Chapter 12

Problems in the Recruitment and Retention of Rural Health Personnel

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INTRODUCTION

The future supply of rural health professionals is dependent on a sufficient supply of professionals appropriately trained for rural practice, and their willingness to locate and remain in rural areas. Factors affecting health professionals' specialty and location choice fall into three general categories:

1. ***personal factors (e.g.,*** work hours, social opportunities, spouse employment, and schooling for children);
2. ***professional factors (e.g.,*** opportunities for professional consultation, community and professional acceptance, and opportunities for career advancement); and
3. ***financial factors (e.g.,*** educational debts, income, and practice costs).

Although recent attention has focused on economic disincentives to rural practice, noneconomic issues also play a critical role in recruitment and retention of rural health professionals. For some professionals, the perceived amenities of rural practice outweigh its disadvantages. For others, the most attractive salaries would not compensate for the perceived drawbacks of rural areas. This chapter presents an overview of factors affecting health professionals' specialty and location choices. It also discusses more specifically some of the key problems in recruitment and retention of rural health professionals. The chapter is largely concerned with physicians because of the relative abundance of studies and data on physician recruitment and retention. Many physician recruitment and retention issues, however, apply generically to other health professionals as well.

FACTORS AFFECTING PHYSICIAN SPECIALTY CHOICE

Because rural areas rely so heavily on primary care physicians (see ch. 10), the recruitment of physicians into primary care is the first step in rural physician recruitment. The recruitment process thus begins in the earliest stages of medical education.

Critics assert that the current medical education system encourages specialty and academic practice and discourages students from pursuing primary care (206,506,556,604,608). It is commonly believed that medical school graduates are increasingly electing nonprimary care fields because these are more profitable. Although earning potential is not frequently mentioned by medical students as a motivator of specialty choice (58,61), a recent analysis suggests that it may be a factor (180). In 1987, the median net income of office-based family practitioners (FPs) and pediatricians was roughly one-half that of office-based ophthalmologists, diagnostic radiologists, orthopedic surgeons, and anesthesiologists. Net specialty income correlated positively with both the number of applications per available residency position and the percentage of available residency positions filled for various specialties (180).

Other factors may also be contributing to the current trend away from primary care specialties, including:

- the perception that primary care practice is less prestigious or less intellectually challenging than other specialties (206,326),
- the belief that primary care residencies and primary care practice are more demanding and require longer hours than other specialties (61,312), and
- the lack of positive role models in the primary care specialties (206,506,556,604,608).

The three factors most frequently mentioned by 1989 medical college seniors as the most important determinant of their specialty choice were intellectual content of the specialty (30 percent of graduates), type of patients encountered (16 percent), and physician role models in the specialty (12 percent) (61). Very few seniors indicated that their choice was based on the ''prestige' of that specialty within the medical profession (60,61).

Over two-thirds of 1989 medical school seniors indicated that they had determined their current specialty preference during the third or fourth year of medical school (61). A substantial proportion (13

percent) indicated that they had chosen a specialty before entering medical school (61). About two-thirds of 1988 and 1989 seniors who indicated a specialty choice had changed their preference during medical school. In both years, those students had most frequently rejected the specialties of family practice, internal medicine, general surgery, and obstetrics/gynecology (60,61). The three reasons most commonly given for the decision against a previously considered specialty were excessive demands on time and effort, inconsistency with student's personality, and negative clerkship experiences (60,61).

A study of 1983 medical school graduates found that receipt of a Federal scholarship was the most powerful predictor of selection of a primary care specialty (168). This same study found that women and married students were more likely than others to enter a primary care field, and that high levels of student indebtedness were somewhat associated with preferences for nonprimary care specialties and intent to enter academic, research, or administrative positions (168).

Some States and regions send a relatively high proportion of their medical graduates into primary care. A study of 1983 medical school graduates (544) found that the percentage of graduates entering family practice residencies was highest in the Pacific (17.5 percent) and Mountain (16.1 percent) regions. Regions with the lowest percentages were New England (7.1 percent) and the Middle Atlantic (8.1 percent). In 7 States, at least 20 percent of graduates entered family practice residencies;[1] in 10 States and the District of Columbia, fewer than 10 percent did so.[2] New York, which continues to have the highest number of medical graduates per year of any State, sent only 3.2 percent of its graduates into family practice residencies in 1988 (744). For individual medical schools, percentages in 1983 ranged from 0.8 percent at Cornell University in New York to 34.2 and 38.5 percent, respectively, for the University of North Dakota and Oral Roberts University in Oklahoma (544). In general, private medical school graduates are less likely than public school graduates to choose a primary care specialty (168).

FACTORS INFLUENCING WILLINGNESS OF HEALTH PROFESSIONALS TO PRACTICE IN RURAL AREAS

In the overwhelming majority of studies reviewed by OTA, personal characteristics and professional concerns were found to be of greater influence than financial factors on the location choices of physicians. The concerns of rural physicians apparently have not changed appreciably over the years. A study of physicians practicing in rural areas in 1967 (90) found areas of concern similar to those identified by more recent surveys. Most physicians practicing in rural areas are satisfied with their jobs (239,405,461), although one study found even higher satisfaction rates among urban physicians (239).

Personal Factors

Preference for rural or urban practice location seems to depend more on a personal preference for rural or urban living than on specific characteristics of rural or urban settings (239). Rural upbringing is a major influence on the decision for rural practice (71,90,142,144,165,239,280,313,507,592,719), as is the preference for a rural lifestyle (239,405,507). From 1978 to 1986, however, the number of enrolled medical students from rural areas decreased by 31 percent while the total number of enrolled students remained essentially the same (500). This decrease was primarily due to a drop in the number of applicants from these areas (500).

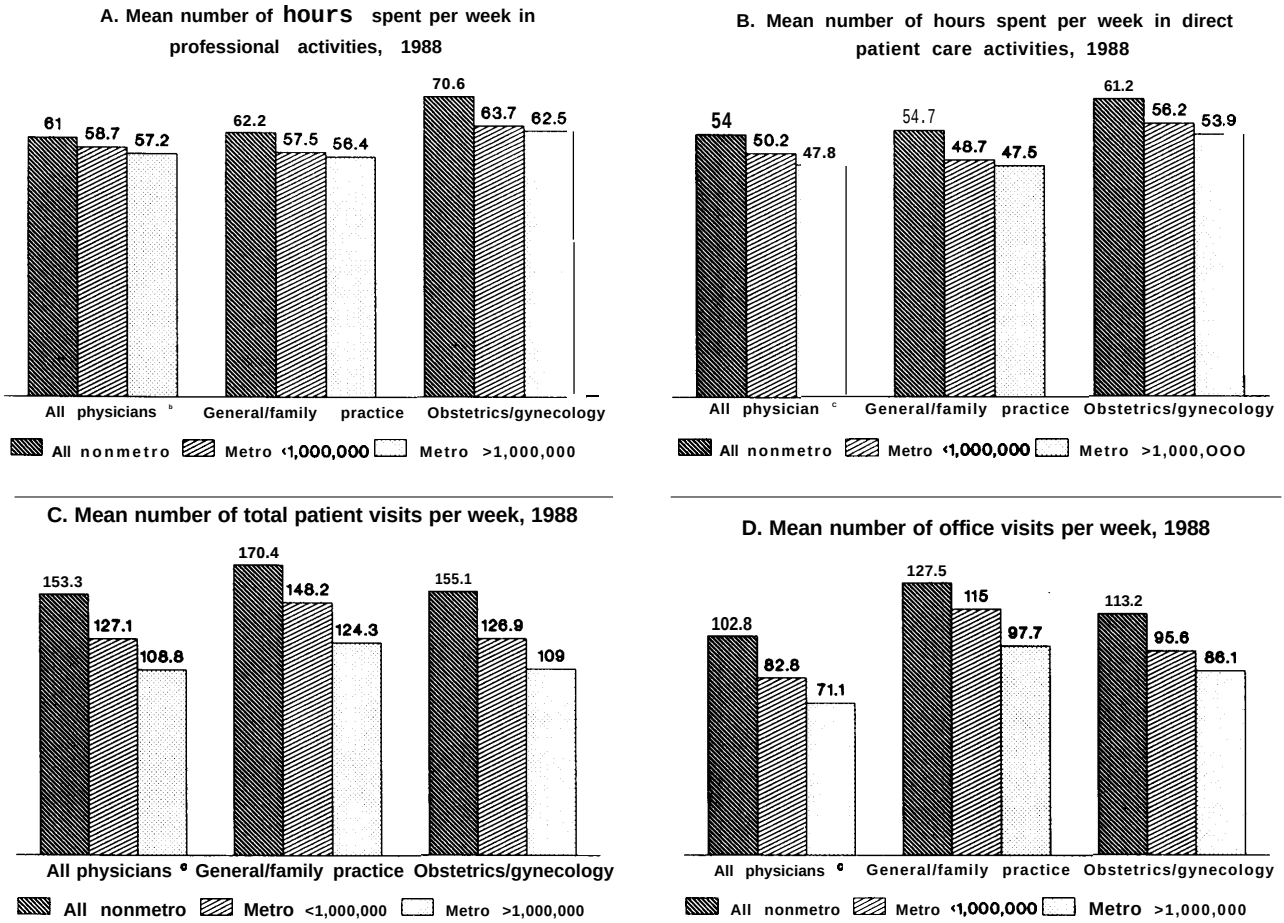
Lower socioeconomic background (124,238), experience in the National Health Service Corps (333), and participation in a loan forgiveness program tied to service obligation (372) are also associated with choice of a rural practice location. Minority physicians are more likely to practice in areas with large minority populations, suggesting that the recruitment of minority medical students may help alleviate the critical medical manpower shortages in some of these areas (507,669).

