

Part III

Availability of Rural Health Services

Chapter 5

Problems and Trends in Rural Health Services

CONTENTS

	<i>Page</i>
INTRODUCTION	111
HOSPITAL CHARACTERISTICS	111
Number of Community Hospitals	111
Hospital Ownership	111
Hospital Scope of Services	113
Size of Hospital Medical Staffs	116
HOSPITAL UTILIZATION AND COMPETITION	117
Hospital Inpatient Utilization	117
Hospital Outpatient Utilization and Ambulatory Surgery	122
Competition for Patients	123
PRIMARY CARE FACILITY CHARACTERISTICS AND UTILIZATION	124
Number of Community Health Centers	124
Community Health Center Services	126
Community Health Center Utilization	126
Number of Certified Rural Health Clinics	126
HEALTH MAINTENANCE ORGANIZATIONS	129
HOSPITAL FINANCIAL VIABILITY	130
Revenue Issues	130
Costs and Operating Margins	135
Access to Capital	137
FINANCIAL VIABILITY OF COMMUNITY HEALTH CENTERS+	140
Revenue Issues	140
Costs and Operating Margins	141
FACILITY CLOSURES	142
Number of Hospital Closures	142
Characteristics of Closed Hospitals	143
Impact of Hospital Closures on Access to Care.....	144
Efficiency of Hospital Closures	145
Closure of Primary Care Facilities	145
POPULATION MOBILITY AND ACCESS TO CARE	146
Patient Outmigration	146
Geographic Limitations to Access to Care	147
SUMMARY OF FINDINGS	151
Rural Community Hospitals	151
Rural Community Health Centers	152
Access to Care	153

Boxes

Box	<i>Page</i>
5-A. The Hill-Burton Program	119
5-B. The Hill-Burton Uncompensated Care Obligation	132

Figures

<i>Figure</i>	<i>Page</i>
5-1. Nonmetropolitan Hospitals by Census Region, 1986	113
5-2. Ownership of Nonmetropolitan Community Hospitals, 1987	113
5-3. Short-Term Hospital Beds to Population Ratio, 1986	121
5-4. Certified Rural Health Clinics, 1988	129
5-5. Sources of Payment for Services in Rural Federally Funded Community Health Centers, 1984, 1986, and 1988	142
5-6. Closure of U.S. Community Hospitals by Metropolitan/Nonmetropolitan Status, 1981-89	143

Tables

<i>Table</i>	<i>Page</i>
5-1. Community Hospital Size and Utilization, by Metropolitan/Nonmetropolitan Status, 1984-88	112
5-2. Number of Community Hospitals by Metropolitan/Nonmetropolitan Status and Bed Size, 1984-87	112
5-3. Most Common Selected Services Available in Nonmetropolitan Community Hospitals With Fewer Than 300 Beds, by Bed Size, 1987	115
5-4. Intensive Care Capability and Selected Diagnostic and Treatment Services Available in Community Hospitals, by Hospital Location and Bed Size, 1987	115
5-5. Long-Term Care Services Provided in Nonmetropolitan Community Hospitals, 1987	116
5-6. Total Medical Staff in Community Hospitals With Fewer Than 300 Beds, by Hospital Location, Type, and Bed Size, 1987	117
5-7. Changes in Utilization of Community Hospitals by Hospital Location and Bed Size, 1984-87	117
5-8. Utilization of Nonmetropolitan Community Hospitals by Hospital Type and Bed Size, 1987	118
5-9. Distribution of Hill-Burton Short-Term Hospital Projects and Population, by Community Size, 1948-71	120
5-10. Community Hospital Beds per 1,000 Population and Occupancy by Hospital Location, 1986	120
5-11. Community Hospital Outpatient Utilization by Hospital Location, 1984-88	123
5-12. Select Ambulatory Care Services Provided in Nonmetropolitan Community Hospitals by Bed Size and Hospital Type, 1987	123
5-13. Number of Federally Funded Community Health Center (CHC) Grantees and Service Sites by Rural/Urban Status and Region, 1984-88	125
5-14. Utilization of Rural Federally Funded Community Health Center Grantees and Service Sites, 1984-88	127
5-15. Primary Care Physician Utilization in Rural Federally Funded Community Health Centers by Region, 1984-88	127
5-16. Number of Certified Rural Health Clinics, and Nonmetropolitan Counties in Which Clinics Could Qualify for Certification, by State, 1989	128
5-17. Average Days in Patient Accounts Receivable for Community Hospitals, by Hospital Location and Bed Size, 1984 and 1987	130
5-18. Aggregate Uncompensated Care in Community Hospitals by Hospital Location and Bed Size, 1984-87	131
5-19. Sources of Net Patient Revenue of Community Hospitals, by Hospital Location, 1986 ...	132

