maryland, Massachusetts, New Jersey and New York.

SOURCE: ProPAC estimates based on Medicare Cost Report data from the U.S. Department of Health and Human Services, Health Care Financing Administration, for 3,321 hospitals.

Table 14

Comparison of PPS Operating Margins for the First Three Years of PPS, by Hospital Type*

Hospital Type	Operating Margins		
	PPS 1	PPS 2	PPS 3
All hospitals	14.7	14.1	8.2
Urban	16.0	15.2	8.9
Rural	8.3	8.7	4.6
MSA > 1 million	16.8	14.6	7.8
Other urban	15.1	15.9	10.2
Rural referral	8.6	14.8	15.3
Sole community	6.2	6.9	3.1
Other rural	8.5	6.9	0.9
Major teaching	19.8	21.5	11.0
Other teaching	17.0	16.3	10.2
Non-teaching	12.4	11.5	6.4
Disproportionate share:			
MSA > 1 million	16.4	14.5	7.2
Other urban	14.9	16.4	10.2
Rural	11.2	10.9	6.2
Non-disproportionate share	14.3	13.6	8.0
New England	13.0	13.1	8.6
Middle Atlantic	16.0	15.9	8.3
South Atlantic	12.9	12.6	5.0
East North Central	15.1	14.8	10.1
East South Central	10.2	11.4	4.8
West North Central	15.9	15.6	11.8
West South Central	16.7	14.0	8.0
Mountain	13.4	14.8	11.9
Pacific	15.4	14.0	6.3
Urban <100 beds	13.7	13.7	6.8
Urban 100–249 beds	15.0	13.6	7.4
Urban 250–404 beds	15.2	13.6	8.3
Urban 405–684 beds	16.8	17.2	10.0
Urban 685+ beds	20.8	20.1	13.1
Rural <50 beds	6.3	5.8	-0.7
Rural 50–99 beds	9.3	8.4	2.6
Rural 100–169 beds	8.4	8.4	2.5
Rural 170+ beds	8.2	10.8	10.5
Voluntary	15.2	14.8	9.0
Proprietary	14.7	12.8	6.6
Urban government	14.8	14.6	6.1
Rural government	7.0	6.3	5.5

* Excludes hospitals in Maryland, Massachusetts, New Jersey, and New York.

SOURCE: ProPAC estimates using Medicare Cost Report data from the U.S. Department of Health and Human Services, Health Care Financing Administration, for a cohort of 3,321 hospitals.

Table 15

PPS Operating Margins: Distribution of Hospitals in the Top and Bottom 10 Percent (PPS 3) and Hospitals with Negative Margins (PPS 1, PPS 2, and PPS 3) (In Percent)*

Hospital Type	PPS 3			PPS 1, PPS 2, PPS 3
	All Hospitals	Top 10 Percent Margins	Bottom 10 Percent Margins	Negative Margins in All Three Years
Percent of All Hospitals	100.0%	10.0%	10.0%	8.7%
Urban	48.6	62.7	21.4	16.7
Rural	51.4	37.3	78.6	83.3
MSA > 1 million	24.1	30.2	13.3	7.6
Other urban	24.5	32.5	8.2	9.0
Rural referral	3.1	2.5	0.0	1.0
Sole community	5.8	5.8	8.7	10.8
Other rural	42.5	28.9	69.9	71.5
Major teaching	2.4	6.1	0.8	0.0
Other teaching	14.3	17.3	3.6	2.1
Non-teaching	83.3	76.7	95.7	97.9
Disproportionate share:				
MSA > 1 million	8.2	10.9	4.3	2.8
Other urban	8.5	12.9	1.8	3.1
Rural	4.5	6.9	5.1	4.5
Non-disproportionate share	78.9	69.3	88.8	89.6
New England	3.0	2.0	1.8	1.7
Middle Atlantic	3.3	3.6	1.0	0.4
South Atlantic	13.2	10.4	12.8	12.2
East North Central	19.4	15.7	9.7	11.5
East South Central	9.4	8.4	5.6	5.9
West North Central	16.1	16.8	21.2	21.5
West South Central	16.9	18.0	32.4	28.5
Mountain	6.1	10.4	6.4	8.0
Pacific	12.5	14.7	9.2	10.4
Urban <100 beds	12.1	22.6	12.2	10.4
Urban 100-249 beds	19.0	20.3	7.7	5.2
Urban 250-404 beds	10.7	10.4	0.8	1.0
Urban 405-684 beds	5.7	6.9	0.5	0.0
Urban 685+ beds	1.0	2.5	0.3	0.0
Rural <50 beds	24.4	24.9	58.7	54.5
Rural 50-99 beds	15.7	6.9	14.8	18.8
Rural 100-169 beds	7.5	3.3	4.6	7.6
Rural 170+ beds	3.8	2.3	0.5	2.4
Voluntary	54.8	54.6	35.8	35.5
Proprietary	14.3	19.4	13.6	11.1
Urban government	7.5	10.2	4.6	3.8
Rural government	23.3	15.8	46.0	49.5

* Excludes hospitals in Maryland, Massachusetts, New Jersey, and New York. Colums may not sum to 100 due to rounding.

SOURCE: ProPAC estimates based on Medicare Cost Report data from the U.S. Department of Health and Human Services, Health Care Financing Administration, for a cohort of 3,321 hospitals.

Table 16

Table 6. Full-Time Equivalent Employees, Registered Community Hospitals, 1980–1986

	Full-Time Equivalent Employees	Percentage change over period		
	1986	1980–1984	1984–1985	1985–1986
TOTAL U.S. HOSPITALS	3,024,853	+5%	–1%	+1%
SMALL OR RURAL HOSPITALS	700,229	–7%	+1%	+1%
BED SIZE				
Rural Hospitals	493,288	–12%	–2%	–0.4%
6–24 Beds	6,829	–17%	+3%	+0.2%
25–49	57,853	0%	+1%	+3%
50–99	131,417	–10%	–3%	+0.4%
100–199	174,083	–6%	–1%	–4%
200 or more	123,106	–23%	–5%	+3%
Small Urban Hospitals	206,941	+10%	+9%	+4%
6–24 Beds	1,637	–23%	–7%	+22%
25–49	19,290	–16%	+3%	+10%
50–99	89,295	+9%	+1%	–2%
100+ with 4,000 or fewer admissions	96,719	+21%	+21%	+9%

Note: The increases at urban hospitals with more than 100 beds but fewer than 4,000 admissions largely reflect increases in the number of hospitals in this category.

Percentage of Part-Time Personnel, Selected Categories of Registered Community Hospitals, 1986

Total U.S. hospitals	27%		
Total small or rural hospitals	27%		
Bed Size			
Rural	27%	Urban	29%
6–24	36%	6–24	29%
25–49	29%	25–49	28%
50–99	29%	50–99	31%
100–199	27%	100+, 4,000 or fewer admissions	28%
200 or more	22%		

Table 17

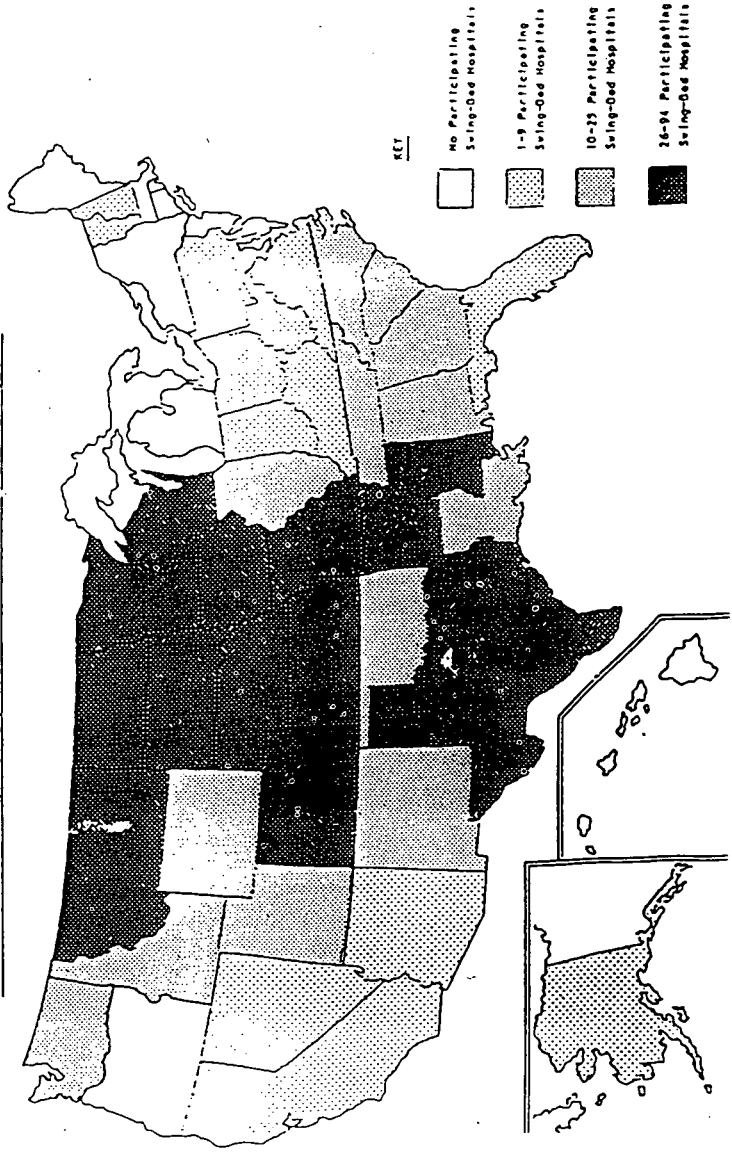
OUTPATIENT VISITS, OUTPATIENT CHARGES AS A FRACTION OF ALL HOSPITAL CHARGES, AND MEDICARE OUTPATIENT VISITS AS A FRACTION OF ALL OUTPATIENT VISITS IN U.S. SHORT-TERM GENERAL NONFEDERAL HOSPITALS, 1981-1986.

	1981	1982	1983	1984	1985	1986	ANNUAL GROWTH RATE
Average Number of Outpatient Visits (in Thousands)							
RURAL							
All	14.8	18.1	14.8	15.1	15.2	16.6	2.3
Under 50 beds	5.3	6.4	5.5	5.5	5.7	6.2	3.2
50 to 99 beds	12.0	14.0	11.9	11.8	12.2	13.3	2.1
100 to 199 beds	22.1	27.5	21.4	21.7	22.2	24.8	2.3
Over 200 beds	48.5	61.7	50.6	53.9	51.2	54.6	2.4
URBAN							
All	57.5	68.4	61.2	60.2	62.3	66.5	3.0
Under 50 beds	7.2	8.5	7.8	7.5	8.5	11.1	9.0
50 to 99 beds	14.8	18.7	15.4	15.2	15.9	17.9	3.9
100 to 199 beds	29.4	34.5	32.5	32.9	35.0	36.8	4.6
Over 200 beds	86.3	102.5	91.4	89.5	92.0	98.0	2.6
Outpatient Charges as a Fraction of All Hospital Charges							
RURAL							
All	14.2	14.3	14.5	16.3	19.8	22.9	10.0
Under 50 beds	15.8	15.8	15.6	17.4	21.4	24.7	9.3
50 to 99 beds	14.0	14.0	14.4	16.4	19.9	23.1	10.5
100 to 199 beds	12.9	12.9	13.4	15.1	18.5	21.2	10.4
Over 200 beds	12.3	12.9	12.9	14.1	16.7	19.3	9.4
URBAN							
All	13.4	13.6	13.6	14.9	17.2	18.9	7.1
Under 50 beds	16.2	16.8	16.2	18.3	22.2	25.5	9.5
50 to 99 beds	13.8	14.3	14.0	16.0	19.2	22.2	10.0
100 to 199 beds	13.4	13.3	14.1	15.5	18.6	20.2	8.6
Over 200 beds	13.1	13.2	13.1	14.0	15.5	16.8	5.1
Medicare Outpatient Visits as a Fraction of All Outpatient Visits							
RURAL							
All	.	.	19.8	20.7	22.4	.	6.4
Under 50 beds	.	.	21.7	21.9	24.7	.	6.7
50 to 99 beds	.	.	19.3	20.8	21.7	.	6.0
100 to 199 beds	.	.	18.4	19.6	20.5	.	5.6
Over 200 beds	.	.	18.5	18.3	21.2	.	7.0
URBAN							
All	.	.	15.8	16.3	17.4	.	4.9
Under 50 beds	.	.	15.5	18.0	19.6	.	12.5
50 to 99 beds	.	.	18.4	19.7	18.2	.	-0.5
100 to 199 beds	.	.	14.9	15.2	16.2	.	4.3
Over 200 beds	.	.	15.6	15.9	17.5	.	5.9

Source: National Center for Health Services Research and Health Care Technology Assessment, Hospital Studies Program, compiled from AHA 1981-1986 data. Data are for hospitals in the 49 states excluding Alaska. Data for Medicare outpatient visits were not reported in 1981, 1982 or 1986. The large jump in reported outpatient visits in 1982 is an artifact of the reporting format used that year by the American Hospital Association.

TABLE 18

Distribution of Swing-Bed Hospitals in the United States in July 1986.



Reproduced from Evaluation of the Rural Hospital Swing Bed Program (Washington, DC: Department of Health and Human Services, October 1987), p.III.4.