The locations of both undergraduate and graduate medical education are also important determinants of physician practice location. An analysis of 1982 data found that 39 percent of all physicians were

[1] These States were Mississippi, Colorado, New Hampshire, Washington Iowa, North Dakota, and Arkansas (544).

[2] These States were New York, Nevada, Connecticut, Massachusetts, Rhode Island, Hawaii, Oregon, Georgia, North Carolina, and Missouri (544).

Figure 12-1—Average Number of Hours Worked and Average Number of Patients Seen by Physicians, by Specialty and Location, 1988[a]



[a]Does not include osteopathic physicians, Federal physicians, residents, and physicians not in patient care.
[b]Includes physicians in all specialties not listed.
[c]Excludes physicians in radiology, psychiatry, anesthesiology, and pathology.

SOURCE: Office of Technology Assessment, 1990. Data from M.L. Gonzalez and D.W. Emmons, *Socioeconomic Characteristics of Medical Practice 1989* (Chicago, IL: American Medical Association, 1989).

practicing in the same State where they received their undergraduate training, and 51 percent were practicing in the same State where they received their graduate training (112). Graduates of public or less prestigious medical schools and training programs were more likely than other graduates to remain in the State of their training. General and family practitioners (G/FPs) and obstetrician/gynecologists (OB/GYNs) were more likely than other specialists to practice in the State where they obtained their medical degree or specialty training (112).

Adequate personal time plays a significant role in physician location decisions (405), and lack of leisure time has been cited as a source of job dissatisfaction among rural physicians (461). Physicians in rural areas work more hours and see more patients per week than do their urban counterparts (figure 12-1) (218). For solo practitioners in isolated rural communities, hours of coverage may be continuous, with little or no opportunity for respite, vacation, or continuing education.

Available data on work hours of registered nurses (RNs) reveal little difference between rural and urban areas for these professionals (table 12-1) (317).

Another area of concern for rural health professionals is the availability of employment opportuni-

Table 12-1—Number of Hours Worked Per Week and Number of Weeks Worked Per Year by Registered Nurses, by County Population Size, 1988

County population size[a]	Mean number of weeks worked per year	Mean number of hours worked per week
All U.S. counties	49.9	34.5
More than 50,000 residents	49.9	34.5
50,000 or fewer residents	49.9	34.7
25,001 to 50,000 residents	50.1	34.9
10,001 to 25,000 residents	49.6	34.5
10,000 or fewer residents	49.7	34.4

[a]County population size does not necessarily reflect metro or nonmetro status.
[b]Number of weeks and hours in principal position.

SOURCE: D.A. Kindig, University of Wisconsin, Madison, WI, and H. Movassaghi, Ithaca College, Ithaca, NY, unpublished analysis of data from the 1988 National Sample Survey of Registered Nurses (provided by the Division of Nursing, Bureau of Health Professions) conducted under contract with the University of North Dakota Rural Health Research Center, Grand Forks, ND, 1989.

ties for their spouses. In general, small rural communities provide limited professional opportunities, and local communities often have to "recruit the spouse'' when trying to attract a provider to the area. Forty-four percent of 1989 senior allopathic medical students were either married or engaged to be married. Of these students' spouses or spouses-to-be, 18 percent were also physicians, 59 percent were in other professional occupations, and 83 percent intended to work after their spouses had completed their medical education (61).

The availability of quality education for children and the availability of social and cultural activities also have been cited as possible disincentives to rural practice, although urban as well as rural physicians mention the lack of these amenities as disadvantages to their current practice location (239).

Professional Factors

Health professionals may be dissuaded from choosing a rural practice location due to either a perceived or an actual lack of professional opportunities and benefits. Unlike their urban counterparts, many rural health professionals do not have easy access to professional colleagues, consultations and second opinions, medical libraries, or continuing education. Moreover, rural primary care physicians may infrequently treat many conditions, and rural technical personnel may find it difficult to maintain competence in skills they rarely practice. Other professional concerns that may influence the location choices of health professionals-particularly nonphysicians—include opportunities for career advancement, ability to meet continuing education requirements for recertification, and statutory, regulatory, and reimbursement restrictions on professional autonomy and scope of practice. This section describes the barriers that some of these concerns create for health professionals in rural environments.

Physician Concerns

Ability to keep up with advances in medicine and availability of adequate support facilities can be key factors in physician location decisions (405), but these amenities tend to represent to a lesser degree in rural than in urban areas. For physicians who are already practicing in rural areas, factors associated with job ***satisfaction*** include the quality of physician-patient relationships, availability of good facilities, technical quality of medicine, practice autonomy (239), diversity of patients, and personal gratification derived from patient care (461). Factors associated with job ***dissatisfaction*** include heavy workload/long hours, lack of professional and educational resources or distance from other health facilities (239,405,461), bureaucratic interference (239), and meeting expectations of high-quality care (461). The perceived or actual lack of professional resources in rural areas may discourage some physicians from locating there.

Preference for Group or Salaried Practice— Trends toward group and salaried practice have serious implications for smaller rural communities. Young physicians today tend to prefer practice arrangements that guarantee them a fixed income and other desired benefits, such as regular hours, vacation time, and a close professional community

(378). A recent survey of 300 medical residents (327) found that 51 percent preferred group practice, 30 percent preferred employment in health maintenance organizations (HMOs), and only 1 percent preferred partnerships with established physicians. HMOs, however, are rarely located in rural areas (see ch. 5), and group practices may have trouble generating sufficient patient volume in very small communities.

American Medical Association (AMA) data confirm that young physicians are increasingly choosing salaried over private practice, but they also suggest that many of these physicians change from salaried to private practice before the fifth or sixth year of their career (218). It is not known whether physicians tend to remain in the same community or move to larger or smaller communities when they leave salaried practice. Increasing educational debts (see "economic factors" below) may be one reason behind the trend towards salaried practice, but this has not been shown empirically.