5-20. Distribution of Hospitals by Medicare Percentage of Net Patient Revenue, 1986	132
5-21. Community Hospitals Receiving Tax Appropriations From State and Local Governments, by Hospital Location and Bed Size, 1984 and 1987	133
5-22. Average PPS Operating Costs Per Case of Hospitals in the Fifth Year of PPS, by Hospital Location and Type	133
5-23. Hospital PPS Operating Margins for the First 5 Years of PPS, by Hospital Location and Type	134
5-24. Fifth-Year Hospital PPS Operating Margins: Means and Percentiles by Hospital Location and Type	134
5-25. Community Hospitals: Gross Outpatient Revenue From outpatients as a Percent of Total Gross Patient Revenue, by Hospital Location and Bed Size, 1984 and 1987	135
5-26. Mean Hospital Costs Per Case Compared With Mean Proposed ASC Payments Per Case and Blended Rate Payments Per Case, by Hospital Location and Bed Size	136
5-27. Changes in Total Revenue and Expenses for Community Hospitals by Hospital Location and Bed Size, 1984 and 1987	137
5-28. Total Mean Expenses Per Inpatient Day for Nonmetropolitan Community Hospitals by Bed Size, 1987	138
5-29. Total Expenses Per Nonmetropolitan Community Hospitals by Ownership and Bed Size, 1987	138
5-30. Community Hospital Net Patient Margins and Net Total Margins, by Hospital Location and Bed Size, 1984 and 1987	139
5-31. Comparison of Nonmetropolitan Hospitals Having Positive and Negative Medicare PPS operating Margins, PPS Years 2 Through 4	139
5-32. Community Hospitals Acquiring New Capital Debts, by Hospital Location and Bed Size, 1984 and 1987	140
5-33. Aggregate Funds Given to Endowments or Available for Plant Replacement/Expansion and Other Restricted Purposes in Community Hospitals, by Hospital Location and Bed Size, 1984-87	141
5-34. Patients Requiring Subsidies in Rural Federally Funded Community Health Centers (CHCs) by Region, 1987	141
5-35. Community Health Center (CHC) Revenue and Expenses, 1986 and 1988	142
5-36. Geographic Distribution of Community Health Centers and Federal Funding, 1983-86 . . .	143
5-37. Characteristics of Community Hospital Closures in 1987, by Hospital Location	144
5-38. Factors Related to Hospital Closure in 1987 as Reported by Nonmetropolitan Hospital Administrators	144
5-39. Changes in Rural Community Health Center Grantees: Mergers, Closures, and New Starts, 1984-88	146
5-40. Sources of Inpatient Care for Rural Residents in New York State, 1983.. +...	147
5-41. Household Characteristics for "Community C" by Hospital Utilization Experience, 1984-85	148
5-42. Regional Differences in Distances From Nonmetropolitan Hospitals to the Nearest Hospital	148
5-43. Travel Time to Nearest Hospital for Nonmetropolitan Hospitals That Are More Than 15 "Crow Fly" Miles From the Nearest Hospital, 1984	149
5-44. Travel Time and Distance to Nearest Hospital for Nonmetropolitan Hospitals More Than Twenty-Five Miles From the Nearest Hospital, 1984	149
5-45. Regional Distribution of Nonmetropolitan Hospitals by Sole Community Hospital (SCH) Status, 1984	150
5-46. Characteristics of Four Frontier Hospitals	151
5-47. Federally Funded Community Health Center Service Sites Located in Frontier Areas by State, 1989	152

Problems and Trends in Rural Health Services

INTRODUCTION

Recent changes in the delivery of rural¹ health services have created both problems and opportunities for rural communities and their health care facilities. In particular, significant changes in the demand for the services of rural hospitals and primary care centers threaten their operational stability and thus the ability of some rural residents to obtain basic health care.

This chapter begins by describing trends in operating and service characteristics of rural acute- and primary-care facilities, particularly regarding utilization and competition for patients. It then examines trends affecting the financial condition and viability of rural hospitals and community health centers (CHCs)², and the impact of the growing number of health care facility closures in rural areas. Finally, it examines what is known about the nature of travel by rural residents outside their communities for health care and the geographical limitations to accessible care in rural areas.