Table 19

RURAL HOSPITALS IN MULTIHOSPITAL SYSTEMS

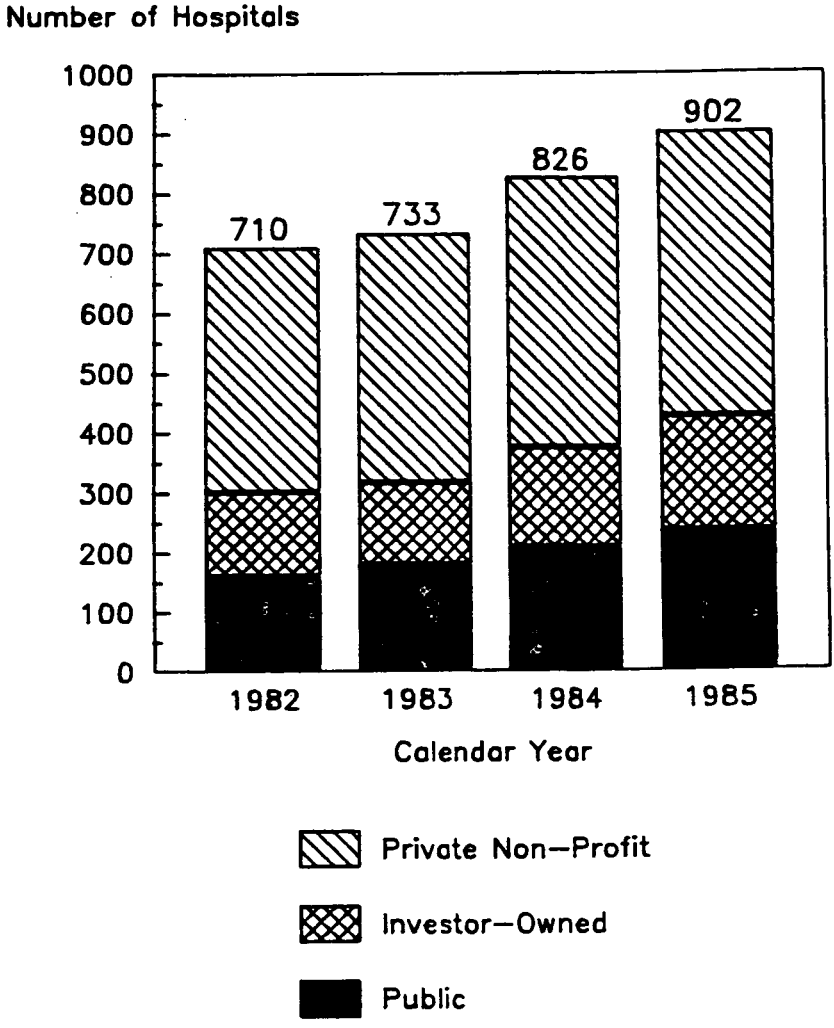


Table 20

Rural Community Hospital Closures by Year of Closure: United States, 1980 - 1987

Year	Hospital Closures		Hospital Beds	
	Number	Percent	Number	Percent
1980	13	8.1	625	8.2
1981	11	6.8	378	5.0
1982	13	8.1	754	9.9
1983	7	4.3	480	6.3
1984	18	11.2	633	8.3
1985	21	13.0	736	9.7
1986	38	23.6	1,570	20.6
1987	40	24.9	2,429	32.0
Total	161	100.0	7,605	100.0

Table 21

PERCENTAGE DISTRIBUTION OF U.S. RURAL COMMUNITY HOSPITAL CLOSURES (1980-87) AND ALL U.S. RURAL COMMUNITY HOSPITALS (1983) BY STATE

	U.S. Rural Community Hospital Closures 1980-87				All U.S. Rural Community Hospitals in 1983			
State	Number of Hospitals	Percentage of Total	Number of Beds	Percentage of Total	Number of Hospitals	Percentage of Total	Number of Beds	Percentage of Total
Texas	34	21.6	1,318	17.9	235	9.7	12,950	6.1
Illinois	7	4.3	458	6.0	88	3.5	9,509	4.5
Minnesota	7	4.3	371	4.9	114	4.6	8,816	4.1
Oklahoma	7	4.3	198	2.6	81	3.2	5,435	2.5
Wisconsin	6	3.7	473	6.2	76	3.0	8,105	3.8
Alabama	6	3.7	361	4.7	73	2.9	6,229	2.9
Kentucky	6	3.7	232	3.0	77	3.1	7,520	3.5
Louisiana	6	3.7	216	2.8	74	3.0	5,022	2.4
Michigan	6	3.7	193	2.5	91	3.6	7,010	3.3
Tennessee	5	3.1	351	4.6	78	3.1	7,812	3.7
Nebraska	5	3.1	347	4.6	84	3.4	5,024	2.4
New York	5	3.1	293	3.8	58	2.3	7,742	3.6
Ohio	4	2.5	228	3.0	68	2.7	8,332	3.9
Virginia	4	2.5	171	2.2	46	1.8	6,236	2.9
Arkansas	4	2.5	141	1.8	76	3.0	6,245	2.9
Missouri	4	2.5	133	1.7	77	3.1	7,095	3.3
Mississippi	4	2.5	116	1.5	102	4.1	9,855	4.6
Oregon	4	2.5	108	1.4	41	1.6	2,974	1.4
Montana	3	1.9	267	3.5	56	2.2	3,501	1.6
Colorado	3	1.9	184	2.4	48	1.9	3,136	1.5
Kansas	3	1.9	155	2.0	124	5.0	7,632	3.6
Arizona	3	1.9	106	1.4	29	1.2	1,865	0.9
California	3	1.9	77	1.0	59	2.4	3,354	1.6
Maine	2	1.2	216	2.8	33	1.3	2,689	1.3
North Dakota	2	1.2	193	2.5	44	1.8	3,140	1.5
Pennsylvania	2	1.2	120	1.6	49	2.0	7,717	3.6
Iowa	2	1.2	79	1.0	103	4.1	7,839	3.7
New Mexico	2	1.2	73	1.0	32	1.3	2,306	1.1
Washington	2	1.2	57	0.7	49	2.0	2,778	1.3
Idaho	2	1.2	53	0.7	43	1.7	2,992	1.4
Georgia	2	1.2	52	0.7	97	3.9	9,375	4.4
North Carolina	2	1.2	52	0.7	78	3.1	10,092	4.7
West Virginia	1	0.6	124	1.6	48	1.9	5,822	2.7
Florida	1	0.6	58	0.8	43	1.7	4,432	2.1
Massachusetts	1	0.6	25	0.3	15	0.6	2,057	1.0
Alaska	1	0.6	6	0.1	11	0.4	486	0.2
TOTAL	161	100.0	7,605	100.0	2,500	100.0	213,124	100.0

Table 22

PERCENTAGE DISTRIBUTION OF U.S. RURAL COMMUNITY HOSPITAL CLOSURES (1980-87) AND ALL U.S. RURAL COMMUNITY HOSPITALS (1983) BY HOSPITAL OWNERSHIP STATUS

	U.S. Rural Community Hospital Closures 1980-87				All U.S. Rural Community Hospital in 1983			
Hospital Ownership Status	Number of Hospitals	Percentage of Total	Number of Beds	Percentage of Total	Number of Hospitals	Percentage of Total	Number of Beds	Percentage of Total
For-Profit	48	29.8	1,861	24.5	250	9.1	19,368	8.2
NonGovernment Not-for-Profit	63	39.1	3,311	43.5	1,290	46.8	131,923	55.6
State and Local Government	50	31.1	2,433	32.0	1,219	44.1	86,096	36.2
Total	161	100.0	7,605	100.0	2,759	100.0	237,387	100.0

Table 23

Number and percent change in supply of active M.D.'s for different types of areas, selected years 1960-1978

	Number			
	1960 (estimated)	1970	1974	1978
U.S. total	205,935	278,855	321,089	377,492
All metropolitan	170,792	239,831	276,997	324,627
Large metro core	94,303	129,125	143,286	160,707
Large metro fringe	16,209	28,301	35,309	44,115
Medium metro	43,941	60,526	72,817	88,108
Small metro	16,610	21,879	25,585	31,697
All nonmetropolitan	35,172	39,024	44,092	52,865
Isolated semirural	18,032	20,787	23,747	28,843
Isolated rural	2,507	2,219	2,416	2,975
	Percent change			
	1960-70	1970-78	1970-74	1974-78
U.S. total	+35	+35	+15	+18
All metropolitan	+40	+35	+15	+17
Large metro core	+37	+24	+11	+12
Large metro fringe	+75	+56	+25	+25
Medium metro	+38	+46	+20	+21
Small metro	+31	+45	+17	+24
All nonmetropolitan	+11	+35	+13	+20
Isolated semirural	+15	+39	+14	+21
Isolated rural	-11	+34	+ 9	+23

Source: American Medical Association Physician Distribution and Medical Licensure in the United States. Figures for 1960 were adjusted downward to reflect the change in classification of physicians in 1968, whereby a large number of active physicians became classified as inactive. (See Reclassification of Physicians, 1968 published by the AMA.)

Table 24

Percentage of Communities with Board-Certified Internists in 1960 and 1977

	Percentage of Communities with Board-Certified Internists, by Size of Population						
	2.5-5	5-10	10-20	20-30	30-50	50-200	200+
	in thousands						
1960	2	11	25	65	85	90	100
1977	9	23	51	92	98	95	100
Number of towns in each population range (1970)	621	361	185	52	59	37	33

Table 25

Trends in Patient Care Physicians: Supply & Availability in Rural Counties of the U.S. by County Groupings

1975-85

County Grouping	1975 Number of Counties	1975 Population	1975 Patient Care Phys. [MD's & DO's] Total	1975 Per 100,000 Pop.	1975 %DOs	1985 Number of Counties	1985 Population	1985 Patient Care Phys. [MD's & DO's] Total	1985 Per 100,000 Pop.	1985 %DOs	1975-85 % Change in Physicians Per 100,000 Pop.
< 2500	95	148,240	39	26.3	12.8	95	147,200	44	29.9	18.2	13.7
2500 - 4999	191	727,576	303	41.6	8.3	166	636,600	336	52.8	10.4	26.9
5,000 - 10,000	399	2,920,980	1416	48.6	16.3	424	3,198,900	1730	54.2	16.1	11.5
Frontier Counties < 10,000 Pop	308	1,196,492	579	48.4	7.4	302	1,223,300	702	57.4	8.5	18.6
Non-Frontier Counties < 10,000 Pop	377	2,600,304	1179	45.5	18.5	383	2,759,400	1408	51.2	18.6	12.5
All Counties < 10,000 Pop	685	3,796,798	1758	46.4	14.8	685	3,982,700	2110	53.0	15.3	14.2
All U.S.		213,051,000	262,494	123.2	5.3		236,158,000	385,576	163.3	5.1	32.5
-Metropolitan* areas		156,954,000	213,152	135.8	NA		179,946,000	314,295	174.7	NA	28.6
-Non metro. areas*,**		56,594,000	35,342	62.1	NA		56,212,000	51,581	91.8	NA	47.8

*Figures reported for physicians refer to MDs only

**Excluding counties with Pop. <10,000

Reproduced from: Kindig, David and Hormoz Movassaghi. Is Physician Availability Adequate in Small Rural Communities of the United States? Unpublished draft. November 1987.

Table 26

Health manpower shortage areas: number, population and additional practitioners needed, for geographic areas, population groups and facilities (as of March 31, 1988)

	Number of designations	Population in designated areas	Estimated unserved population 1/	Practitioners needed to remove designations
Primary medical care totals...	1,931	33,718,911	12,847,023	4,139 2/
Geographic areas.....	1,611	30,135,176	11,052,801	3,451
Population groups.....	218	3,355,498	1,648,585	540
Facilities.....	102	228,237	145,637	148
Dental totals.....	788	15,662,041	7,145,722	1,717 3/
Geographic areas.....	656	13,523,401	5,472,104	1,286
Population groups.....	114	2,006,016	1,561,094	356
Facilities.....	18	132,624	112,524	75
Psychiatry totals.....	565	47,470,436	27,668,086	1,706 4/
Geographic areas.....	415	46,939,200	27,382,200	1,097
Population groups.....	5	120,800	48,800	1
Facilities.....	145	410,436	237,086	608

1/ The estimated unserved population is computed by multiplying the number of practitioners in the area by the population-to-practitioner ratio required for designation, and subtracting this figure from the area population.

2/ The number of additional primary care physicians required to achieve a population-to-primary care physician ratio of 3500:1 (3000:1 where high needs are indicated) in all designated primary care shortage areas, resulting in their removal from designation.

3/ The number of additional dentists required to achieve a population-to-dentist ratio of 5000:1 (4000:1 where high needs are indicated) in all designated dental shortage areas, resulting in their removal from designation.

4/ The number of additional psychiatrists needed to achieve a population-to-psychiatrist ratio of 30,000:1 (20,000:1 where high needs are indicated) in all designated psychiatric shortage areas, resulting in their removal from designation.

Table 27

Health manpower shortage areas by metropolitan/non-metropolitan classification (as of March 31, 1988)

	Number of designations	Population in designated areas	Practitioners needed to remove designations
Primary medical care totals...	1,931	33,718,911	4,139 1/
Metropolitan.....	639 (33%)	17,740,376 (53%)	2,343 (57%)
Non-metropolitan.....	1,292 (67%)	15,978,535 (47%)	1,796 (43%)
Dental totals.....	788	15,662,041	1,717 2/
Metropolitan.....	216 (27%)	6,987,523 (45%)	832 (48%)
Non-metropolitan.....	572 (73%)	8,674,518 (55%)	885 (52%)
Psychiatry totals.....	565	47,470,436	1,706 3/
Metropolitan.....	182 (32%)	13,899,447 (29%)	664 (39%)
Non-metropolitan.....	383 (68%)	33,570,989 (71%)	1,042 (61%)

1/ The number of additional primary care physicians required to achieve a population-to-primary care physician ratio of 3500:1 (3000:1 where high needs are indicated) in all designated primary care shortage areas, resulting in their removal from designation.