Impact of Hospital Closures on Physician Supply-- ***The*** large number of rural hospital closures in recent years raises concerns about effects on the availability of rural office-based physicians. The presence of a hospital has been found to play a significant role in the initial location decisions of physician specialists but a lesser role for primary care physicians (90,241,576). Less is known about the effect of hospital closure on local physician supply. A recent study found no conclusive evidence that rural hospital closure reduced the availability of local office-based generalist or specialist physicians during the periods 1970-80 and 1980-85[3] (273). A recent Minnesota survey examined the issue prospectively. When asked whether the closure of their local hospital would affect their decision of whereto practice, only 21 percent of rural physicians replied that it would ***not*** affect their decision, compared with 64 percent of physicians in the Twin Cities metro area and 50 percent of physicians in the Duluth and Rochester metro areas (173). Individual cases where hospital closure has endangered access to physician services have been reported (267).

Midlevel Practitioner Concerns

Factors influencing the location decisions of midlevel practitioners (MLPs)[4] have not been studied as extensively as those influencing physicians, but isolated studies indicate that professional concerns play a key role. In a recent survey of graduates from a certificate-level nurse practitioner (NP) training program in eastern North Carolina that places most of its graduates in rural practice, the four primary incentives for choosing a particular site were professional autonomy, good salary benefits, adequate medical backup, and educational opportunities (337). Many MLPs are required to participate in accredited continuing education programs in order to maintain licensure, but those practicing in rural areas may have difficulty accessing accredited programs. Federal and State restrictions on MLPs' scope of practice and on reimbursement for their services are key concerns for MLPs and are likely to influence their location decisions.

State Restrictions on Scope of MLP Services— ***The*** quality of care delivered by MLPs within their areas of competence has been described as at least equal to that provided by physicians (617), and some States allow certain MLPs to provide these services in independent settings. Other States, however, sharply limit the types of services MLPs may provide and the conditions under which they may be provided. Such diverse policies may influence the location decisions of MLPs.

The practice of NPs is governed by State nurse practice acts. States always require collaboration with or supervision by a physician, but they vary in their specific terms and conditions. NPs can and do practice without direct physician supervision in all States.[5] In 1990, 32 States allowed some form of prescriptive privileges for NPs, but only three States allowed NPs to prescribe medication without any cosigning or approval by a physician (603).

The professional autonomy of physician assistants (PAs) is much more limited. A fundamental difference is that PA practice is defined under State medical practice acts. Forty-nine States[6] and the

[3]The author noted two possible limitations in the study method that may have affected the results: 1) the measurement of hospital loss may have been too imprecise, and 2) the availability of other hospital facilities nearby was not taken into account.

[4]Includes nurse practitioners (NPs), physician assistants (PAs), certified nurse-midwives (CNMs), and certified registered nurse anesthetists (CRNAs) (see ch. 10).

[5]Restrictive interpretation of nurse practice acts in one or two States may limit the scope of NP practice (*603*).

[6]The exception is New Jersey, where PAs are not legally recognized health professionals and are permitted to work only in Federal facilities (*16*).

District of Columbia allow PAs to provide medical services under physician supervision, but the nature and extent of the supervision vary. All of these States except Colorado permit some conditions under which PAs can practice without a physician physically present in the room. Fewer States allow PAs to practice with off-site physician supervision.[7] As of March 1990,24 States and the District of Columbia allowed PAs to prescribe some medications (192).[8] Restrictions such as these prevent the utilization of PAs in rural satellite or remote practice settings.

Institutional and medical restrictions on scope of practice, liability coverage costs and availability, and stringent educational requirements present barriers to CNM practice (24,617). These barriers may be of particular concern to rural CNMs who practice in remote areas and therefore require a greater degree of autonomy. As of 1989, 5 States required a bachelor's or master's degree in nursing for nurse-midwifery practice, and 19 States required continuing education units for either RN or nurse-midwife license renewal (25). All nurse-midwives certified by the American College of Nurse-Midwives are required to complete continuing education units for certification renewal (191). Some rural CNMs have difficulty fulfilling continuing education requirements due to lack of recognized continuing education programs in some States and areas. These CNMs must travel to regional workshops to receive training, often at their own expense (191).

As with NPs and PAs, restrictive State (nurse) practice acts limit autonomous CNM practice in some States (191). Thirty-one States did not grant prescriptive privileges to CNMs in 1989, although some are now considering changes in their policies.[9] Moreover, some State hospital licensing laws prevent hospitals from allowing CNMs admitting privileges (191).

Reimbursement Disincentives for MLPs and Their Employers—A major barrier to the utilization of MLPs is the limited coverage for their services under Medicare, Medicaid, and other third-party plans (617). Reimbursement issues for MLPs are matters of economic concern for their employers and professional concern for the MLPs themselves, and they may play a role in MLPs' location decisions.

Table 12-2 summarizes coverage and direct payment for the services of MLPs under Medicare, Medicaid, and other third-party payers. MLPs receive third-party reimbursement for their services directly or indirectly (through their employers or supervising physicians). Reimbursement for MLPs under Medicare and Medicaid is limited to certain settings and conditions, and reimbursement by other third-party payers varies dramatically by State and by insurance plan.

Medicare—Although reimbursement of MLPs under Medicare Part B has expanded over the past two decades, it is still subject to many restrictions and, with few exceptions, payments are made to the employer rather than directly to the MLP. Legislation passed in 1982 (Public Law 97-248) authorized indirect Medicare reimbursement for PA and NP services delivered without direct physician supervision within HMO settings. Subsequent legislation authorized indirect Medicare reimbursement for PA services delivered under physician supervision in hospitals and nursing homes, for assistance during surgery, and for PA services delivered in rural Health Manpower Shortage Areas (HMSAs) (Public Laws 99-509, 100-203). Legislation in 1989 (Public Law 101-239) authorized indirect Medicare reimbursement for the services of NPs in skilled nursing facilities. Recent reports indicate an increased demand for PAs in certain hospital settings (see ch. 10). Medicare reimbursement for NPs and PAs in HMO settings may limit the supply of these practitioners in rural areas, since it increases the demand for NPs and PAs in HMOs' predominantly urban settings. Anecdotal reports indicate increased demand for PAs in some rural clinics following the 1987 amendments (192).

NPs, PAs, and CNMs in certified rural health clinics (RHCs) obtain indirect cost-based reimbursement under Medicare for their services.[10] Although RHC legislation was passed in 1977 (Public Law

[7]According to the American Academy of Physician Assistants, PA practice in satellite or remote settings would be difficult if not impossible in at least five States due to language in or interpretation of medical practice acts. These States are Colorado, Louisiana, Mississippi, New Jersey, and South Carolina (192).

[8]In addition, six States which do not allow PAs to prescribe drugs do allow them to dispense certain prescription drugs (192).

[9]In 19 States and the District of Columbia, prescriptive privileges are authorized, but the scope of the authority varies greatly. In two States, CNM prescriptive authority has been challenged by the State Attorneys General (191).

[10]Services of clinical psychologists and social workers furnished in RHCs are also reimbursed by Medicine.

Table 12-2—Coverage and Direct Payment for Services of Midlevel Practitioners[a]

Third-party payer	Nurse Practitioners (NPs)		Physic i an Assistants (PAs)		Certified Nurse-Midwives (CNMs)		Certified Registered Nurse Anesthetists (CRNAs)-	
	Coverage	Direct payment	Coverage	Direct payment	Coverage	Direct payment	Coverage	Direct payment
Medicare:								
Part A	No	No	No	No	No	No	No	No
Part B[b]	Some[c]	No	Some[d]	No	Yes	Yes	Yes	Yes
HMOs[e]	Yes	NA	Yes	NA	NA	NA	Yes	NA
State Medicaid programs[f]	Some States	A few States[g]	Some States	No States	Almost all States	Almost all States	Most States	**At least 20 States**
Medicare and Medicaid:								
Rural Health Clinics[h]	Yes	No	Yes	No	Yes	No	NA	**NA**
Private insurance	Some States	Some States	No	No	Some States	Some States	Some States	At least 13 States

NOTE: NA = not applicable.