Most of the data documenting changes in hospital operations are from 1984 through 1987 and were supplied by the American Hospital Association (AHA). Additional AHA data also enabled a more in-depth analysis of hospital operations in 1987. Most data on CHCs cover trends from 1984 through 1988, and most were obtained from the Bureau of Health Care Delivery and Assistance of the U.S. Public Health Service.

Local health departments (LHDs) and private group practices are also important sources of basic rural health services. No information on these facilities is presented in this chapter, however, because no national data are available on their numbers, scope of services, or other basic operating characteristics.

HOSPITAL CHARACTERISTICS

Number of Community Hospitals

In recent years, the number of community hospitals in both rural and urban areas has decreased slightly. As shown in table 5-1, the number of rural hospitals declined 5.5 percent from 1984 to 1988, or about twice as much as did the number of urban hospitals. Over 70,000 hospital beds were eliminated during this period through the downsizing or closure of hospitals. Only 29 percent of the eliminated beds were in rural hospitals, but because rural hospitals are smaller in size (i.e., have fewer beds) than urban ones, the proportion of beds eliminated was actually higher in rural than in urban areas.³ (In 1988, rural hospitals made up about 46 percent of the 5,533 community hospitals, but they housed only 22 percent of the total licensed beds (35).)

In 1987, nearly three-fourths of rural hospitals had fewer than 100 beds (and about one-third housed fewer than 50 beds) (table 5-2). By comparison, only 23 percent of urban hospitals had fewer than 100 beds. From 1984 to 1987, the number of large rural hospitals declined, while the number of rural hospitals with fewer than 50 beds actually increased (30).

Hospitals are not evenly distributed throughout rural areas of the country. Nearly two-thirds of rural hospitals are located in the four central Census regions of the United States;⁴ over 20 percent are located in six Midwestern States (figure 5-1) (382). About 11 percent of rural hospitals are in frontier areas (counties with six or fewer persons per square mile). In 1987, there were 277 hospitals located in 387 frontier counties (see app. C).

Hospital Ownership

Nearly one-half (48 percent) of all rural community hospitals in 1987 were privately owned, non-profit facilities (figure 5-2). State and local govern-

¹Unless otherwise noted, "rural" corresponds to nonmetropolitan areas—all areas outside of designated metropolitan counties (see ch. 2).

²"CHCs" in this chapter includes migrant health centers.

³The number of hospital beds refers to total facility beds (both acute care and other) set up and staffed for use. A hospital's number of staffed beds is typically fewer than the total number of beds the hospital is licensed to operate by the State.

⁴See app. F for a description of Census regions.

Table 5-1—Community Hospital^a Size and Utilization, by Metropolitan/Nonmetropolitan Status, 1984-88

	1984	1985	1986	1987	1988	Percent change 1984-88
Number of hospitals						
Nonmetro.	2,696	2,674	2,638	2,599	2,549	-5.5
Metro.	3,063	3,058	3,040	3,012	2,984	-2.6
Number of beds						
Nonmetro.	232,746	228,871	223,422	216,921	212,624	-8.6
Metro.	784,311	771,807	754,953	741,391	734,073	-6.4
Average number of beds/hospital						
Nonmetro.	86	86	85	83	83	-3.5
Metro.	256	252	248	246	246	-3.9
Admissions (in thousands)						
Nonmetro.	7,450	6,826	6,360	6,000	5,882	-21.0
Metro.	27,706	26,622	26,019	25,601	25,571	-7.7
Inpatient days (in thousands)						
Nonmetro.	51,651	46,746	44,920	43,754	43,313	-16.1
Metro.	204,952	189,873	184,527	183,261	183,562	-10.4
Occupancy rate (percent)						
Nonmetro.	60.7	56.0	55.1	55.3	55.7	-8.2
Metro.	71.5	67.5	67.0	67.7	68.4	-4.3
Average length of stay (days)						
Nonmetro.	6.9	6.8	7.1	7.3	7.4	7.2
Metro.	7.4	7.1	7.1	7.2	7.2	-2.7

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

^bOccupancy rates are based on the hospital's total number of beds (both acute care and other).