2/ The number of additional dentists required to achieve a population-to-dentist ratio of 5000:1 (4000:1 where high needs are indicated) in all designated dental shortage areas, resulting in their removal from designation.

3/ The number of additional psychiatrists required to achieve a population-to-psychiatrist ratio of 30,000:1 (20,000:1 where high needs are indicated) in alldesignated psychiatric shortage areas, resulting in their removal from designation.

Table 28

Health manpower shortage areas, by metropolitan status and by degree-of-shortage group
(as of March 31, 1988)

	Total	Metropolitan	Non-metropolitan
Primary care:			
All groups.....	1,931	639	1,292
Group 1.....	756	274	482
Group 2.....	537	175	362
Group 3.....	325	100	225
Group 4.....	313	90	223
Dental:			
All groups.....	788	216	572
Group 1.....	352	103	249
Group 2.....	155	50	105
Group 3.....	133	40	93
Group 4.....	148	23	125
Psychiatry:			
All groups.....	565	182	383
Group 1.....	172	36	136
Group 2.....	225	63	162
Group 3.....	82	38	44
Group 4.....	86	45	41

Table 29
Population and number of practitioners needed in designated areas, by priority group (as of March 31, 1988)

	Population in designated areas	Estimated unserved population 1/	Practitioners needed to remove designations	
Primary care:				
All groups..	33,718,911	12,847,023	4,139	2/
Group 1...	10,701,813	7,209,944	2,342	
Group 2...	9,501,577	3,954,527	1,295	
Group 3...	6,107,816	1,194,571	377	
Group 4...	7,407,705	487,981	125	
Dental:				
All groups..	15,662,041	7,145,722	1,717	3/
Group 1...	5,439,776	4,292,364	1,000	
Group 2...	3,705,405	1,679,994	446	
Group 3...	3,460,463	894,135	217	
Group 4...	3,056,397	279,229	54	
Psychiatry:				
All groups..	47,470,436	27,668,086	1,706	4/
Group 1...	8,088,315	7,754,845	484	
Group 2...	24,436,589	15,332,859	594	
Group 3...	7,416,182	2,704,862	355	
Group 4...	7,529,350	1,875,520	273	

1/ The estimated unserved population is computed by multiplying the number of practitioners in the area by the population-to-practitioner ratio required for designation, and subtracting this figure from the area population.

2/ The number of additional primary care physicians required to achieve a population-to-primary care physician ratio of 3500:1 (3000:1 where high needs are indicated) in all designated primary care shortage areas, resulting in their removal from designation.

3/ The number of additional dentists required to achieve a population-to-dentist ratio of 5000:1 (4000:1 where high needs are indicated) in all designated dental shortage areas, resulting in their removal from designation.

4/ The number of additional psychiatrists needed to achieve a population-to-psychiatrist ratio of 30,000:1 (20,000:1 where high needs are indicated) in all designated psychiatric shortage areas, resulting in their removal from designation.

Table 30. Primary Care HMSA Totals
(as of March 31, 1988)

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
U.S. Total	1,931	1,611	218	102	33,718,911	12,847,023	4,139
Region I	80	61	17	2	1,061,869	411,569	127
Connecticut	10	4	6	0	126,090	63,090	21
Maine	25	25	0	0	108,131	57,831	13
Massachusetts	24	17	6	1	586,185	210,585	68
New Hampshire	5	5	0	0	57,221	23,621	7
Rhode Island	9	3	5	1	136,821	40,971	13
Vermont	7	7	0	0	47,421	15,471	5
Region II	156	108	44	4	4,477,435	1,329,669	439
New Jersey	12	8	3	1	739,142	121,792	41
New York	76	62	11	3	2,039,106	482,490	152
Puerto Rico	66	36	30	0	1,661,821	702,421	238
Virgin Islands	2	2	0	0	37,366	22,966	8
Region III	178	168	7	3	3,208,034	1,121,284	346
Delaware	3	3	0	0	69,294	18,194	6
District of Columbia	3	1	1	1	91,677	66,777	25
Maryland	13	12	0	1	346,926	133,176	42
Pennsylvania	66	62	4	0	1,371,075	433,075	130
Virginia	44	43	1	0	653,635	206,985	62
West Virginia	49	47	1	1	675,427	263,077	81
Region IV	437	373	53	11	8,655,248	3,217,181	1,038
Alabama	53	46	6	1	1,250,112	384,962	120
Florida	67	34	30	3	1,437,425	722,980	245
Georgia	75	70	5	0	1,379,589	562,339	179
Kentucky	47	45	1	1	645,529	278,479	92
Mississippi	51	44	6	1	1,037,409	316,909	102
North Carolina	44	41	3	0	1,263,772	426,772	131
South Carolina	42	37	0	5	705,093	235,471	75
Tennessee	58	56	2	0	936,319	289,269	94
Region V	256	221	13	22	5,742,594	2,238,091	742
Illinois	50	45	1	4	1,916,768	871,518	292
Indiana	37	30	1	6	642,030	234,330	82
Michigan	48	44	2	2	1,127,452	439,502	146
Minnesota	25	24	1	0	243,199	55,049	16
Ohio	56	44	7	5	1,258,362	423,212	136
Wisconsin	40	34	1	5	554,783	214,480	70

Table 30. Primary Care HMSA Totals
(as of March 31, 1988)
Continued

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
Region VI	262	212	12	38	4,575,062	1,793,012	586
Arkansas	49	45	1	3	505,010	188,210	60
Louisiana	53	46	2	5	1,278,936	540,436	171
New Mexico	30	26	3	1	437,671	268,821	80
Oklahoma	23	16	1	6	241,676	87,776	30
Texas	107	79	5	23	2,111,769	707,769	245
Region VII	130	113	10	7	1,722,078	574,720	176
Iowa	22	20	2	0	271,615	69,465	21
Kansas	16	14	2	0	143,692	30,392	7
Missouri	67	56	5	6	1,116,187	415,737	130
Nebraska	25	23	1	1	190,584	59,126	18
Region VIII	156	147	8	1	949,155	421,105	123
Colorado	30	24	6	0	170,715	85,615	23
Montana	29	28	0	1	141,366	65,866	20
North Dakota	28	28	0	0	193,249	92,349	26
South Dakota	37	37	0	0	187,315	84,015	24
Utah	18	17	1	0	150,195	49,695	15
Wyoming	14	13	1	0	106,315	43,565	15
Region IX	152	120	26	6	2,502,349	1,249,449	400
Arizona	33	23	9	1	298,030	185,230	54
California	89	71	16	2	1,866,418	837,018	271
Hawaii	2	1	0	1	18,760	17,760	6
Nevada	20	17	1	2	98,228	76,628	25
American Samoa	1	1	0	0	36,260	7,760	3
Federated States of	4nesia	4	0	0	94,500	58,500	20
Guam	1	1	0	0	25,185	21,685	6
Marshall Islands	1	1	0	0	42,210	33,210	11
Palau	0	0	0	0	0	0	0
Trust Territories Pa	0	0	0	0	0	0	0
N. Mariana Islands	1	1	0	0	22,758	11,658	4
Region X	124	88	28	8	825,087	490,943	162
Alaska	14	9	1	4	104,769	57,069	24
Idaho	30	25	4	1	202,894	133,644	41
Oregon	53	39	12	2	289,816	179,266	56
Washington	27	15	11	1	227,608	120,964	41

Table 31. Dental Care HMSA Totals
(as of March 31, 1988)

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
U.S. Total	788	656	114	18	15,662,041	7,145,722	1,717
Region I	22	18	2	2	286,848	142,068	34
Connecticut	4	2	2	0	39,012	12,182	3
Maine	10	10	0	0	74,043	46,143	10
Massachusetts	3	3	0	0	150,304	68,304	17
New Hampshire	0	0	0	0	0	0	0
Rhode Island	3	1	0	2	23,373	15,373	4
Vermont	2	2	0	0	116	66	0
Region II	82	40	42	0	2,212,496	1,503,280	360
New Jersey	2	1	1	0	106,414	40,814	11
New York	14	11	3	0	694,777	253,577	63
Puerto Rico	64	26	38	0	1,373,939	1,181,523	279
Virgin Islands	2	2	0	0	37,366	27,366	7
Region III	77	70	6	1	1,683,296	580,496	138
Delaware	1	1	0	0	121,188	7,588	2
District of Columbia	2	2	0	0	203,051	48,251	12
Maryland	5	5	0	0	165,599	54,799	13
Pennsylvania	32	29	3	0	581,578	232,778	57
Virginia	18	17	1	0	261,520	99,720	23
West Virginia	19	16	2	1	350,360	137,360	31
Region IV	263	244	18	1	5,254,567	2,026,675	473
Alabama	45	44	1	0	1,122,480	487,380	111
Florida	38	26	11	1	864,312	398,242	93
Georgia	52	51	1	0	697,078	352,878	81
Kentucky	21	21	0	0	399,208	102,208	24
Mississippi	40	40	0	0	658,415	220,367	53
North Carolina	34	32	2	0	761,356	263,056	60
South Carolina	19	17	2	0	553,903	139,544	34
Tennessee	14	13	1	0	197,815	63,000	17
Region V	65	51	10	4	1,643,456	769,489	212
Illinois	23	16	4	3	442,713	205,763	74
Indiana	0	0	0	0	0	0	0
Michigan	6	4	2	0	111,833	52,576	12
Minnesota	2	0	2	0	28,942	16,142	4
Ohio	29	26	2	1	857,803	391,803	97
Wisconsin	5	5	0	0	202,205	103,205	25

Table 31. Dental Care HMSA Totals
(as of March 31, 1988)
Continued

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
Region VI	107	99	8	0	2,297,524	1,081,652	250
Arkansas	18	18	0	0	175,207	67,607	15
Louisiana	25	22	3	0	470,247	189,174	43
New Mexico	15	13	2	0	203,549	123,049	25
Oklahoma	13	12	1	0	262,046	125,746	29
Texas	36	34	2	0	1,186,475	576,076	138
Region VII	63	54	3	6	882,146	298,897	74
Iowa	6	5	1	0	77,371	50,771	13
Kansas	11	11	0	0	70,473	22,274	3
Missouri	44	38	0	6	728,802	220,352	56
Nebraska	2	0	2	0	5,500	5,500	2
Region VIII	36	30	6	0	172,984	95,584	19
Colorado	5	3	2	0	52,819	11,819	2
Montana	3	2	1	0	16,777	11,977	2
North Dakota	6	6	0	0	17,900	17,900	4
South Dakota	12	12	0	0	52,766	32,766	6
Utah	7	4	3	0	27,130	15,530	4
Wyoming	3	3	0	0	5,592	5,592	1
Region IX	56	42	13	1	917,310	454,084	105
Arizona	16	11	5	0	228,309	103,609	22
California	20	14	6	0	425,628	183,802	42
Hawaii	1	0	0	1	3,231	2,331	2
Nevada	10	8	2	0	58,365	29,365	5
American Samoa	1	1	0	0	34,300	6,300	2
Federated States of	Onesia	0	0	0	0	0	0
Guam	1	1	0	0	18,190	12,190	3
Marshall Islands	0	0	0	0	0	0	0
Palau	0	0	0	0	0	0	0
Trust Territories Pa	6	6	0	0	126,681	97,881	24
N. Mariana Islands	1	1	0	0	22,606	18,606	5
Region X	17	8	6	3	311,374	193,497	52
Alaska	4	4	0	0	24,765	11,765	2
Idaho	0	0	0	0	0	0	0
Oregon	4	3	1	0	8,752	8,475	2
Washington	9	1	5	3	277,857	173,257	48

Table 32. Psychiatry HMSA Totals
(as of March 31, 1988)

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
U.S. Total	565	415	5	145	47,470,436	27,668,086	1,706
Region I	28	23	1	4	1,875,988	728,908	53
Connecticut	2	2	0	0	104,900	74,900	3
Maine	7	5	0	2	257,296	197,716	20
Massachusetts	9	8	1	0	744,600	276,600	11
New Hampshire	3	2	0	1	105,422	41,222	10
Rhode Island	5	5	0	0	606,000	81,000	3
Vermont	2	1	0	1	57,770	57,470	6
Region II	25	25	0	0	4,454,000	2,267,000	86
New Jersey	8	8	0	0	1,173,300	481,300	18
New York	10	10	0	0	675,500	200,500	7
Puerto Rico	6	6	0	0	2,508,700	1,528,700	58
Virgin Islands	1	1	0	0	96,500	56,500	3
Region III	52	40	0	12	4,504,490	2,299,740	117
Delaware	2	2	0	0	178,500	58,500	2
District of Columbia	0	0	0	0	0	0	0
Maryland	7	6	0	1	419,400	227,400	8
Pennsylvania	20	16	0	4	2,227,794	970,594	39
Virginia	14	9	0	5	889,859	595,659	35
West Virginia	9	7	0	2	788,937	447,587	33
Region IV	128	110	1	17	15,409,054	9,410,634	477
Alabama	18	15	0	3	2,015,472	1,310,432	67
Florida	13	13	0	0	1,085,100	878,100	39
Georgia	11	11	0	0	1,464,100	855,100	32
Kentucky	16	15	0	1	2,739,635	1,464,635	70
Mississippi	13	12	0	1	2,030,630	1,409,130	69
North Carolina	18	16	0	2	1,718,638	967,738	67
South Carolina	20	12	0	8	2,044,588	933,608	68
Tennessee	19	16	1	2	2,310,891	1,591,891	65
Region V	105	57	0	48	5,502,514	3,527,134	365
Illinois	36	14	0	22	1,544,377	1,016,027	149
Indiana	4	4	0	0	794,500	378,500	14
Michigan	13	10	0	3	668,848	491,898	25
Minnesota	7	3	0	4	364,395	241,515	41
Ohio	17	7	0	10	784,699	415,099	57
Wisconsin	28	19	0	9	1,345,695	984,095	79