[a] "Coverage" means reimbursement is provided to the employer. "Direct payment" means that reimbursement is made directly to the practitioner. "Services" means services that are typically and characteristically provided by physicians. Most payment for midlevel practitioner services, whether direct or indirect, is at levels lower than a physician would receive for comparable services.

[b] Direct reimbursement for CRNA services was mandated in 1986. Direct reimbursement for CNM services delivered without direct physician supervision but in accordance with State practice acts was mandated in 1987.

[c] Indirect part B reimbursement for the services of NPs in skilled nursing facilities was mandated in 1989.

[d] Medicare reimbursement for PA services delivered under physician supervision in hospitals, nursing homes, and as assistants during surgery was mandated in 1986. Medicare reimbursement for PA services furnished in rural primary care Health Manpower Shortage Areas was mandated in 1987. Payment is made to the supervising physician or to the employer.

[e] prepaid payments t. certain Health Maintenance organizations (HMOs) for NP and PA services were mandated in 1982.

[f] States have the option of reimbursing for Np, PA, and CRNA services but are required to reimburse for the services of CNMs delivered without direct physician supervision.

[g] 1989 legislation required all States to reimburse directly for the services of pediatric and family nurse practitioners in all settings. The new policy is scheduled to take effect in June 1990.

[h] Clinics certified under Public Law 95-210 (see ch. 3). Reimbursement is indirect and is cost-based rather than prospective.

[i] Indicates whether States have laws that require or permit Private insurers to cover or directlyreimburse for the services Of NPs, pAs, CNMs, and CRNAS.

SOURCE: Office of Technology Assessment, 1990.

95-210), implementation among States has been highly uneven. Over 2,000 counties in all 50 States qualify for RHCs,[11] yet in 1989 only 470 RHCs were certified in 37 States (table 5-15). In 8 States, each of which had more than 40 qualifying counties, there were no RHCs at all (table 5-15). Under the law, MLPs can work without direct physician supervision only within the proscriptions of State nurse and medical practice acts. Reasons for the lack of RHCs in some States may include restrictions on MLP scope of practice and resistance from the medical profession (516) or simply lack of awareness of the program. The RHC certification process can be lengthy and can cause substantial financial difficulty for some clinics (see ch. 5). The ability of clinics in rural HMSAs to obtain fee-for-service reimbursement from Medicare for PA services (see above) while seeking certification may ease the financial burden on these clinics, but clinics still cannot obtain such reimbursement for the services of NPs (192). (See chs. 3 and 5 for further discussion of the Rural Health Clinics Act and barriers to its implementation.)

Unlike most other MLPs, certified registered nurse anesthetists (CRNAs) may bill Medicare directly for their services. Direct Medicare reimbursement for CRNAs was mandated in 1986 (public Law 99-509). The American Association of Nurse Anesthetists, however, believes that reimbursement is too low (23).

Medicaid—Legislation in 1980 (Public Law 96-499) required that States reimburse for CNM services under Medicaid, regardless of whether these services are provided under direct physician supervision. Legislation in 1985 (Public Law 99-272) further directed that CNM-operated birthing centers do not have to be administered by physicians in order to qualify for Medicaid reimbursement. Legislation in 1989 (Public Law 101-239) required States to provide direct reimbursement under Medicaid for the services of pediatric and family NPs, regardless of whether the NP is under the supervision of or associated with a physician or other health care provider (effective July 1, 1990). PAs, NPs, and CNMs in designated rural health clinics also receive indirect cost-based reimbursement under Medicaid (see above).

Excepting the previous provisions, States are not required to reimburse PAs and NPs under Medicaid, but at least one-half of States exercise their option to do so to some extent (418). The method of reimbursement in these States varies. Several States limit direct reimbursement to NPs to certain procedures, such as obstetrics. At least 20 States directly reimburse CRNAs under Medicaid (601).[12] Most other States also reimburse CRNAs under Medicaid, but the method of reimbursement may be indirect (e.g., through a hospital) (601).

Private Insurance-Private insurance coverage of MLP services varies both by individual insurance plan and by State. In some States, legislation either requires or allows third-party payers to reimburse for MLP services (table 12-2), but some plans reimburse in States where there is no mandate. Twenty-six States either allow or mandate direct private third-party reimbursement for NP services, and 7 others allow or mandate direct reimbursement for certified psychiatric NPs (603). NPs have succeeded in obtaining direct reimbursement from some private plans. As of 1989, 20 States had mandated private insurance reimbursement for CNM services, but the method of reimbursement varies (25). Most private third-party payers reimburse either directly or indirectly for CRNA services, and at least 13 States require direct reimbursement for their services (601).

Nurse Concerns

Rural nurses cite lack of opportunities for career advancement, low salaries, and increased responsibility for non-nursing tasks as sources of job dissatisfaction. The same factors have been associated with recent declines in applicants to nursing programs (698). Lack of professional autonomy (e.g., inability to influence their own practice environment and characteristics) is regarded by many as one of the key factors affecting nurse retention and job satisfaction (232,262 #10,370, 469,593,717,733,). A study of nurses in rural Georgia hospitals found personal characteristics—including age, education, salary, marital status, and

[11] This is an underestimation of the total number of qualifying counties, since it only includes qualifying *nonmetro counties.* Under Public Law 95-210, clinics in nonurbanized areas of metro counties can also qualify if the areas meet the criteria fordesignationas a Medically Underserved Area or a primary care HMSA (see ch. 11).

[12] This figure is based on a survey conducted several years ago, and more States may now be reimbursing directly (601).

number of dependents-to be relatively unimportant predictors of rural hospital nurses' job satisfaction (232). The influence of these factors on those nurses' initial location decisions, however, was not studied.

Nurses in remote settings maybe less likely than urban nurses to have opportunities for career advancement (e.g., upgrading from a licensed practical/vocational nurse to an RN or from an RN to an advanced nursing position) due to poorer access to education programs and less flexible work schedules. Nurses in more populated counties are more likely than those in less populated counties to be enrolled in nursing-related educational programs (table 12-3) (317). Rural RNs also spend more time in supervisory and administrative activities than do their urban counterparts (table 12-3) (317). Whether this difference is looked on favorably by RNs is not known, but it does diminish the amount of time these nurses spend in direct patient care (table 12-3).

RNs in less populated counties are less likely than others to have bachelors' degrees (table 10-43) (317). The availability of upgrade programs for RNs without bachelor's degrees is a key issue for RNs in rural areas who want to become certified as CNMs, CRNAs, NPs, or other nurse specialists. Although certificate-level advanced nurse training programs do exist, their numbers are decreasing (263,673). Moreover, most organizations that certify advanced nurses require a bachelor's or master's degree (263), and there have been movements in some States towards the bachelor's degree as the entry-level degree in professional nursing (698). In fact, in the mid-1980s North Dakota became the first State to require a bachelor's degree in nursing for RN licensure (263).

Economic Factors

Economic concerns influence rural health personnel recruitment and retention at many stages. Increasing costs of health professions education can discourage students from choosing health careers. Heavy educational debt loads, perceived or actual rural-urban income differentials, and reimbursement policies that penalize certain specialties or geographic areas may influence practice choices. Other variables, such as rising malpractice insurance premiums, may also influence students' and professionals' career and practice choices.

Photo credit: Gail Mooney

Nurses in many rural hospitals are called upon to assume a wide range of responsibilities due to the hospitals' small size and limited resources.