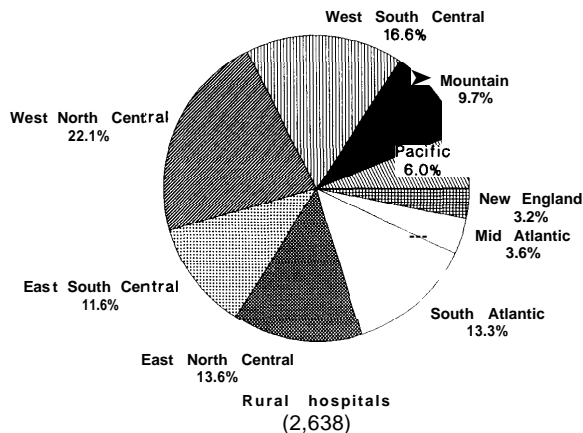
SOURCE: American Hospital Association, *Hospital Statistics* (Chicago, IL: AHA, 1985-89 eds.).

Table 5-2—Number of Community Hospitals^a by Metropolitan/Nonmetropolitan Status and Bed Size, 1984-87

Bed size	1984	1985	1986	1987	Percent change 1984-87
Nonmetro hospitals	2,696	2,674	2,638	2,599	-3.6
6-24 beds.	182	177	175	192	5.5
25-49.	799	800	809	805	0.8
50-99.	932	919	908	893	-4.2
100-199.	606	610	576	536	-11.5
200-299.	131	125	130	135	3.0
300-399.	34	31	30	28	-17.6
400-499.	6	6	5	5	-16.7
500 or more beds.	6	6	5	5	-16.7
Metro hospitals.	3,063	3,058	3,040	3,012	-1.7
6-24 beds.	33	31	36	38	15.1
25-49.	188	182	184	174	-7.4
50-99.	476	480	468	471	-1.0
100-199.	772	797	806	811	5.0
200-299.	603	614	622	618	2.5
300-399.	402	408	407	397	-1.3
400-499.	263	233	211	211	-19.8
500 or more beds.	326	313	306	292	-10.4

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from the Annual Survey of Hospitals, 1984-87.

Figure 5-1--Nonmetropolitan Hospitals by Census Region,^a 1986

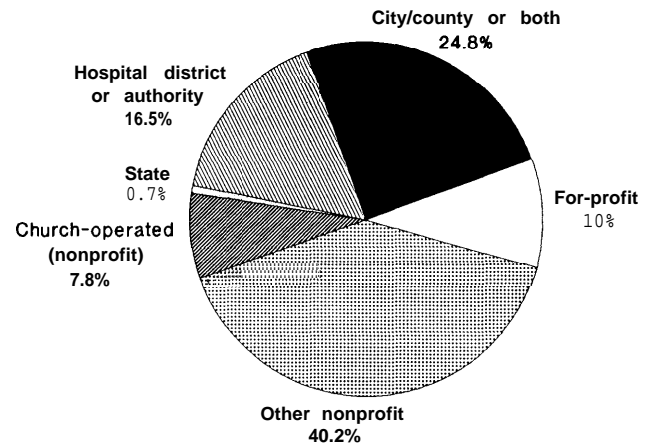
^aAs defined by the U.S. Census Bureau. See app. F for geographic display of regions.

SOURCE: Office of Technology Assessment, 1990. Data from M. Merlis, "Rural Hospitals," U.S. Congress, Congressional Research Service, Washington, DC: no. 89-296 EPW, May 2, 1989.

ment authorities owned another 42 percent, and for-profit investors the remaining 10 percent (625).

A rural hospital's type of ownership is related to its size. Hospitals with 100 or more beds were predominantly private nonprofit facilities, whereas over one-half of hospitals with fewer than 50 beds were owned by State and local governments (625). The large number of rural community hospitals under local government authority probably indicates the importance of community-subsidized support for these facilities.

Type of ownership also varies by the location and type of rural hospital. A majority of hospitals in frontier areas (56 percent) were government-owned in 1987, but just 21 percent of rural referral centers (RRCs)⁵ were government-owned. Conversely, 71 percent of referral centers v. only 42 percent of frontier hospitals were privately owned, nonprofit facilities. The ownership profile of Medicare-designated sole community hospitals (SCHs) (see ch. 3) was comparable to that for rural hospitals in general. Just 3 percent of both frontier hospitals and SCHs had for-profit owners; RRCs had a slightly higher proportion (7 percent) (625).

Figure 5-2--Ownership of Nonmetropolitan Community Hospitals,^a 1987

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

In 1987, about 19 percent of rural hospitals were contract-managed (see ch. 6), compared with 8 percent of urban hospitals. The number of rural facilities under contract management increased 15 percent from 1984 to 1987, suggesting a change in traditional forms of governance for many hospitals (e.g., greater involvement in hospital operations by interests outside the community) (30).