Table 32. Psychiatry HMSA Totals
(as of March 31, 1988)

Continued

	Number of designations	Number of designated geographic areas	Number of designated population groups	Number of designated facilities	Population for all designations	Estimated unserved population	Practitioners needed to remove designations
Region VI	77	42	1	34	6,878,978	4,093,896	288
Arkansas	11	9	0	2	2,214,922	1,568,302	95
Louisiana	9	6	0	3	958,847	536,267	54
New Mexico	19	15	0	4	774,575	524,125	31
Oklahoma	8	8	0	0	1,374,800	824,800	33
Texas	30	4	1	25	1,555,834	640,402	75
Region VII	49	38	0	11	4,772,470	2,654,742	170
Iowa	12	10	0	2	963,295	434,047	29
Kansas	8	8	0	0	899,600	396,800	13
Missouri	21	14	0	7	2,160,630	1,266,650	82
Nebraska	8	6	0	2	748,745	557,245	46
Region VIII	32	24	0	8	1,287,692	896,762	62
Colorado	5	4	0	1	164,371	125,071	12
Montana	3	2	0	1	120,023	119,093	8
North Dakota	4	3	0	1	221,189	127,289	15
South Dakota	13	9	0	4	469,609	293,809	17
Utah	5	5	0	0	246,200	210,200	9
Wyoming	2	1	0	1	66,300	21,300	1
Region IX	23	18	1	4	1,472,827	988,827	46
Arizona	6	5	0	1	680,228	464,228	16
California	10	9	1	0	469,200	202,200	6
Hawaii	1	0	0	1	1,562	1,562	5
Nevada	3	1	0	2	102,237	101,237	7
American Samoa	1	1	0	0	32,200	32,200	2
Federated States of	Onesia	0	0	0	0	0	0
Guam	1	1	0	0	96,000	96,000	5
Marshall Islands	0	0	0	0	0	0	0
Palau	0	0	0	0	0	0	0
Trust Territories Pa	1	1	0	0	91,400	91,400	5
N. Mariana Islands	0	0	0	0	0	0	0
Region X	46	38	1	7	1,312,423	800,443	42
Alaska	21	21	0	0	163,300	133,300	3
Idaho	3	3	0	0	433,900	187,900	7
Oregon	9	8	0	1	373,647	200,077	13
Washington	13	6	1	6	341,576	279,166	19

Table 33

NATIONAL HEALTH SERVICE CORPS

Number Of Scholarship Physicians And First Year Of Availability

1981	1,041
1982	1,121
1983	1,244
1984	1,291
1985	1,351
1986	1,184
1987	807
1988	461
1989	222
1990	109
1991	74
1992	53
1993	28
1994	2

Projections for FY 1989 and beyond based upon commitments as of May 11, 1988.

Table 34

PERSONAL BACKGROUND AND PROFESSIONAL CHARACTERISTICS
OF PAs RESPONDING TO THE 1976, 1978, and 1981
PHYSICIAN ASSISTANT GRADUATE SURVEYS

Characteristic	1976		1978		1981	
	Number	Percent	Number	Percent	Number	Percent
Sex						
Men	2,528	72.5	3,099	69.4	3,807	63.5
Women	958	27.5	1,366	30.6	2,189	36.5
Total	3,486	100.0	4,465	100.0	5,996	100.0
Race/Ethic Origin[1]						
White	2,865	86.5	3,925	87.7	5,460	91.4
Black	195	5.9	234	5.2	195	3.3
Other Minorities	152	4.6	218	4.9	261	4.4
None of the Above	100	3.0	94	2.2	53	.9
Total	3,338	100.0	4,471	100.0	5,969	100.0
Prior Academic Experience[1]						
College With Degree	1,562	46.8	2,067	49.9	2,536	49.7
College Without Degree	1,280	38.3	1,632	39.4	2,148	42.1
No College	496	14.9	445	10.7	419	8.2
Total	3,312	100.0	4,144	100.0	5,103	100.0
Prior Health Care Experience[2]						
Military Corpsmen	1,490	42.6	1,871	41.9	1,801	34.8
Technologist/Technician	734	21.0	898	20.1	1,284	24.9
Registered Nurse	402	11.5	598	13.4	653	12.6
Other Health Fields	610	17.5	589	13.2	811	15.6
No Experience	257	7.4	509	11.4	626	12.1
Type of Training[1]						
Formal	3,242	92.8	4,442	95.0	5,886	97.2
Informal	251	7.2	223	5.0	167	2.8
Total	3,493	100.0	4,465	100.0	6,053	100.0
Professional Activity[1]						
Active	3,065	87.7	3,476	86.6	5,202	86.5
(Patient Care)	(2,837)	(82.1)	(3,278)	(81.7)	(4,873)	(81.0)
(Nonpatient Care)	(198)	(5.6)	(198)	(4.9)	(329)	(5.5)
Inactive 428	12.3	537	13.4	812	13.5	
Total	3,493	100.0	4,013	100.0	6,014	100.0

[1] Percentages based on number responding to question.
[2] Percentages based on number responding to question and includes multiple responses.

SOURCE: Carter, "Secondary Analysis: 1981 National Survey of Physician Assistants." DHHS, Rockville, MD, 1984.

Table 35. NUMBER OF PAs IN THE UNITED STATES BY GEOGRAPHIC REGION AND STATE, 1985 AND 1987

	Estimated Number of PAs[1/] 1985	1987	Percent Increase
UNITED STATES	16,962	19,446	14.6
NORTHEAST/NEW ENGLAND	1,052	1,289	22.5
Connecticut	346	408	17.9
Maine	158	192	21.5
Massachusetts	379	455	20.1
New Hampshire	72	105	45.8
Rhode Island	52	69	32.7
Vermont	45	60	33.3
MIDDLE ATLANTIC	3,376	3,793	12.4
New Jersey	211	232	10.0
New York	2,240	2465	10.0
Pennsylvania	961	1096	14.0
NORTH CENTRAL/EAST NORTH CENTRAL	1,886	2,129	12.9
Illinois	210	229	9.0
Indiana	145	147	1.4
Michigan	585	700	19.7
Ohio	621	698	12.4
Wisconsin	325	355	9.2
WEST NORTH CENTRAL	1,116	1,238	10.9
Iowa	223	236	5.8
Kansas	208	228	9.6
Minnesota	140	177	26.4
Missouri	156	178	14.1
Nebraska	161	175	8.9
North Dakota	114	127	11.4
South Dakota	114	117	2.6
SOUTH/SOUTH ATLANTIC	3,171	4,062	28.1
Delaware	22	35	59.1
District of Columbia	87	106	21.8
Florida	691	846	22.4
Georgia	540	666	23.3
Maryland	630	751	19.2
North Carolina	771	905	17.4
South Carolina	201	202	0.5
Virginia	289	348	20.4
West Virginia	192	203	5.7
EAST SOUTH CENTRAL	597	648	8.5
Alabama	162	169	4.3
Kentucky	205	209	2.0
Mississippi	34	32	(5.9)
Tennessee	196	238	21.4

Table 35. (continued). NUMBER OF PAs IN THE UNITED STATES BY GEOGRAPHIC REGION AND STATE, 1985 AND 1987

	Estimated Number of PAs[1]		
	1985	1987	Percent Increase
WEST SOUTH CENTRAL	1,423	1,524	7.1
Arkansas	41	48	17.1
Louisiana	95	105	21.1
Oklahoma	333	335	0.1
Texas	954	1036	8.6
WEST MOUNTAIN	1,013	1,255	23.9
Arizona	222	277	24.8
Colorado	339	392	15.6
Idaho	51	54	5.9
Montana	41	41	-
Nevada	72	82	13.9
New Mexico	230	247	11.7
Utah	112	120	7.1
Wyoming	45	42	(6.7)
PACIFIC	2,918	3,385	16.0
Alaska	156	169	8.3
California	2,167	2,508	15.7
Hawaii	59	70	18.6
Oregon	117	146	24.8
Washington	419	492	17.4

[1]The total estimated number of PAs in the U.S.; it does not represent the number who are involved in patient care.

SOURCES: Health Resources and Services Administration, Bureau of Health Professions, Rockville, MD. 1987.

AAPA Membership Division, Arlington, VA. 1987.

Table 36

PA Practice Setting by Size of Community, 1984

Size of Community	Number	Percent*
Fewer Than 10,000	1,086	18.6
10,000 to 24,999	660	11.2
25,000 to 49,999	607	10.1
50,000 to 124,999	928	15.6
125,000 to 499,999	915	15.5
500,000 to 999,999	571	9.7
1,000,000 to 2,499,999	529	8.7
2,500,000 to 4,999,999	244	4.2
5,000,000 or More	374	6.5
Total	5,914	

*Percents do not total 100 due to rounding.

SOURCE: "AAPA 1985 Masterfile Survey," Arlington, VA, 1985.

Table 37

Exhibit 3
Geographic Distribution Of Anesthesia Providers, Ranked By CRNAs Per Capita

	CRNAs[a]				Anesthesiologists			
State	Number[b]	Percent of total	Per 10,000 population[c]	Rank	Number[d]	Percent of total	Per 10,000 population[c]	Rank
South Dakota	141	0.7%	1.99	1	19	0.1%	0.27	51
North Dakota	129	0.6	1.88	2	31	0.2	0.45	44
Minnesota	774	3.9	1.85	3	267	1.7	0.64	21
Louisiana	723	3.6	1.61	4	216	1.3	0.48	42
Pennsylvania	1,772	8.8	1.49	5	824	5.1	0.70	15
West Virginia	279	1.4	1.44	6	95	0.6	0.49	41
Alabama	562	2.8	1.40	7	175	1.1	0.44	46
North Carolina	863	4.3	1.38	8	283	1.8	0.45	44
Kansas	326	1.6	1.33	9	126	0.8	0.51	39
Tennessee	625	3.1	1.31	10	309	1.9	0.65	19.5
Delaware	78	0.4	1.25	11	37	0.2	0.59	30.5
Missouri	611	3.0	1.21	12	291	1.8	0.58	32.5
Nebraska	193	1.0	1.20	13	83	0.5	0.52	38
Michigan	992	4.9	1.09	14	502	3.1	0.55	34.5
Maine	125	0.6	1.07	15	69	0.4	0.59	30.5
Arkansas	243	1.2	1.03	16	105	0.7	0.45	44
Mississippi	263	1.3	1.01	17	87	0.5	0.33	49
Hawaii	104	0.5	0.99	19	61	0.4	0.58	32.5
Idaho	99	0.5	0.99	19	31	0.2	0.31	50
South Carolina	333	1.7	0.99	19	140	0.9	0.42	47
District of Columbia	61	0.3	0.97	21	48	0.3	0.77	10
Virginia	525	2.6	0.92	22	358	2.2	0.63	22
Georgia	546	2.7	0.91	23	367	2.3	0.61	27
Connecticut	287	1.4	0.90	24	280	1.7	0.88	5
Ohio	946	4.7	0.88	25	765	4.8	0.71	14
New Hampshire	84	0.4	0.84	27	53	0.3	0.53	36.5
Rhode Island	81	0.4	0.84	27	60	0.4	0.62	24
Texas	1,382	6.9	0.84	27	1,065	6.6	0.65	19.5
Kentucky	301	1.5	0.81	29.5	199	1.2	0.53	36.5
New Mexico	117	0.6	0.81	29.5	87	0.5	0.60	29
Massachusetts	456	2.3	0.78	31	582	3.6	1.00	1
Vermont	41	0.2	0.77	32	33	0.2	0.62	24
Florida	860	4.3	0.76	33	822	5.1	0.72	12.5
Oklahoma	244	1.2	0.74	34	164	1.0	0.50	40
Wisconsin	350	1.7	0.73	35	326	2.0	0.68	17
Iowa	208	1.0	0.72	36	160	1.0	0.55	34.5
Maryland	310	1.5	0.71	37.5	404	2.5	0.92	2.5
Montana	59	0.3	0.71	37.5	51	0.3	0.62	24
Illinois	810	4.0	0.70	39	709	4.4	0.61	27
Wyoming	34	0.2	0.67	40	31	0.2	0.61	27
Alaska	34	0.2	0.65	41.5	21	0.1	0.40	48
Washington	286	1.4	0.65	41.5	394	2.5	0.89	4
Oregon	168	0.8	0.63	43	208	1.3	0.77	10
Colorado	181	0.9	0.56	44	233	1.4	0.72	12.5
New Jersey	347	1.7	0.46	45	511	3.2	0.68	17
New York	800	4.0	0.45	46	1,461	9.1	0.82	8
Arizona	140	0.7	0.44	47	263	1.6	0.83	7
Utah	71	0.4	0.43	48	152	0.9	0.92	2.5
Nevada	38	0.2	0.41	49	81	0.5	0.87	6
California	957	4.8	0.36	50	2,025	12.6	0.77	10
Indiana	119	0.6	0.22	51	374	2.3	0.68	17

[a] Certified registered nurse anesthetists.
[b] Active members in the American Association of Nurse Anesthetists, as of August 1986.
[c] Population figures for 1985, from the Bureau of the Census, Boston Regional Office.
[d] Active members in the American Society of Anesthesiologists, as of December 31, 1986.