Costs of Education and Student Indebtedness

Tuition in many health professions schools has been increasing faster than inflation. During the period 1980-81 to 1986-87, average medical school tuition increased by 125 percent for students attending a public school in their State of residence (671). First-year tuition in osteopathic medical schools increased by 17 percent from 1982 to 1984 alone (670). The average cost of tuition, fees, and other expenses at United States medical schools in academic year 1987-88 ranged from $13,765 for students attending public schools in their State of residence to $25,629 for students attending private medical schools (673) Tuition in all types of nursing programs has also been increasing (673). In publicly supported associate degree nursing programs, tuition increased by 65 percent from 1985-86 to 1989-90 (673).

Recent reductions in the availability of scholarships and other forms of financial aid have forced medical students to borrow more heavily in order to finance their education (168). As costs of education have increased, so have the levels and frequency of indebtedness among health professional school graduates. A recent study of students in allopathic and

Table 12-3-Registered Nurses Employed in Nursing: Percent of Time Spent in Various Professional Activities and Percent Enrolled in Advanced Nurse Education Programs, by County Population Size, 1988

	Percent distribution within each county size category[a]					
	All U.S. counties	Counties 50,000 or more residents	Counties with fewer than 50,000 residents	Counties with 25,001 to 50,000 residents	Counties with 10,001 to 25,000 residents	Counties with 10,000 or fewer residents
Currently enrolled in education program for nursing-related degree:						
Yes	**11.2**	11.4	8.9	9.3	7.8	**10.4**
No	**88.3**	**88.1**	**90.8**	**90.4**	**92.1**	**89.6**
Unknown	**0.5**	**0.5**	**0.2**	**0.3**	**0.2**	**0.0**
Total[b]	**100.0**	100.0	100.0	100.0	100.0	100.0
Percent time spent in:						
Administration	10.4	10.3	12.1	11.3	13.0	13.0
Consultation	6.5	6.5	5.9	5.4	6.8	5.8
Direct patient care	64.6	65.0	60.8	62.1	59.1	58.5
Research	1.6	1.6	1.3	1.3	1.2	1.4
Supervision	11.3	11.0	15.0	14.5	15.2	17.0
Teaching	5.1	5.2	4.4	4.8	3.9	4.1
Other	0.4	0.4	0,5	0.4	0.7	0.1
Total[b]	100.0	100.0	100.0	100.0	100.0	100.0

[a]County population size does not necessarily reflect metro or nonmetro status.
[b]Percentages may not add to 100 due to rounding.

SOURCE: D.A. Kindig, University of Wisconsin, Madison, WI, and H. Movassaghi, Ithaca College, Ithaca, Ny, unpublished analysis of data from the 1988 National Sample Survey of Registered Nurses (provided by the Division of Nursing, Bureau of Health Professions) conducted under contract with the University of North Dakota Rural Health Research Center, Grand Forks, ND, 1989.

osteopathic medicine, dentistry, optometry, and veterinary medicine estimated that three-fourths of these students cover 70 to 90 percent of their educational costs through loans averaging $10,000 for each year they are in school (52). The average educational debt of senior allopathic medical students[13] more than doubled from 1980 to 1989, from $17,200 to $42,374 (61,671). In 1989, 81 percent of senior allopathic medical students reported some level of educational debt, and 29 percent were in debt in excess of $50,000 (61). The average educational debt of senior osteopathic medical students increased by 30 percent from 1985 to 1988 alone, from $49,600 to $64,700 (21).

Indebtedness of other health professionals can also be substantial. In 1987, the average debt of dental graduates was $39,000 (673). The amount doubled from 1979 to 1984, and it has since increased at an annual rate of 6 percent (673). In 1987, average indebtedness was $33,600 for graduating optometry students and $13,000 for graduating pharmacy students (673). The average educational debt of baccalaureate nursing students in 1988 was $10,056 in public institutions and $12,939 in private institutions (19a).[14]

Heavy debt loads may cause financial difficulties for physicians during specialty training and during the early years of practice. Hernried et al. estimated that a resident with $40,000 in undergraduate debt who is training in a relatively inexpensive city will experience a deficit of $4,890 during internship and will have a negative cash flow throughout his or her residency (254). Residents with debts in excess of $80,000 may accumulate an additional debt of $75,000 or more during a 5-year residency program (254).

Evidence on the relationship between indebtedness and location choice is scarce and inconclusive. A recent study of indebtedness issues by the Bureau of Health Professions (670) concluded that the current scarcity of research on the effects of indebt-

[13]Includes debt from premedical education. Included in the average are students who reported no educational debt.

[14]Baccalaureate nursing student debt based on data from case studies in only 10 institutions.

edness on career and location choices maybe due in part to the relative newness of high student indebtedness. If educational costs and indebtedness levels continue to escalate at their current rate, financial considerations will probably become more prominent factors in students' and graduates' career and practice choices.

Income and Practice Costs

Factors such as lower income and increased number of patients with inadequate insurance coverage have been cited as sources of job dissatisfaction among rural physicians (405,461). The extent to which economic concerns such as these actually affect health professionals' location decisions has not been assessed directly, but perceived or actual lower income may serve as a disincentive to rural practice.

The incomes of rural physicians are lower and have not increased as rapidly as the average income of all physicians (table 12-4) (68). Some of the smaller increases are probably due to the fact that many rural physicians are primary care physicians, who have also witnessed relatively slow rises in income. Less is known about rural/urban differences in the incomes of other health professionals. PAs practicing in smaller communities are more likely to have low salaries than PAs practicing in larger communities (table 12-5) (17). There are considerable differences in average RN salaries among counties of different population sizes, with RNs in the least populated counties receiving only 76 percent of the annual salary of RNs in the most populated counties (table 12-6) (317). The extent to which these differences reflect cost of living or other factors is unknown.

Physician Income—Nearly 30 percent of physician income is from government sources, much of it from Medicare (68). Geographic variations in Medicare payments for equivalent physician services, which can be considerable (152,396,475,609,615), have been a subject of considerable attention from the Physician Payment Review Commission (PPRC) and other interested parties. Payments within a given locality to different practitioners who provide equivalent services also vary (475,562). These variations are probably an underlying cause of geographic variations in payment within a given physician specialty, because methods for setting payment rates for different specialists are not consistent among Medicare's insurance carriers[15] (652).

Table 12-4-income of U.S. Physicians (as a Percentage of Average Physician Income) by Specialty and Practice Location, 1977 through 1986a

	Percent of average U.S. physician income	
	1977-78	1985-86
Income by specialty		
General/family practice	82.8	68.3
Internal medicine	98.2	91.2
Pediatrics	76.5	68.2
Income by geographic area		
Nonmetropolitan areas	95.9	86.8

[a]Data are an average of 2 years' surveys.

SOURCE: Reprinted with permission from P. G. Barnett and J. E. Midtling, "Public Policy and the Supply of Primary Care Physicians," JAMA 262 (20): 2864-2868, 1989, table 5 (Copyright 1989, American Medical Association). Based on data from: M. L. Gonzalez and D. W. Emmons, Socioeconomic Characteristics of Medical Practice 1987 (Chicago, IL: American Medical Association, 1987).

Table 12-5--Average Annual Salary Range of Physician Assistants by Community Size, 1989

Salary range	Community size[b] Fewer than 10,000 residents	10,000 to 250,000 residents	More than 250,000 residents
	Percent of physician assistants		
Less than $20,000	5	3	4
$20,000 -$30,000	20	17	12
$30,000 -$40,000	44	46	41
$40,000 -$50,000	20	23	26
Greater than $50,000	10	10	15
None listed	1	1	1
Total[c]	100	100	100

[a]This information is derived from the American Academy of Physician Assistants' 1989 Prescriptive Practice Survey and is statistically representative of member and nonmember physician assistants in communities of all sizes.

[b]Community size does not reflect metro or nonmetro location.

[c]Percentages may not add to 100 due to rounding.

SOURCE: American Academy of Physician Assistants, Alexandria, VA, unpublished data from the 1989 PA Prescriptive Practice Survey provided to OTA in 1989.