Hospital Scope of Services

There are few in-depth analyses of the nature of medical services offered by rural community hospitals, or their dependence on hospital size, location, and other factors. Shorten, in a national study of hospitals in multihospital systems⁶ from 1984 to 1987, found that rural hospitals offered fewer services (average 17) than urban hospitals (average 22). However, rural hospitals were found to provide a variety of services (particularly outside the hospital) targeted to the elderly (418). Much of the difference in the scope of services of rural and urban hospitals appears to be due to smaller rural hospital size. A study of hospitals in 13 geographically diverse States found that rural hospitals as a group offered 30 percent fewer services than did urban hospitals. However, no significant differences were

⁵Rural referral centers are described in ch. 3.

⁶An in-depth discussion of multihospital systems in rural areas is presented in ch. 6.

found in the number of services between rural and urban hospitals of the same size (590).

In a recent study of the service mix of both rural and urban hospitals in 1985, the provision of specific services was linked to local demand, provider capabilities, and mission or strategy of the hospital. For example:

- Rural hospitals provided more long-term care services than did urban hospitals.
- Emergency and obstetric services were present in nearly every rural hospital.
- Occupational therapy was most likely to be delivered by smaller urban hospitals that could target specific needs of the market.
- Most hospitals with fewer than 50 beds did not provide cardiac intensive care, an expensive specialty service.

Long-term care services were particularly prominent in smaller rural hospitals, where the hospital-based nursing home often had three to five times as many patients as the acute-care part of the hospital (236).

Rural hospitals generally provide less highly specialized care and perform fewer complex procedures than do urban hospitals. Number of hospital beds and the ability to obtain a regular surgeon appear to be critical factors in whether rural hospitals provide inpatient surgery. Hart et al. found that procedures in hospitals with fewer than 100 beds were generally common ones of relatively low risk and complexity. Rural hospitals with fewer than 25 beds provided very little inpatient surgery; 79 percent of these hospitals performed fewer than 100 annual inpatient operating room surgeries. By comparison, over two-thirds of all rural hospitals with at least 50 beds performed more than 100 surgeries a year (236).

Common Acute-Care Services

Table 5-3 lists the most common services of community hospitals with fewer than 300 beds in 1987 (625). The likelihood that such hospitals provide any of these services increases as the number of beds in the hospital (bed size) increases. Nearly all rural and urban hospitals (over 90 percent) of this size provide an emergency department, diagnostic x-ray facility, and ambulatory surgery. The remaining common services, however, are as much as 40 percent more likely to be provided in urban than in rural hospitals of a given size (e.g., 93 percent of urban hospitals with fewer than 300 beds

have an ultrasound unit, compared with 77 percent of rural hospitals in this group).

Complex Acute-Care Services

The proportion of hospitals offering intensive care services differs by location and decreases by bed size (table 5-4). Although 62 percent of all rural hospitals with fewer than 300 beds have medical/surgical intensive care units (compared with 88 percent of urban hospitals of the same size), just 19 percent of rural hospitals with fewer than 25 beds have this service. Only a small percentage of all hospitals with fewer than 300 beds offer cardiac or neonatal intensive care-services commonly reserved for larger urban referral centers (625).

Other new and complex services are also found less often in small than in large hospitals and in rural than in urban hospitals of a given size. In 1987, for example, rural hospitals were generally less likely to provide in-house computed tomography (CT) scanning, nuclear magnetic resonance imaging (MRI), cardiac catheterization laboratory services, organ transplants, open heart surgery, and extracorporeal shock wave lithotripsy (ESWL) for kidney stones (table 5-4) (625).

Mobile settings may make some expensive technology more accessible to small and isolated hospitals. These facilities can then have periodic access to on-site technology without needing to generate the patient volume for its full-time support. MRI and ESWL are particularly attractive candidates for shared use among small hospitals. An estimated 28 percent of MRI scanners in 1987 were mobile units, and manufacturers estimate that in 1990 approximately one-third of ESWL equipment operate in mobile settings (489,542).