Table 38

EDUCATIONAL PROGRAMS PREPARING REGISTERED NURSES IN THE UNITED STATES, 1970-71 to 1983-84

Academic year	Programs[1]	Enrollments[1]	Admissions[2]	Graduations[2]
TOTAL:				
1975-76	1,362	248,171	112,174	77,065
1976-77	1,358	247,044	112,523	77,755
1977-78	1,356	245,390	110,950	77,874
1978-79	1,358	239,486	107,476	77,132
1979-80	1,374	234,659	105,952	75,523
1980-81	1,385	230,966	110,201	73,985
1981-82	1,401	234,995	115,279	74,052
1982-83	1,432	242,035	120,579	77,408
1983-84	1,466	250,553	123,824	80,312
1984-85	1,477	237,232	118,224	82,075
1985-86	1,473	217,955	(3)	(3)
ASSOCIATE DEGREE:				
1975-76	608	88,121	52,232	34,625
1976-77	632	91,004	53,610	36,289
1977-78	645	91,102	52,991	36,556
1978-79	666	91,527	53,366	36,264
1979-80	678	92,069	53,633	36,034
1980-81	697	94,060	56,899	36,712
1981-82	715	100,019	60,423	38,289
1982-83	742	105,324	63,947	41,849
1983-84	764	109,605	66,576	44,394
1984-85	777	104,968	63,776	45,208
1985-86	776	96,756	(3)	(3)
DIPLOMA:				
1975-76	428	60,213	23,622	19,861
1976-77	390	56,091	22,243	18,014
1977-78	367	52,858	20,611	17,131
1978-79	344	48,059	18,499	15,820
1979-80	333	43,651	16,905	14,495
1980-81	311	41,048	17,494	12,903
1981-82	303	41,009	18,928	11,682
1982-83	288	42,348	19,368	11,704
1983-84	281	42,007	17,848	12,200
1984-85	273	37,256	14,875	11,892
1985-86	256	30,179	(3)	(3)
BACCALAUREATE:[4]				
1975-76	326	99,837	36,320	22,579
1976-77	336	99,949	36,670	23,452
1977-78	344	101,430	37,348	24,187
1978-79	348	99,900	35,611	25,048
1979-80	363	98,939	35,414	24,994
1980-81	377	95,858	35,808	24,370
1981-82	383	93,967	35,928	24,081
1982-83	402	94,363	37,264	23,855
1983-84	421	98,941	39,400	23,718
1984-85	427	95,008	39,573	24,975
1985-86	441	91,020	(3)	(3)

[1]As of October 1 of each year.
[2]Time period for the academic year is August 1 through July 31.
[3]Data not available.
[4]Includes programs and students in generic master's and doctoral programs, where such are in existence.

SOURCE: National League for Nursing, Nursing Student Census, 1985, and unpublished data.

Table 39

PRACTICAL NURSING EDUCATIONAL PROGRAMS AND STUDENTS IN THE UNITED STATES, 1975-1976 to 1984-1985

Academic year	Programs[1]	Enrollments[1]	Admissions[2]	Graduations[2]
1975-76	1,315	58,460	61,353	47,145
1976-77	1,318	58,423	60,166	46,614
1977-78	1,319	56,943	60,610	45,350
1978-79	1,310	54,543	57,081	44,235
1979-80	1,298	52,202	56,316	41,892
1980-81	1,299	52,565	58,479	41,002
1981-82	1,309	55,024	60,426	43,299
1982-83	1,295	57,367	61,453	45,174
1983-84	1,297	55,446	57,865	44,654
1984-85	1,254	48,840	(3)	(3)

[1]As of October 15.
[2]Time period is from August 1 through July 31.
[3]Data not available.

SOURCE: National League for Nursing, NLN Nursing Data Review 1985, and unpublished data.

Table 40

AVERAGE ANNUAL EARNINGS OF REGISTERED NURSES EMPLOYED FULL-TIME IN THEIR PRINCIPAL NURSING POSITION, BY FIELD OF EMPLOYMENT AND TYPE OF POSITION: NOVEMBER 1984

Field of employment	Total[1]	Administrator or assistant	Consultant	Supervisor or assistant	Instructor	Head nurse or assistant	Staff nurse	Nurse practitioner/ midwife	Clinical nurse specialist	Nurse clinician	Certified nurse anesthetist	Researcher	Private duty
Total	$23,505	$29,164	$25,922	$24,914	$24,759	$25,168	$21,704	$25,975	$25,815	$24,283	$37,991	$24,621	$21,585
Hospital	24,188	32,982	(2)	26,629	25,931	25,931	22,394	27,970	26,512	25,396	37,552	24,858	—
Nursing home extended care facility	20,483	22,776	(2)	19,870	19,892	19,822	18,220	(2)	(2)	—	—	—	—
Nursing education	25,633	34,576	(2)	(2)	24,564	(2)	(2)	(2)	(2)	(2)	—	—	—
Community/public health	21,998	28,256	23,929	23,181	(2)	(2)	20,006	22,689	(2)	(2)	(2)	—	—
Student health service	20,153	(2)	(2)	(2)	(2)	(2)	19,310	(2)	(2)	(2)	—	—	—
Occupational health	24,188	(2)	(2)	25,043	(2)	(2)	22,969	(2)	(2)	(2)	—	—	—
Ambulatory care setting	19,932	29,259	(2)	21,035	(2)	18,416	18,032	27,655	21,537	20,126	(2)	(2)	—
Private duty	21,585	—	—	—	—	—	—	—	—	—	—	—	21,585
Other self-employed	34,882	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	—
Other	24,177	31,352	23,765	(2)	(2)	(2)	20,829	(2)	(2)	(2)	(2)	(2)	—

[1]Includes all registered nurses in positions not separately identified as well as those itemized separately.
[2]Too few to compute average.

SOURCE: Moses, Evelyn B., The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses, November 1984. Accession No. HRP 0906938, National Technical Information Service, Springfield, VA, 1986.

Table 41

AVERAGE ANNUAL EARNINGS OF LICENSED PRACTICAL/VOCATIONAL NURSES EMPLOYED FULL TIME IN THEIR PRINCIPAL NURSING POSITION, BY FIELD OF EMPLOYMENT AND TYPE OF POSITION: NOVEMBER 1983

Field of employment	Total[1]	Charge nurse	Private duty nurse	Staff nurse	No position title
Total	$14,395	$13,938	$11,934	$14,714	$13,914
Hospital	$15,106	$15,415	(2)	$15,083	$15,256
Nursing home	13,463	13,498	(2)	13,449	13,044
Public/community health	13,730	14,537	(2)	13,907	13,319
Student health	11,053	(2)	(2)	10,887	(2)
Occupational health	15,472	(2)	(2)	15,201	15,326
Physician or dentist offices	13,068	14,743	(2)	12,801	2,853
Private duty	11,845	(2)	11,744	(2)	(2)

[1]Includes all licensed practical/vocational nurses in positions not separately identified, as well as those itemized separately.
[2]Too few to compute average.

SOURCE: U.S. Department of Health and Human Services, Division of Nursing. First National Sample Survey of Licensed Practical and Vocational Nurses, 1983. Accession No. HRP 0906278, National Technical Information Service, Springfield, VA, 1984.

Table 42

REGISTERED NURSE POPULATION IN EACH STATE AND AREA, BY ACTIVITY STATUS: NOVEMBER 1984

Geographic area	Registered nurse population						Employed nurses per 100,000 population[1]
	Number in sample	Total	Employed in nursing		Not employed in nursing		
			Number	Percent	Number	Percent	
United States	31,626	1,887,697	1,485,725	78.7	401,971	21.3	629
New England	3,118	158,044	119,914	75.9	38,130	24.1	953
Connecticut	643	35,508	26,407	74.4	9,101	25.6	837
Maine	447	11,360	8,453	74.4	2,906	25.6	731
Massachusetts	898	82,880	63,540	76.7	19,340	23.3	1,096
New Hampshire	450	11,627	8,024	69.0	3,603	31.0	821
Rhode Island	402	10,934	8,851	81.0	2,083	19.0	920
Vermont	273	5,735	4,639	80.9	1,096	19.1	875
Middle Atlantic	3,507	367,147	277,040	75.5	90,107	24.5	746
New Jersey	716	72,255	52,493	72.6	19,763	27.4	699
New York	1,437	167,653	133,310	79.5	34,343	20.5	752
Pennsylvania	1,354	127,239	91,238	71.7	36,001	28.3	767
South Atlantic	5,402	299,857	227,724	78.6	62,133	21.4	577
Delaware	301	5,476	4,423	80.8	1,054	19.2	722
District of Columbia	331	10,114	9,465	93.6	649	6.4	1,519
Florida	923	86,816	67,722	78.0	19,094	22.0	617
Georgia	618	36,304	29,365	80.9	6,939	19.1	503
Maryland	790	38,796	31,565	81.4	7,231	18.6	726
North Carolina	788	40,541	32,460	80.1	8,081	19.9	527
South Carolina	432	18,049	13,761	76.2	4,289	23.8	417
Virginia	745	40,222	28,477	70.8	11,745	29.2	505
West Virginia	474	13,538	10,485	77.5	3,052	22.5	537
East South Central	2,056	85,526	72,429	84.7	13,096	15.3	482
Alabama	520	24,329	19,750	81.2	4,578	18.8	495
Kentucky	587	19,332	16,799	85.9	2,533	13.1	451
Mississippi	468	13,275	10,577	79.7	2,698	20.3	407
Tennessee	481	28,589	25,302	88.5	3,287	11.5	536
West South Central	2,317	145,661	113,518	77.9	32,143	22.1	435
Arkansas	431	12,576	10,256	81.6	2,318	18.4	437
Louisiana	542	21,603	17,372	80.4	4,232	19.6	389
Oklahoma	450	17,143	13,569	79.2	3,574	20.8	411
Texas	894	94,339	72,320	76.7	22,020	23.3	452
East North Central	4,101	345,202	277,280	80.3	67,922	19.7	667
Illinois	910	99,290	80,564	81.1	18,726	18.9	700
Indiana	719	39,383	32,240	81.9	7,143	18.1	586
Michigan	694	73,114	56,449	77.2	16,665	22.8	622
Ohio	1,002	93,836	75,676	80.6	18,160	19.4	704
Wisconsin	776	39,579	32,351	81.7	7,229	18.3	679
West North Central	4,105	149,298	125,639	84.2	23,659	15.9	717
Iowa	692	28,609	23,704	82.9	4,905	17.1	815
Kansas	571	19,608	15,943	81.3	3,665	18.7	664
Minnesota	790	37,950	32,229	84.9	5,721	15.1	774
Missouri	722	36,784	31,866	86.6	4,918	13.4	636
Nebraska	563	13,437	11,094	82.6	2,342	17.4	691
North Dakota	415	6,404	5,637	88.0	767	12.0	822
South Dakota	352	6,505	5,164	79.4	1,340	20.6	731
Mountain	3,356	95,264	72,448	76.1	22,817	24.0	577
Arizona	582	25,875	19,015	73.5	6,860	26.5	623
Colorado	590	29,469	21,212	72.0	8,258	28.0	667
Idaho	322	6,389	5,039	78.9	1,349	21.1	503
Montana	404	6,942	5,260	75.8	1,682	24.2	638
Nevada	346	5,878	4,849	82.5	1,029	17.5	532
New Mexico	372	8,846	7,255	82.0	1,591	18.0	509
Utah	370	8,697	7,151	82.2	1,546	17.8	433
Wyoming	370	3,167	2,667	84.2	501	15.8	522
Pacific	3,664	251,697	199,734	79.4	51,964	20.7	584
Alaska	327	4,018	3,256	81.0	762	19.0	651
California	1,543	176,601	141,834	80.3	34,767	19.7	554
Hawaii	416	8,569	6,462	75.4	2,107	24.6	622
Oregon	669	22,097	18,081	81.8	4,016	18.2	676
Washington	709	40,412	30,100	74.5	10,312	25.5	692

[1]Population data were based on provisional estimates of resident population as of July 1, 1984 in the publication of U.S. Department of Commerce, Bureau of the Census, State Population Estimates, by Age and Components of Change: 1980 to 1984, Series P-25, No. 970, Issued June 1985.

SOURCE: Moses, Evelyn B., The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses, November 1984. Accession No. HRP 0906938, National Technical Information Service, Springfield, VA, 1986.