[15]Medicare Part B reimbursement is handled through 48 insurance carriers. Physicians submit their claims to the carriers for reimbursement, and the carriers in turn submit reimbursement totals to the Health Care Financing Administration on a quarterly basis.

Table 12-6--Average Annual Salary of Registered Nurses, by County Population Size, 1988

County population size[a]	Average annual salary[b]
All U.S. counties	$27,432
50,000 or more residents	27,790
Fewer than 50,000 residents	23,516
25,001 to 50,000 residents	24,336
10,001 to 25,000 residents	22,774
10,000 or fewer residents	21,365

[a]County population size does not necessarily reflect metro or nonmetro status.
[b]Annual earnings in principal position.

SOURCE: D.A. Kindig, University of Wisconsin, Madison, WI, and H. Movassaghi, Ithaca College, Ithaca, NY, unpublished analysis of data from the 1988 National Sample Survey of Registered Nurses (provided by the Division of Nursing, Bureau of Health Professions) conducted under contract with the University of North Dakota Rural Health Research Center, Grand Forks, ND, 1989.

Under Medicare's current "customary, prevailing, and reasonable" (CPR) method for determining physician payments, which will remain in place until 1992 (see ch. 3), the United States is divided into approximately 240 "prevailing charge localities" administered by 48 insurance carriers. Within each locality, the carriers compute a "prevailing charge" for each physician service (475). A 1986 survey of 39 carriers found that 5 carriers did not distinguish among specialists in calculating the prevailing charge, but that 17 carriers calculated a separate "prevailing charge" for each specialty (6.52).

PPRC studied geographic variations in prevailing charges for 13 procedures and found notable variations among urban and rural counties of different sizes (table 12-7) (475). Prevailing charges were generally lowest in the smallest rural areas and highest in the largest urban areas. After adjusting for cost of practice, however, these variations evened out considerably (table 12-7).[16] PPRC concluded that these analyses "cast doubt on the existence of major inequities between rural and urban areas in the aggregate," but that greater inequities do exist among specific localities, both urban and rural (475).

Among the 13 procedures studied, charges for hospital and office visits to internists and FPs showed substantially greater variations among localities than did other services (475), a fact that may be of particular significance in rural areas where internists and FPs constitute a larger part of the physician population. A study of geographic variations in Medicare surgical fees found that, both before and after adjusting for practice costs, rural/urban differences were much smaller than differences across large urban areas (396).[17] Wide variation across rural areas of the same size has also been noted. In 1984, for example, prevailing charges for a total hip replacement were $2,400 in rural Mississippi and $990 in rural Kentucky (475). Such examples are not isolated incidents, and they cannot be explained by differences in practice costs alone (475).

Less is known about geographic and specialty variations in Medicaid reimbursement for physician services. By law, Medicaid is prohibited from paying more than Medicare would for a particular service (see ch. 3), although in practice it may occasionally do so. In many cases, however, Medicaid appears to pay considerably less. Table 12-8 compares Medicare and Medicaid payments for two common procedures in each State in 1986. Depending on the State, the maximum Medicaid payment ranged from 33 to 125 percent of Medicare's maximum allowable charge for a brief followup office visit, and from 14 to 104 percent for an appendectomy (610). These percentages must be regarded with caution, because the analysis compared the highest Medicare-allowed charge anywhere in a State to the average maximum Medicaid payment statewide. However, the analysis does illustrate the extreme variation in both Medicare and Medicaid reimbursement.

Rural physicians may be harder hit by low Medicare and Medicaid reimbursement rates because they have proportionately greater Medicare and Medicaid caseloads than those of their urban counterparts. A recent survey of Minnesota physicians found that the median Medicaid caseload was 15 percent in rural Minnesota compared with 5 percent in the Twin Cities metro area (173). Rural physicians surveyed were more likely than physicians Statewide to report a recent increase in their

[16]PPRC uses the Geographic practice Cost Index (GPCI) to adjust for geographic differences in cost of practice
[17]These researchers also used the GPCI to adjust for practice costs.

Table 12-7—Average Prevailing Charges for Selected Procedures by Geographic Location, Actual and Adjusted for Differences in Practice Costs, 1987 (In dollars)

Procedure (specialist)	County size and classif ication[a]				
	Large urban	Small urban	Large rural	Small rural	All count i es
Comprehensive office visit (internist)					
Actual	83	76	69	68	77
Adjusted	76	79	76	77	77
Comprehensive office visit (family practitioner)					
Actual	72	63	55	53	64
Adjusted	65	65	61	60	63
Limited office visit (internist)					
Actual	26	22	20	18	23
Adjusted	24	23	22	21	23
Limited office visit (family practitioner)					
Actual	24	21	19	18	21
Adjusted	22	21	21	20	21
Hospital care,comprehensive (internist)					
Actual	94	88	80	79	88
Adjusted	87	90	90	89	89
Hospital care, comprehensive (family practitioner)					
Actual	84	81	75	71	80
Adjusted	77	83	83	80	80
Hospital care, limited (internist)					
Actual	29	23	21	20	25
Adjusted	27	24	23	23	25
Consultation, comprehensive (internist)					
Actual	116	98	89	85	102
Adjusted	106	100	99	96	102
EKG, complete (internist)					
Actual	39	36	34	33	36
Adjusted	36	37	38	37	37
Chest x-ray (internist)					
Actual	44	39	37	37	40
Adjusted	40	40	41	42	41
Upper GI endoscopy (gastroenterologist)					
Actual	361	327	313	285	335
Adjusted	338	334	347	321	339
Gallbladder removal (general surgeon)					
Actual	1,042	893	810	794	920
Adjusted	966	922	907	899	933
Cataract removal (ophthalmologist)					
Actual	1,867	1,593	1,521	1,563	1,681
Adjusted	1,718	1,628	1,701	1,776	1,685
Multiservice index					
Actual	114	97	90	86	101
Adjusted	104	99	100	98	101

[a]Large urban = metro counties of 1,000,000 or more residents; small urban = metro counties with fewer than 1,000,000 residents; large rural = nonmetro counties with 10,000 or more residents; small rural = nonmetro counties with fewer than 10,000 residents.

SOURCE: Physician Payment Review Commission, Annual Report to Congress: March 1988 (Washington, DC: March 1988), tables 8-5 and 8-7.

Medicaid caseload (78 percent v. 52 percent) (173). Rural Minnesota physicians were also more likely than their urban counterparts to report recent increases in the proportion of their Medicare patients who are unable to pay their bills (61 percent of rural physicians v. 42 Percent of physicians in the Twin Cities and 35 percent of physicians in Duluth and Rochester metro areas), and in the proportion of all their patients who lack any form of basic health insurance (173).