Table 43

LICENSED PRACTICAL/VOCATIONAL NURSE POPULATION IN EACH STATE AND AREA, BY ACTIVITY STATUS: NOVEMBER 1983

Geographic area	Total number in sample	Licensed practical nurse population						
		Total	Employed as LP/VN		Not employed as LP/VN		Employed nurses per 100,000 population[1]
			Number	Percent	Number	Percent	
United States	17,235	781,506	539,463	69.0	242,042	31.0	231
New England	1,553	46,333	33,004	71.2	13,329	28.2	264
Connecticut	262	10,302	6,985	67.8	3,317	32.2	223
Maine	261	4,139	3,154	76.2	985	23.8	275
Massachusetts	449	23,018	16,553	71.9	6,465	28.1	287
New Hampshire	182	3,250	2,114	65.0	1,136	35.0	220
Rhode Island	206	3,364	2,488	73.9	877	26.1	261
Vermont	173	2,259	1,710	75.7	549	24.3	326
Middle Atlantic	2,005	137,040	82,885	60.5	54,154	39.5	224
New Jersey	388	22,794	14,212	62.3	8,582	37.7	190
New York	854	64,333	38,321	59.6	26,011	40.4	217
Pennsylvania	763	49,913	30,352	60.8	19,561	39.2	255
South Atlantic	2,744	121,494	86,872	71.5	34,622	28.5	224
Delaware	149	1,563	1,170	74.8	394	25.2	193
District of Columbia	127	2,245	1,719	76.6	526	23.4	276
Florida	578	33,687	23,954	71.1	9,733	28.9	224
Georgia	306	22,528	15,114	67.1	7,414	32.9	264
Maryland	274	10,215	6,770	66.3	3,445	33.7	158
North Carolina	363	17,962	13,310	74.1	4,652	25.9	219
South Carolina	282	9,200	7,042	76.5	2,158	23.5	216
Virginia	389	17,934	13,042	72.7	4,891	27.3	235
West Virginia	276	6,161	4,752	77.1	1,409	22.9	242
East South Central	1,286	56,050	41,598	74.2	14,453	25.8	278
Alabama	326	16,892	12,295	72.8	4,596	27.2	311
Kentucky	297	9,099	7,280	80.0	1,819	20.0	196
Mississippi	302	10,287	7,552	73.4	2,735	26.6	292
Tennessee	361	19,772	14,470	73.2	5,302	26.8	309
West South Central	1,756	103,123	70,671	68.5	32,452	31.5	274
Arkansas	274	11,527	7,788	67.6	3,739	32.4	335
Louisiana	305	15,600	11,513	73.8	4,087	26.2	259
Oklahoma	292	10,901	7,835	71.9	3,066	28.1	238
Texas	885	65,096	43,536	66.9	21,560	33.1	277
East North Central	2,348	135,561	94,979	70.1	40,582	29.9	229
Illinois	474	31,248	19,855	63.5	11,393	36.5	173
Indiana	363	13,814	10,546	76.3	3,268	23.7	192
Michigan	502	34,125	23,299	68.3	10,826	31.7	257
Ohio	661	41,228	29,542	71.7	11,686	28.3	384
Wisconsin	348	15,146	11,737	77.5	3,410	22.5	247
West North Central	2,177	64,495	48,729	75.6	15,765	24.4	280
Iowa	361	10,794	7,692	71.3	3,102	28.7	265
Kansas	243	6,624	5,327	80.4	1,297	19.6	220
Minnesota	435	18,795	13,842	73.6	4,954	26.4	334
Missouri	362	16,182	12,725	78.6	3,457	21.4	256
Nebraska	302	6,019	4,568	75.9	1,451	24.1	286
North Dakota	274	3,251	2,567	79.0	684	21.0	378
South Dakota	200	2,829	2,009	71.0	820	29.0	287
Mountain	1,643	32,882	21,386	65.0	11,496	35.0	173
Arizona	262	7,416	4,896	66.0	2,519	34.0	165
Colorado	219	8,718	5,252	60.2	3,466	39.8	167
Idaho	211	3,445	2,169	62.9	1,277	37.1	219
Montana	244	3,001	1,786	59.5	1,214	40.5	219
Nevada	142	1,785	1,249	70.0	536	30.0	140
New Mexico	162	3,714	2,659	71.6	1,055	28.4	190
Utah	233	3,698	2,617	70.8	1,081	29.2	162
Wyoming	170	1,105	785	68.6	347	31.4	147
Pacific	1,743	84,528	59,339	70.2	25,190	29.8	176
Alaska	119	1,025	569	55.5	456	44.5	119
California	843	60,757	44,721	73.6	16,036	26.4	178
Hawaii	185	2,539	1,770	69.7	770	30.3	173
Oregon	260	5,889	4,170	70.8	1,720	29.2	157
Washington	336	14,317	8,109	56.6	6,209	43.4	189

[1]Population data used for computation of nurse-population ratios were based on estimates of resident population as of July 1, 1983 in the publication of U.S. Department of Commerce, Bureau of the Census, Estimates of the Population of States, by Age: July 1, 1981 to 1983, Series P-25, No. 951, Issued May 1984.

SOURCE: U.S. Department of Health and Human Services, Division of Nursing. First National Sample Survey of Licensed Practical and Vocational Nurses, 1983. Accession No. HRP 0906278, National Technical Information Service, Springfield, VA, 1984.

Table 44

Degree of Difficulty in Recruiting Registered Nurses for Medical Surgical Staff Positions: Hospital Characteristics and Degree of Nursing Shortage

Hospital Characteristic	Degree of Difficulty[a] 1 Very Difficult	2 Difficult	3 Not Difficult	4 Haven't Tried
Location				
Rural	27.8	38.0	27.2	7.0
Urban (<1,000,000)	24.1	45.6	27.2	3.2
Urban (≥1,000,000)	37.6	34.4	27.0	1.1
Financial Organization				
Government (non-federal)	31.5	33.1	26.6	7.7
Non-Profit	29.4	40.8	26.8	3.0
Investor Owned	25.7	41.4	27.1	5.7
Number of Inpatient Beds				
1-49	37.6	38.3	16.1	8.1
50-99	21.6	35.3	35.3	7.8
100-199	27.4	38.4	31.5	2.7
200-299	32.5	36.1	30.1	1.2
300-399	25.4	47.8	25.4	1.5
400-499	39.4	45.5	15.2	0.0
≥500	32.6	41.9	25.6	0.0
Degree of Nursing Shortage				
None	8.2	23.9	52.8	15.1
Mild	13.5	40.5	41.9	4.1
Moderate	34.2	50.2	15.2	0.4
Severe	63.8	33.9	2.4	0.0

Table 45

EMPLOYMENT AND VACANCY RATES OF NURSING PERSONNEL IN U.S. REGISTERED HOSPITALS AND IN COMMUNITY HOSPITALS BY TYPE OF PERSONNEL, 1981-1985

Personnel classification	U.S. registered hospitals					Community hospitals				
	1981	1982	1983	1984	1985	1981	1982	1983	1984	1985
Total hospital personnel	4,124,974	4,250,421	4,215,014	4,117,238	4,116,854	3,470,567	3,585,290	3,579,711	3,481,588	3,464,178
Full time	3,197,902	3,295,286	3,258,474	3,199,799	3,178,596	2,596,609	2,686,998	2,680,550	2,619,945	2,585,680
Part time	927,072	955,135	956,540	917,439	938,258	873,958	898,292	899,161	861,643	878,498
FTE[1]	3,661,438	3,772,854	3,736,744	3,658,519	3,647,725	3,033,588	3,136,144	3,130,130	3,050,767	3,024,929
Vacancy rate	4.2	3.3	3.1	3.3	(2)	4.2	3.2	3.0	3.3	(2)
Registered nurses	823,321	881,791	913,945	915,978	937,026	751,301	804,709	836,504	835,947	851,827
Full time	571,790	606,852	627,748	630,106	641,799	507,407	539,130	559,800	559,732	566,677
Part time	251,531	274,939	286,197	285,872	295,227	243,894	265,580	276,704	276,215	285,150
FTE[1]	697,556	744,322	770,847	773,042	789,412	629,354	671,918	698,151	697,480	709,253
Vacancy rate	7.6	5.3	4.4	4.5	(2)	7.6	5.3	4.4	4.6	(2)
Licensed practical/ vocational nurses	304,606	311,338	302,331	272,464	253,682	274,722	280,658	271,912	242,635	221,987
Full time	221,712	223,682	215,881	194,190	181,136	193,730	195,016	187,558	166,482	151,572
Part time	82,894	87,656	86,450	78,274	72,546	80,992	85,642	84,354	76,153	70,415
FTE[1]	263,159	267,510	259,106	233,327	217,409	234,226	237,837	229,735	204,559	186,780
Vacancy rate	5.8	3.7	3.1	0.2	(2)	5.5	3.4	2.8	3.3	(2)
Ancillary personnel	428,671	437,607	451,128	410,229	382,757	324,802	332,138	341,364	299,219	272,827
Full time	336,207	339,865	351,446	324,707	303,059	236,426	238,891	246,907	219,220	198,878
Part time	92,464	97,742	99,683	85,522	79,698	88,376	93,247	94,367	79,999	73,949
FTE[1]	382,439	388,736	401,287	367,468	342,908	280,614	285,514	294,180	259,220	235,883
Vacancy rate	3.0	2.6	2.6	0.1	(2)	2.9	2.4	2.3	2.9	(2)

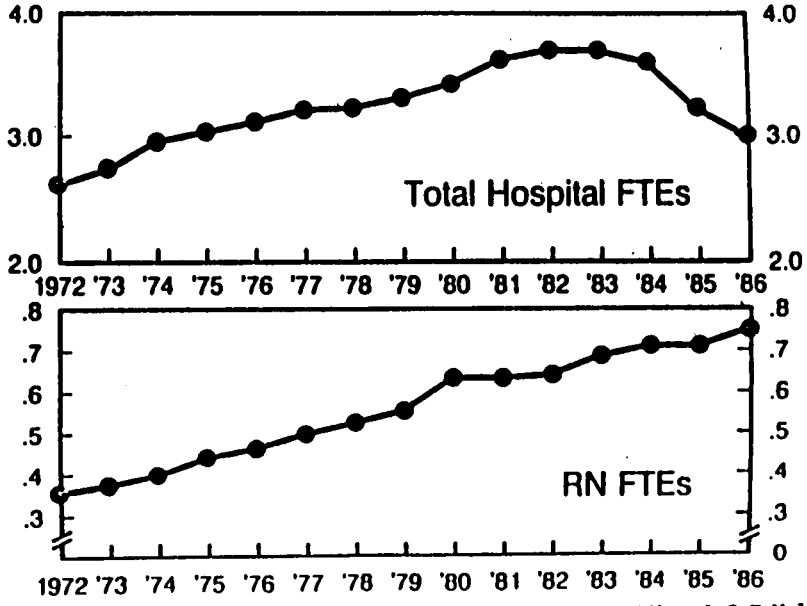
[1]FTE = Full-time equivalent.
[2]Data not available.

SOURCE: American Hospital Association, Annual Surveys of Hospitals, 1981-1985.

Table 46

NUMBER OF FULL-TIME EQUIVALENT HOSPITAL EMPLOYEES

1972 - 1986
(In Millions)

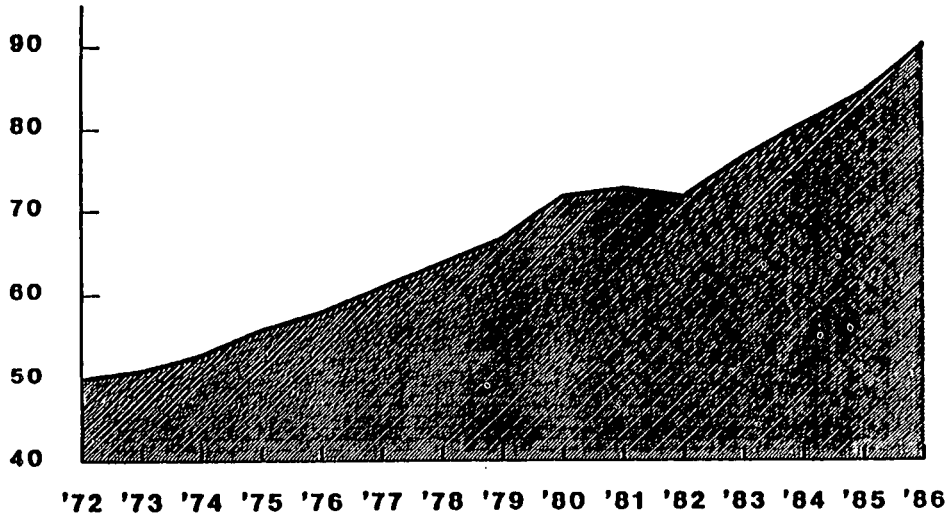


L.H.Aiken & C.F.Mullinix;"Recurring Hospital Nurse Shortages: Explanations and Solutions";

adapted from lecture, Nov.21,1986.

Table 47

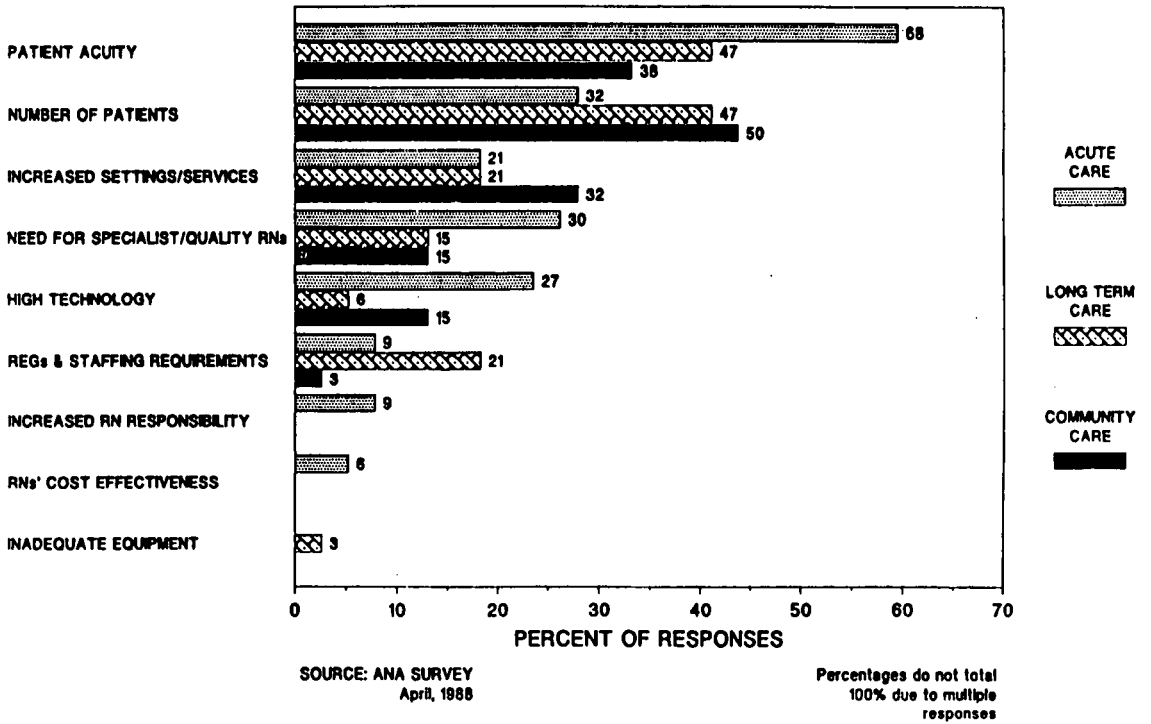
HOSPITAL RNs EMPLOYED PER 100 AVERAGE ADJUSTED DAILY PATIENT CENSUS 1972 - 1986



L.H.Aiken & C.F.Mullinix;"Recurring Hospital Nurse Shortages: Explanations and Solutions"; adapted from lecture, Nov.21,1986.

Table 48

MOST FREQUENTLY CITED FACTORS AFFECTING DEMAND



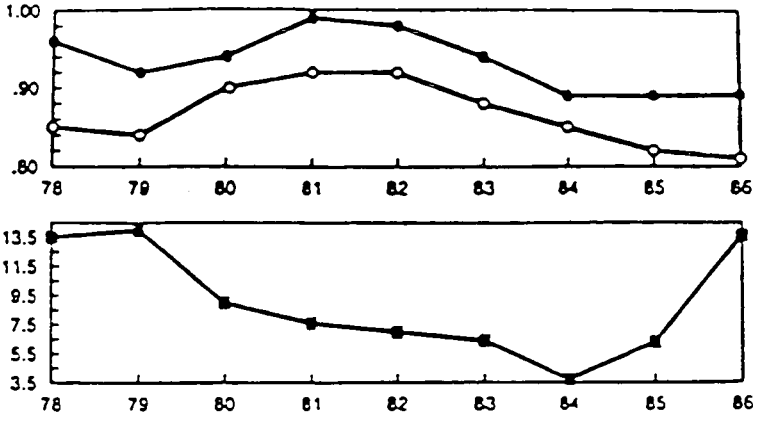
SOURCE: ANA SURVEY
April, 1988

Percentages do not total 100% due to multiple responses

Table 49

NURSES' RELATIVE INCOMES AND HOSPITAL NURSE VACANCY

1978 - 1986

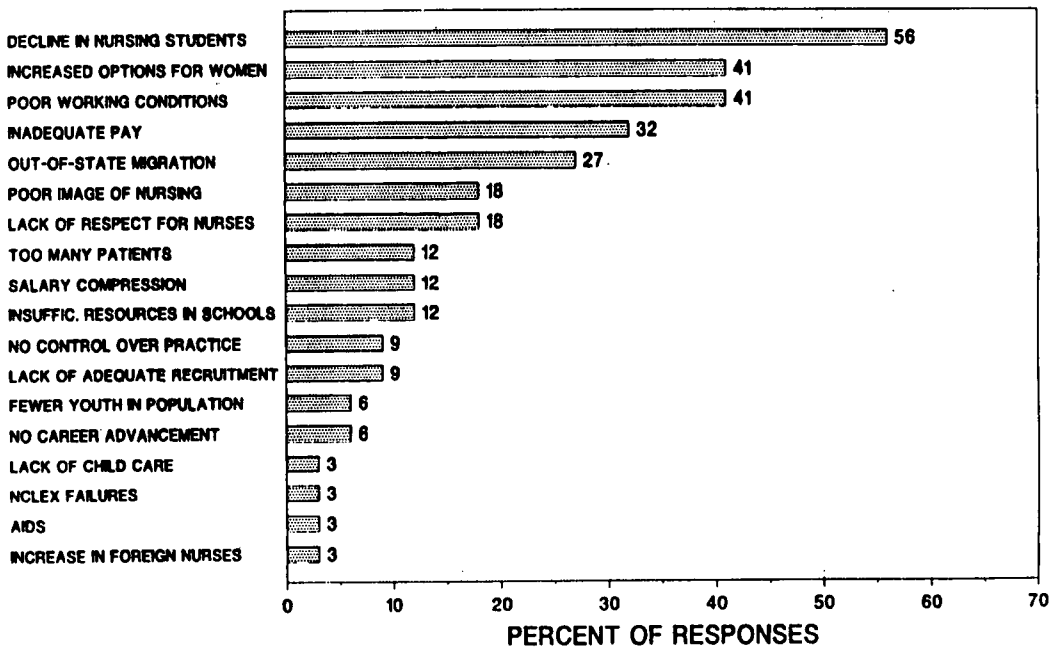


● Ratio of Nurses' Incomes to Female Professionals' ○ Ratio of Nurses' Incomes to Teachers' ■ Hospital Nurse Vacancy Rates (Per 100 Positions)

L.H.Aiken & C.F.Mullinix;"Recurring Hospital Nurse Shortages: Explanations and Solutions"; adapted from lecture, Nov.21,198[illegible]

Table 50

MOST FREQUENTLY CITED FACTORS AFFECTING SUPPLY



SOURCE: ANA SURVEY
April, 1988

Percentages do not total 100% due to multiple responses

Table 51

ESTIMATED NUMBER OF ALLIED HEALTH PERSONNEL EMPLOYED IN THE UNITED STATES: SELECTED YEARS, 1970-1986 1/

Occupation	1970	1975	1980	1986
Allied health personnel	673,000	899,000	1,100,000	1,330,000
Dental hygienists	15,000	27,000	38,000	48,000
Dental assistants	112,000	136,000	156,000	175,000
Dental laboratory technicians	31,000	42,000	53,000	63,000
Dietitians	17,000	23,000	32,000	41,000
Dietetic technicians	2,000	3,000	4,000	7,000
Medical record administrators	10,000	12,000	13,000	16,000
Medical record technicians	42,000	53,000	64,000	76,000
Medical laboratory workers:	135,000	191,000	249,000	293,000
Medical technologists	(57,000)	(93,000)	(138,000)	(174,000)
Cytotechnologists	(3,000)	(6,000)	(7,000)	(9,000)
Medical laboratory technicians	(1,000)	(8,000)	(13,000)	(16,000)
Other laboratory workers	(74,000)	(84,000)	(91,000)	(94,000)
Occupational therapists	6,000	21,000	25,000	32,000
Physical therapists	30,000	38,000	50,000	63,000
Radiologic service workers	87,000	97,000	116,000	143,000
Respiratory therapy workers	30,000	43,000	56,000	65,000
Speech pathologists and audiologists	19,000	32,000	42,000	57,000
Other allied health personnel 2/	135,000	183,000	212,000	251,000

1/ All numbers are rounded to the nearest thousand. Due to revisions and independent estimations, some numbers may differ from those that appear elsewhere.

2/ Includes such categories as dietetic assistant, genetic assistant, operating room technician, ophthalmic medical assistant, optometric assistant and technician, orthoptic and prosthetic technologist, pharmacy assistant, occupational and physical therapy assistants, physician assistant, podiatric assistant, vocational rehabilitation counselor, other rehabilitation services, and other social and mental health services.

SOURCE: Health Resources and Services Administration, Bureau of Health Professions, Division of Associated and Dental Health Professions, February 1987.

Table 52

Geographic Distribution of Selected Allied Health Professions, 1980

Allied Health Profession	Number per 100,000 population		Non-metro ratio as percent of metro ratio
	Non-metro	Metro	
Dietitian	26.0	30.9	84
Speech therapist	14.4	19.5	74
Health aide, except nursing	99.9	138.5	72
Inhalation therapist	16.6	23.1	72
Dental assistant	53.2	75.2	71
Health record technician	5.0	7.2	69
Radiologic technician	31.0	46.3	67
Physical therapist	12.7	21.1	60
Clinical laboratory technician	68.9	120.5	57
Dental hygienist	12.3	23.1	53
Occupational therapist	3.5	9.3	38

SOURCE: Review of Allied Health Education: 5, Ed. Joseph Hamburg, University Press of Kentucky, 1985.

Table 53

Distribution of Locality Prevailing Charges for Selected Procedures and Specialities, Weighted by Frequency of Service, 1987

HCPCS	Procedure Name	Spec.	Mean (dollars)	PERCENTILES 5	25	50	75	95
90020	Office Visit, Comprehensive	IM	81	55	67	78	90	111
		FP	64	30	45	60	83	111
	Office Visit Index	IM	61	40	50	58	67	91
90050	Office Visit, Limited	IM	24	16	21	22	28	33
		FP	20	13	16	18	22	32
90220	Hospital Care, Comprehensive	IM	91	55	78	89	105	124
		FP	78	55	60	78	90	111
90250	Hospital Care, Limited	IM	26	17	22	26	28	36
90620	Consultation, Comprehensive	IM	104	78	89	105	111	150
93000	EKG, Complete	IM	38	30	33	39	44	45
71020	Chest X-Ray	IM	41	33	36	40	44	56
43235	Upper GI Endoscopy	GE	343	254	293	330	363	542
27130	Total Hip Replacement	OS	2694	1923	2238	2662	3105	3549
33512	Coronary Artery Bypass	TS	4385	3092	3678	4434	5000	5919
47600	Gallbladder Removal	GS	922	721	776	887	1043	1350
52601	Prostatectomy (TUR)	UR	1270	887	998	1109	1349	1774
66983	Cataract Removal	OP	1689	1390	1522	1624	1827	2122
	Multiservice Index		101	79	88	97	110	135

Sources: 1987 HCFA Survey of Carriers (prevailing charges), 1985 BMAD I Procedure File (frequency weights).

Table 54

Percent of Services in Localities Where Prevailing Charge is Within Specified Range Relative to U.S. Mean, 1987

HCPCS	Procedure Name	Spec.	Mean (dollars)	-- Range -- below 80	80-120	above 120
90020	Office Visit, Comprehensive	IM	81	21	59	20
		FP	64	31	39	30
	Office Visit Index	IM	61	17	66	17
90050	Office Visit, Limited	IM	24	23	54	23
		FP	20	33	49	18
90220	Hospital Care, Comprehensive	IM	91	14	66	21
		FP	78	28	57	16
90250	Hospital Care, Limited	IM	26	20	59	20
90620	Consultation, Comprehensive	IM	104	11	76	13
93000	EKG, Complete	IM	38	7	89	4
71020	Chest X-Ray	IM	41	2	86	12
43235	Upper GI Endoscopy	GE	343	15	73	13
27130	Total Hip Replacement	OS	2694	16	64	19
33512	Coronary Artery Bypass	TH	4385	18	62	20
47600	Gallbladder Removal	GS	922	7	70	23
52601	Prostatectomy (TUR)	UR	1207	11	69	19
66983	Cataract Removal	OP	1689	3	87	10
	Multiservice Index		101	6	80	12

Sources: 1987 HCFA Prevailing Charge Data File (prevailing charges), 1985 BMAD I Procedure File (approved charges and frequency weights).

Table 55

Mean Prevailing Charges for Selected Procedures in Urban and Rural Counties, by Size Category, 1987

HCPCS	Procedure Name	Spec.	Large Urban (c.v.)	Small Urban (c.v.)	Large Rural (c.v.)	Small Rural (c.v.)	All Counties (c.v.)
90020	Office Visit, Comprehensive	IM	83 (26)	76 (20)	69 (22)	68 (21)	77 (25)
		FP	72 (31)	63 (31)	55 (34)	53 (34)	64 (34)
	Office Visit Index	IM	69 (22)	60 (23)	51 (21)	51 (21)	61 (25)
90050	Office Visit, Limited	IM	26 (22)	22 (19)	20 (18)	18 (18)	23 (24)
		FP	24 (28)	21 (22)	19 (21)	18 (18)	21 (27)
90220	Hospital Care, Comprehensive	IM	94 (22)	88 (15)	80 (16)	79 (19)	88 (20)
		FP	84 (24)	81 (21)	75 (21)	71 (24)	80 (23)
90250	Hospital Care, Limited	IM	29 (21)	23 (21)	21 (19)	20 (20)	25 (25)
90620	Consultation, Comprehensive	IM	116 (16)	98 (18)	89 (15)	85 (16)	102 (20)
93000	EKG, Complete	IM	39 (14)	36 (15)	34 (12)	33 (15)	36 (16)
71020	Chest X-Ray	IM	44 (18)	39 (15)	37 (12)	37 (19)	40 (18)
43235	Upper GI Endoscopy	GE	361 (25)	327 (18)	313 (16)	285 (18)	335 (22)
47600	Gallbladder Removal	GS	1042 (20)	893 (20)	810 (13)	794 (9)	920 (21)
66983	Cataract Removal	OP	1867 (17)	1593 (12)	1521 (11)	1563 (11)	1681 (17)
	Multiservice Index		114 (15)	97 (12)	90 (10)	86 (9)	101 (17)

Source: 1987 HCFA Survey of Carriers (prevailing charges), 1987 Area Resources File (population weights).