Table 12-8-Medicaid Maximum Payments and Medicare Maximum Allowable Charges for Selected Services, 1986[a] (In dollars)

	Brief followup office visit			Appendectomy		
	Medicaid	Medicare	Medicaid as percent of Medicare	Medicaid	Medicare	Medicaid as percent of Medicare
Alabama	$11.70	$20.70	56.5	$405.00	$412.80	98.1
Alaska	28.41	24.70	115.0	NA	NA	NA
Arkansas	12.00	14.40	83.3	275.00	412.60	66.7
California	11.04	30.00	36.8	353.68	825.20	42.9
Colorado	11.75	15.50	75.8	280.00	433.20	64.6
Connecticut	8.80[b]	24.80	35.5	276.00[b]	700.00	39.4
Delaware	12.66	21.00	60.3	390.35	492.70	79.2
District of Columbia	20.00	25.00[c]	90.9	315.00	515.60[c]	61.1
Florida	10.00	24.80	40.3	197.50	674.60	29.3
Georgia	15.60	15.00	104.0	399.50	600.00	66,6
Hawaii	13.25	16.50	80.3	453.66	660.10	68.7
Idaho	10.50	14.60	71.9	336.40	476.10	70.7
Illinois	11.50	25.00	46.0	270.00	605.00	44.6
Indiana	17.30	16.50	104.8	533.00	515.75	103.3
Iowa	NA	30.00	NA	NA	500.00	NA
Kansas	15.00	16.70	89.8	268.00	536.20	50.0
Kentucky	13.00	16.50	78.8	401.60	515,75	77.9
Louisiana	10.69	16.30	65.6	411.16	722.00	56.9
Maine	8.00	NA	NA	217.50	536.40	40.5
Maryland	10.50	22.00	47.7	202.00	515.70	39.2
Massachusetts	8.00	NA	NA	233.00	515.75	45.2
Michigan	7.75	23.50	33,0	271.50	399.00	68.0
Minnesota	15.75	NA	NA	520.00	519.90	100.0
Mississippi	11.55	NA	NA	295.05	510.00	57.9
Missouri	10.00	20.70	48.3	220.00	567.40	38.8
Montana	11.30	14.70	76.9	342.88	489.90	70.0
Nebraska	16.30	16.30	100.0	453.90	453.90	100.0
Nevada	15.82	24.70	64.0	673.72	742.70[d]	90.7
New Hampshire	6.00	12.40	48.4	225.00	490.00	45.9
New Jersey	9.00	20.60	43.7	211.00	660.20	32.0
New Mexico	11.50	17.20	66.9	396.15	579.60	68.3
New York	7.oo[b]	20.60[d]	34.0	160.00	1,140.20	14.0
North Carolina	13.10	16.50	79.4	378.00	536.40	70.5
North Dakota	8.20	12.40	66.1	449.05	494.80	90.8
Ohio	12.00	20.60	58.3	337.50	515.75	65.4
Oklahoma	11.00	20.70	53.1	500.00	610.00	82.0
Oregon	11.07	18,50	59.8	387.98	577.60	67.2
Pennsylvania	13.00	25.00	52.0	301.50	515.70	58.5
Rhode Island	14.00	20.63	67.9	205.00	515.75	39.7
South Carolina	9.50	14.62	65.0	307.40	440.92	69.7
South Dakota	12.00	12.40	96.8	345.00	455.80	75.7
Tennessee	18.00	14.40	125.0	449.50	536.50	83.8
Texas	NA	24.75[b]	NA	NA	618.90[d]	NA
Utah	9.92	12.40	80.0	430.12	NA	NA
Vermont	8.00	12.40	64.5	225.00	490.00	45.9
Virginia	6.30	NA	NA	236.25	515.60	45.8
Washington	13.92	17.7ob	78.6	290.23	576.80	50.3
West Virginia	10.00	16.50	60.6	230.00	515.75	44.6
Wisconsin	16.23	18.10	89.7	432.85	663.80	65.2
Wyoming	16.30	14.40	113.2	483.50	464.30	104.2
Simple average	12.43	18.56	67.0	337.97	557.47	60.6

NOTE: NA = not available.

[a]Maximums shown under Medicare and Medicaid are for physician specialist services, unless otherwise noted. In many States, there is a lower Medicare maximum for general practitioners' services; only a few Medicaid programs make this distinction. Medicaid maximums are statewide averages. Medicare maximums are the highest allowable charges anywhere in the State. Arizona had no general Medicaid program in 1986.

[b]Maximum payment for general practitioner; value for specialists is unavailable.

[c]Includes Maryland suburbs.

[d]Information available *only* for part of State.

SOURCE: U.S. Congress, Congressional Research Service, Medicaid Source Book: Background Data and Analysis, House of Representatives Committee on Energy and Commerce, Print No. 1OO-AA (Washington, DC: U.S. Government Printing Office, November 1988), tables G-3 and G-4.

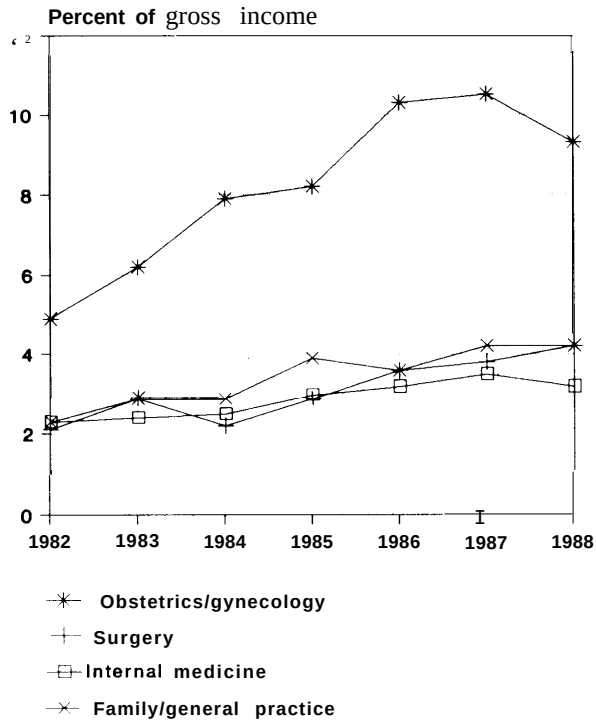
Physician Practice Costs—A Medical Economics survey of 1987 physician practice costs found that rural physicians had higher mean professional expenses than did their urban and suburban counterparts (269). This same survey showed that solo physicians' practice costs accounted for a percentage of their gross income greater than that for physicians in group practice.[18] American Medical Association data indicated that median professional expenses for rural G/FPs were $14,000 higher than those for G/FPs in the largest urban areas in 1988 (218).

Although surveys of physicians such as these suggest rural practice costs are higher than urban ones, other data show per-unit rural costs to be lower. While AMA and ***Medical Economics*** data are based on reported annual outlays per physician, Medicare uses the Geographic Practice Cost Index, which uses per-unit input prices for the various practice cost components (e.g., nonphysician employee salaries, malpractice insurance premiums, equipment costs), to set fees for specific services. These per-unit costs are generally lower in rural than in urban areas (475).

Medical malpractice liability insurance premiums as a percentage of gross income have increased more dramatically for providers of obstetric care than for other medical specialties, although these increases now appear to be leveling off (figure 12-2) (36,218). High premiums may discourage physicians and CNMs from practicing obstetrics, particularly in areas where volume of cases is low, or where women cannot pay the full costs of care. (The impact of rising malpractice insurance premiums on the availability of rural obstetric services is discussed in greater detail inch. 15.)

Dramatic variations in physicians' malpractice insurance premiums exist among States. For example, in 1985, annual premiums for OB/GYNs in Florida (excluding Dade and Broward Counties), Arkansas, and North Carolina were $92,830,$18,950, and $15,290, respectively (636). Premiums in these States for general practitioners providing minor surgery were $16,700, $3,700, and $3,000, respectively (636).[19] No studies have been conducted to date to determine the direct effects of premium increases on providers' choices of practice location.

Figure 12-2—Average Liability Insurance Premiums as a Percent of Average Gross Income* of Self-Employed Physicians in Selected Specialties,[b] 1982-88



[a]Mean net income plus mean professional expenses.
[b]Does not include osteopathic physicians.

SOURCE: Office of Technology Assessment, 1990. Data from M.L. Gonzalez and D.W. Emmons, *Socioeconomic Characteristics of Medical Practice 1989* (Chicago, IL: American Medical Association, 1989); and American Medical Association, Center for Health Policy Research, *Socioeconomic Characteristics of Medical Practice* 7987 (Chicago, IL: 1987).

Although more challenging to translate into purely economic terms, certain other practice 'costs" may be higher for rural than for urban physicians, such as:

- longer work and on-call hours (figure 12-1),
- higher costs of maintaining medical equipment due to technician travel costs,
- difficulty subsidizing through patient revenues the costs of maintaining expensive but infrequently used medical equipment, and
- high volumes of uncompensated care for some physicians.