Table 56

Physician Average Expenses as Percentages of Average Total Expenses by Specialty for 1982 and 1984

	General/family practice		Internal medicine		Pediatrics		Surgery		Obstetrics/ gynecology	
	1982	1984	1982	1984	1982	1984	1982	1984	1982	1984
Nonphysician payroll	42	35	39	36	39	37	37	33	43	30
Malpractice insurance	5	5	5	6	4	5	9	10	10	16
Medical equipment	6	6	7	5	4	5	7	7	7	6
Office expenses	23	26	25	25	26	30	21	25	23	26
Medical supplies	15	16	10	13	12	13	8	11	9	11
Other expenses	9	12	14	15	15	10	18	14	8	11

Table 57

Estimated Distribution of Changes in Malpractice Insurance Costs Per Inpatient Day From 1983 to 1985 by Size of Hospital

Hospital size (number of beds)	Number[a] of hospitals	Percent changes in costs									
		Increases of less than 50 percent and decreases		Increases							
				50 to 99 percent		100 to 199 percent		200 to 299 percent		300 percent or more	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
All hospitals[b]	**5,472**	**2,189**	**40**	**1,149**	**21**	**1,313**	**24**	**438**	**8**	**383**	**7**
Fewer than 50	1,127	406	36	248	22	225	20	169	15	68	6
50 to 99	1,368	451	33	287	21	424	31	68	5	123	9
100 to 199	1,304	535	41	248	19	326	25	117	9	78	6
200 to 299	707	389	55	106	15	141	20	35	5	28	4
300 to 399	412	194	47	103	25	74	18	16	4	29	7
400 to 499	255	97	38	76	30	54	21	10	4	18	7
500 or more	299	120	40	78	26	69	23	15	5	18	6

[a]Detail by percent change may not add to total or 100 percent due to rounding.

[b]Detail by bed size may not add to total for all hospitals due to independent estimation.

Note See note to table 3 5

Table 58

NUMBER OF ACTIVE PSYCHIATRISTS BY RATE PER 100,000 POPULATION[1] AND RANKING BY STATE: 1982

STATE	N	RATE	RANK
Total, United States	29791	12.9	--
Alabama	196	5.0	46
Alaska	40	9.1	25
Arizona	279	9.8	23
Arkansas	126	5.5	44
California	4483	18.1	5
Colorado	488	16.0	8
Connecticut	771	24.4	3
Delaware	83	13.8	10
Florida	1060	10.2	22
Georgia	508	9.0	27
Hawaii	172	17.3	7
Idaho	36	3.7	50
Illinois	1240	10.8	20
Indiana	314	5.7	43
Iowa	168	5.8	42
Kansas	310	12.9	13
Kentucky	265	7.2	36
Louisiana	358	8.2	31
Maine	124	10.9	19
Maryland	1032	24.2	4
Massachusetts	1640	28.4	1
Michigan	1080	11.9	16
Minnesota	326	7.9	32
Mississippi	117	4.6	48
Missouri	463	9.4	24
Montana	38	4.7	47
Nebraska	111	7.0	37
Nevada	68	7.7	33
New Hampshire	115	12.1	15
New Jersey	1025	13.8	11
New Mexico	140	10.3	21
New York	4958	28.1	2
North Carolina	540	9.0	29
North Dakota	42	6.3	39
Ohio	973	9.0	26
Oklahoma	194	6.1	40
Oregon	294	11.1	18
Pennsylvania	1639	13.8	9
Rhode Island	131	13.7	12
South Carolina	236	7.4	35
South Dakota	41	5.9	41
Tennessee	318	6.8	38
Texas	1300	8.5	30
Utah	118	7.6	34
Vermont	93	18.0	6
Virginia	706	12.9	14
Washington	477	11.2	17
West Virginia	105	5.4	45
Wisconsin	428	9.0	28
Wyoming	22	4.4	49

Source: APA 1982 Manpower Report, Pending Publication, 1986.

[1] State population estimates were taken from U.S. Bureau of the Census, Current Population Reports, Series P-25, #944. Physicians practicing in the District of Columbia were excluded from the APA Manpower Report and will be included in a future supplementary report of psychiatrists in large metropolitan areas.

Table 59

COUNTY PER CAPITA INCOME AND PROVIDER DISTRIBUTION

1987 (est.) MEDIAN PER-CAPITA INCOME

STATE	State Median	Counties Served Only By Social Workers			Percent Below State Median
		No.	%	Per cap.	
Illinois	$12,575	34	33.3%	$10,347	17.7%
Michigan	$10,584	23	28.0%	$7,872	25.6%
Oklahoma	$11,462	26	33.8%	$8,194	28.5%
Texas	$11,787	65	25.6%	$9,060	23.1%
Florida	$12,558	3	4.5%	$8,397	33.1%
W. Virginia	$8,434	14	25.5%	$6,686	20.7%

PERCENT OF COUNTIES SERVED BY TYPES OF PROVIDERS

State	Psychiatrist, Psychologist & Social Worker	Psychologist & Social Worker Only	Social Worker Only	None	Other*
Illinois	29.4%	18.6%	33.3%	12.7%	5.9%
Michigan	42.7%	26.8%	28.0%	1.2%	1.2%
Oklahoma	18.2%	14.3%	33.8%	29.9%	3.8%
Texas	19.0%	10.2%	25.6%	39.8%	2.7%
Florida	52.2%	9.0%	4.5%	16.4%	17.9%
W.Virginia	36.7%	34.5%	25.5%	3.6%	5.5%

* Primarily psychiatrist and social worker

Table 60

Health Care Delivery and Assistance

National health service corps:

	1986	1987	1988	1989
NHSC Federally Employed Field Staff				
1. On duty start-of-year	539	456	366	352
2. Estimated losses from NHSC sites	-138	-162	-76	-76
3. Estimated loss to non-Fed Fields	-36	-6	--	--
4. NHSC new scholarships and loan repayment	+91	+78	+62	+60
5. End-of-year Field Strength	456	366	352	336
Private Practice Option Field Staff				
1. On duty start-of-year	470	429	317	172
2. Estimated losses	-148	-138	-153	-115
3. From new NHSC scholarships and loan repayment	+97	+25	+8	+5
4. From Amnesty program	--	--	--	+28
5. From NHSC conversion	+10	+1	--	--
6. End-of-year PPO field strength	429	317	172	90
Private Place. (Salaried) Field Staff				
1. On duty start-of-year	704	731	602	518
2. Estimated losses	-156	-321	-192	-182
3. From new NHSC scholarships and loan repayment	+175	+190	+108	+26
4. From Amnesty program	--	--	--	+160
5. From NHSC conversions	+8	+2	--	--
6. End-of-year PPS field Strength	731	602	518	522
Private Placement (Grant) Field Staff				
1. On duty start-of-year	1,245	1,511	1,457	1,206
2. Estimated losses	-421	-417	-397	-464
3. From new NHSC scholarships and loan repayment	+669	+360	+146	+50
4. From Amnesty program	--	--	--	+312
5. From NHSC conversions	+18	+3	--	--
6. End-of-year PPA Field Strength	1,511	1,457	1,206	1,104
Combined Field Strengths				
Federally employed field staff	456	366	352	336
Private practice option	429	317	172	90
Private placement salaried	731	602	518	522
Private placement assignment	1,511	1,457	1,206	1,104
Combined EOY Field Strengths	3,127	2,742	2,248 1/	2,052 1/

1/ Includes recipients of loan repayments under Section 338H.

Table 61

RURAL COMMUNITY HEALTH CENTERS

State	Number
Alabama	10
Alaska	0
Arizona	10
Arkansas	6
California	28
Colorado	10
Connecticut	0
Delaware	0
Florida	27
Georgia	8
Hawaii	2
Idaho	8
Illinois	6
Indiana	2
Iowa	0
Kansas	0
Kentucky	3
Louisiana	3
Maine	5
Maryland	4
Massachusetts	2
Michigan	17
Minnesota	0
Mississippi	20
Missouri	6
Montana	1
Nebraska	0
Nevada	1
New Hampshire	1
New Jersey	4
New Mexico	10
New York	6
North Carolina	15
North Dakota	1
Ohio	9
Oklahoma	1
Oregon	3
Pennsylvania	13
Puerto Rico	14
Rhode Island	2
South Carolina	16
South Dakota	6
Tennessee	10
Texas	26
Utah	3
Vermont	2
Virginia	13
Washington	10
West Virginia	20
Wisconsin	3
Wyoming	0

Table 62

SOURCES OF FUNDING FOR
COMMUNITY AND MIGRANT HEALTH CENTERS (C/MHC)
(Dollars in Millions)

	1987 Actual	1988 Current Estimate	1989 Estimate
Community Health Centers	$400 1/	$383	$400
Migrant Health Centers	45	43	43
Infant mortality initiative	--	20	21
Subtotal, C/MHC	445	446	464
Medicare	47	47	50
Medicaid	135	135	147
Title XX	4	4	4
Other 3rd Party	62	62	65
Patient Fees	90	95	97
State/Local/Other	130	133	153
Total, C/MHC Funding	$913	$922	$980

1/ Excludes $19,550,000 reprogrammed from the NHSC.

Table 63

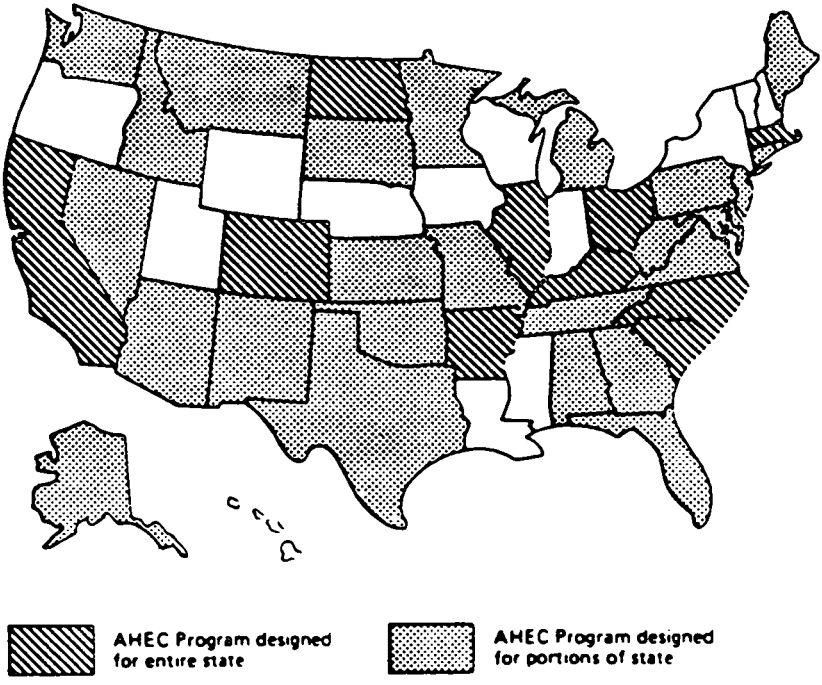

AHEC Program designed for entire state
AHEC Program designed for portions of state

Table 64

RURAL HEALTH CLINICS (RHC's)

State	#RHC's	# Medically Underserved Counties
Alabama	5	49
Alaska	16	15
Arizona	8	11
Arkansas	0	48
California	47	39
Colorado	12	30
Connecticut	0	6
Delaware	0	2
Florida	13	48
Georgia	22	79
Hawaii	0	2
Idaho	7	27
Illinois	1	32
Indiana	0	32
Iowa	10	36
Kansas	2	20
Kentucky	8	48
Louisiana	0	49
Maine	25	14
Maryland	0	12
Massachusetts	0	8
Michigan	0	48
Minnesota	3	33
Mississippi	9	58
Missouri	0	53
Montana	0	30
Nebraska	0	31
Nevada	6	13
New Hampshire	2	6
New Jersey	0	8
New Mexico	23	28
New York	25	48
North Carolina	36	54
North Dakota	0	33
Ohio	16	48
Oklahoma	0	25
Oregon	8	32
Pennsylvania	24	47
Rhode Island	3	4
South Carolina	2	36
South Dakota	21	45
Tennessee	24	46
Texas	0	83
Utah	8	17
Vermont	5	11
Virginia	0	49
Washington	12	25
West Virginia	29	47
Wisconsin	4	47
Wyoming	1	12
Total	438	1624

SOURCES FOR THE TABLES

Tables	Source
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34-36 38-43 45,51	Sixth Report To The President and Congress on the Status of Health Personnel in the United States. (Washington: U.S. Department of Health & Human Services, undated draft).

Tables	Source
37	Health Affairs, Fall 1988 issue. Reprinted with permission of the editors.
44,46-50	Data supplied by the Secretary's Commission on Nursing, U.S. Department of Health & Human Services.
52	Institute of Medicine. Allied Health Services: Avoiding Crises. Prepublication copy. (Washington: National Academy Press, 1988).
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58	Table supplied by the American Psychiatric Association.
59	Preliminary Report of the Geographic Distribution of Mental Health Providers. (Silver Spring, MD: National Association of Social Workers, 1988).
60,62	Budget justification material submitted to the Committees on Appropriations by the Health Resources and Services Administration, U.S. Department of Health & Human Services.
61	Data supplied by the National Association of Community Health Centers.
63	Map reproduced from Rural Health, Family Practice and AHEC: Results of a National Survey, a presentation by Dr. Richard Blondell to the 11th Annual conference of the National Rural Health Association, 1988.
64	Table supplied by the American Academy of Physician Assistants.