[18]PPRC found substantial differences in the figures reported by this survey and others conducted during the same time period (47'5).

[19]All figures are for the same degree of coverage.

Concerns of Allied Health Professionals[20]

A Florida study (572) found that the greatest problems with the recruitment and retention of allied health professionals (AHPs) in Florida's small rural hospitals were general short supply of AHPs and difficulty in recruiting AHPs to work in rural areas. Recommendations of the study included:

- development of cross-training programs,
- recruitment of students from rural areas,
- development of rural training sites, and
- formation of networks through which rural hospitals could share the services of certain hard-to-find AHPs (572).

State licensure requirements for AHPs were also cited as a barrier to rural recruitment and retention (572). Small rural hospitals were particularly dissatisfied with Florida's licensure requirements for respiratory therapists, laboratory technologists and technicians, and radiologic personnel. Some hospitals indicated a need to broaden certain licensure requirements to permit personnel to perform a wider range of functions, while others recommended that licensure requirements be narrowed for hospitals that provide a more limited range of procedures. Some hospitals noted that practice regulations are in some cases too stringent, and that certain AHPs should be permitted to function with less direct supervision. For example, Florida law prevents licensed laboratory technicians from performing procedures (e.g., drawing blood, plating cultures) when a licensed medical laboratory technologist is not physically present in the room (572).

Although fulfilling continuing education requirements was cited as a problem for Florida's rural AHPs, hospitals and professional organizations felt that current requirements were appropriate and should not be changed due to the provider's location (572).

Multiskilled AHPs

Small rural facilities that have a lower volume of specific services may not need full-time specialized AHPs, but they may be required to hire certain types of personnel in order to provide those services. For example, a remote rural intermediate care facility would be required to provide limited diagnostic radiology services and medical laboratory services, but it maybe fiscally unable to hire both a certified radiologic technologist and a certified medical laboratory technologist. Furthermore, a fully certified medical laboratory technologist may be overqualified for work in a facility that only provides a limited range of services. Ideally, such a facility would hire a single individual who was certified in both fields, but such individuals are in even shorter supply than single-skilled AHPs.

There are two major barriers to the use of multiskilled AHPs. First, there are few programs that offer formal cross-training for AHPs. It is not known how many of these, if any, are in rural areas. Some hospitals provide formal on-the-job training for their multiskilled AHPs (424), but this involves a commitment of resources that small rural facilities may not have.

Second, State licensure and regulation policies in some cases do not permit limited licensure of health professionals--i.e., licensure for a narrower range of skills than the profession typically performs. Returning to the example above, the rural intermediate care facility may not require the full range of skills that a fully trained and certified radiologic technologist could offer. Ideally, the facility would train a certified medical laboratory technologist to perform a more limited range of radiologic tasks (e.g., simple x-rays). This solution would be feasible only if the State offered limited licenses for radiologic technologists or had more flexible staffing requirements for intermediate care facilities. It is likely that informal cross-training of AHPs has been occurring in rural facilities for some time, but in some instances the use of such professionals may fall outside the proscriptions of State laws and regulations.

In its 1989 report, the Institute of Medicine's Committee to Study the Role of Allied Health Personnel described licensure as the "most restrictive type of regulation" and concluded that "its effectiveness in protecting the public has not been conclusively demonstrated' (288). The Committee recommended that States increase flexibility in current licensing laws to allow more overlap in scope of practice for some occupations and to allow alternative routes to licensure (288).

resee ch.10 for a description of allied health professionals.

SUMMARY OF FINDINGS

Factors Affecting Physician Specialty Choice

Unfortunately for the future supply of rural physicians, ***physicians are increasingly choosing nonprimary care specialties.*** Reasons for this trend include perceptions that primary care practice is less intellectually challenging and more demanding in time and effort. Lack of faculty role models in primary care maybe an additional factor. preference for nonprimary care specialties has also been linked to expected earnings and to high levels of indebtedness.

Public medical schools produce a larger proportion of primary care physicians than do private schools, and some States and regions send relatively high proportions of their medical graduates into primary care. Receipt of a Federal scholarship (e.g., NHSC) is also strongly associated with the choice of primary care.

Factors Affecting Location Choice

Physician location decisions are more dependent on personal and professional than on financial factors. Factors such as preference for rural or urban living, availability of recreational, social, and cultural activities, adequate backup facilities, opportunity for professional consultation and continuing education, shorter work hours, and opportunity for group practice have been identified as key determinants in the choice for rural or urban practice. Employment opportunities for spouses may also play a key role in the location decisions of young physicians. Other factors strongly associated with the decision for rural medical practice include lower socioeconomic background, experience in the National Health Service Corps, and participation in a loan forgiveness program tied to service obligation.

For nonphysicians, job satisfaction is more heavily influenced by professional autonomy and opportunities for career advancement. However, financial considerations may be important in the initial recruitment process.

Personal and Professional Concerns

Compared with urban physicians, physicians in rural areas work longer hours, see more patients per week, and have more office visits per week. Solo practitioners in isolated rural communities may have continuous hours, with little or no opportunity for vacation or continuing education leave. These problems may also apply to MLPs in isolated rural areas. A strong preference for group and salaried practice, most often found in urban areas, has been noted among medical residents. Studies examining the impact of hospital closures on rural physician supply are inconclusive or conflicting.

Lack of opportunities for career advancement and poor access to continuing or advanced education may dissuade nurses from choosing rural practice locations. For nurses already in rural areas, lack of educational resources may prevent them from seeking advanced nursing degrees, thus stifling a potential source of rural nurse MLPs.

A major barrier to the utilization of MLPs in autonomous settings is the limited coverage for their services under Medicare, Medicaid, and other third-party plans. Restrictive State practice acts can also present barriers to the utilization of MLPs in independent rural settings. Although third-party reimbursement for MLPs has improved during the past decade, it is still limited to certain settings, and it is usually indirect rather than direct.

Recruitment and retention of some AHPs in regulated rural settings, such as hospitals and nursing homes, are hindered by limitations of State licensing laws that do not permit the cross-licensing of AHPs to perform broader ranges of functions.

Economic Concerns

The costs of medical and other health professions education have risen sharply in recent years. Student indebtedness has also increased dramatically and is particularly pronounced for medical graduates. Although there is as yet no conclusive evidence of the effect of indebtedness on location choice, ***the increasing preference among medical graduates for salaried practice suggests that economic concerns such as indebtedness do play a role in practice decisions, and they may dissuade recent graduates from establishing private practices in rural areas.***

The average incomes of both primary care physicians and rural physicians have increased more slowly than those for other physicians. ***Based on the limited information available, it appears that physicians in rural practice care for a larger percentage of Medicare, Medicaid, and uninsured patients than their urban counterparts.*** Thus they may be

penalized by low reimbursement rates (particularly for Medicaid patients) and higher volumes of uncompensated care. In addition, many "intangible" costs may be greater for rural than for urban physicians (e.g., longer work hours and costs of maintaining frequently used equipment).

It remains unclear to what extent rising malpractice insurance costs are affecting the outmigration, immigration, or practice of rural health professionals. Obstetric care providers face particularly high premiums. Premiums have increased rapidly during the last decade, but they are now beginning to stabilize. The impact of the "liability crisis' may be greater on rural than on urban areas due to lower caseloads among rural practitioners and higher proportions of lower paying patients.

PAs and nurses in smaller communities have lower incomes than those in larger communities, but it is not clear to what extent these differences reflect cost of living or other factors.

Low operating margins make it difficult for many rural health facilities to compete for AHPs and nurses in the national labor market by raising salaries and offering other incentives. In addition, licensure requirements can limit the use of multiskilled AHPs in small rural facilities that neither need nor can afford to employ several AHPs to perform separate functions.