No studies have directly compared rates of technology adoption in urban and rural hospitals, but small and nonteaching hospitals have been shown to adopt specific expensive and complex new technologies less rapidly than do other hospitals. One study, for example, found that large hospitals (250 or more beds) were much more likely than smaller hospitals to have adopted certain sophisticated laboratory equipment by 1980 (707). The study also found that the increase between 1975 and 1980 in the adoption of endoscopes was higher for small nonteaching hospitals, suggesting that these hospitals adopted the technology later than did other hospitals (which

Table 5-3-Most Common Selected Services^a Available in Nonmetropolitan Community Hospitals^b With Fewer Than 300 Beds, by Bed Size, 1987

Services	Percent of hospitals offering:						Metro
	Nonmetro hospitals						hospitals
	6-24 beds	25-49 beds	50-99 beds	100-199 beds	200-299 beds	All < 300 beds	All < 300 beds
Emergency department.	95	98	99	98	98	98	96
Diagnostic X-ray facility	95	96	97	98	100	97	99
Ambulatory surgery.	77	91	95	97	99	93	98
Respiratory therapy	67	84	91	96	100	89	96
Physical therapy.	50	70	67	93	98	81	92
Ultrasound facility.	39	65	83	93	99	77	93
Blood bank.	45	50	67	76	87	63	76
Patient education.	47	49	63	75	83	61	79
Organized outpatient service.	55	53	60	64	76	59	73
Community health promotion.	39	39	54	66	78	52	73
Chronic obstructive pulmonary services.	39	43	51	62	77	51	72
Birth room.	28	33	52	70	75	49	54

^aServices are those hospital-based only.

^bCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

Table 5-4-intensive Care Capability and Selected Diagnostic and Treatment Services^a Available in Community Hospitals^b, by Hospital Location and Bed Size, 1987

Service	Percent of hospitals offering:									
	Nonmetro					Metro				
	6-24 beds	25-49 beds	50-99 beds	100-199 beds	200-299 beds	6-24 beds	25-49 beds	50-99 beds	100-199 beds	200-299 beds
Intensive care (IC) capability										
Medical/surgical IC beds..	18.6	43.6	69.1	83.8	93.9	4.5	56.6	83.7	91.1	95.8
Cardiac IC beds.	3.3	4.1	6.3	7.4	34.1	0.0	3.3	3.3	14.6	39.2
Neonatal IC beds.	0.0	0.0	0.7	4.4	12.1	0.0	0.0	1.1	5.1	15.1
selected technologies										
Computed tomography scanner.	7.1	14.1	41.3	69.6	90.2	0.0	24.6	52.6	79.2	93.2
Nuclear magnetic resonance imaging.	1.6	0.7	1.6	3.8	7.6	0.0	2.5	4.1	6.5	12.6
Cardiac catheterization laboratory.	0.0	0.3	0.8	6.8	18.2	0.0	0.8	1.9	16.2	42.2
Organ transplant capability.	0.0	0.1	0.6	1.0	1.5	4.5	0.8	0.3	1.6	6.0
Open heart surgery.	0.0	0.0	0.1	1.1	4.5	0.0	0.8	0.8	5.5	22.4
Extracorporeal shock- wave lithotripter.	0.0	0.0	0.7	2.1	1.5	0.0	0.8	0.6	3.2	5.3

^aIncludes hospital-based services only.

^bCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

Table 5-5-Long-Term Care Services Provided in Nonmetropolitan Community Hospitals^a, 1987

Bed size	Hospitals having:			
	Separate long-term care unit		Skilled nursing facility unit	
	Number	Percent of total	Number	Percent of total
6-24 beds	6	3	4	2
25-49	74	10	58	8
50-99	268	32	211	25
100-199	211	40	196	37
200-299	45	34	42	32
300 or more	11	30	8	22
Total	615	25	519	21
Sole community hospitals	85	30	73	25
Frontier hospitals	103	40	77	30
Rural referral centers ^b	32	15	34	16

NOTE: Numbers of hospitals with skilled nursing facility units are probably included in the numbers of hospitals with separate long-term care units.

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

^bAs defined for Medicare purposes (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

presumably were closer to market saturation in 1975)(707).

Long-term Care Services

For many rural hospitals, involvement in long-term care has become as crucial to their livelihood as the more traditional acute inpatient services. As shown in table 5-5, 25 percent of all rural community hospitals in 1987 had some form of a separate long-term care unit. Rural hospitals are much more likely to have separate long-term care units if they are relatively large. Size is not the only important factor, however. Only about 15 percent of the larger rural referral centers have separate long-term care units, while 40 percent of the typically smaller hospitals in frontier areas have such a unit (625). These figures suggest that hospitals with highly utilized and profitable acute-care services have a lower tendency to provide long-term care services.

Long-term care is a major service of those hospitals providing it. In the 25 percent of rural hospitals that have a separate long-term care unit, beds in that unit make up, on average, nearly one-half of the total hospital beds. Although only 6 percent of all admissions to these hospitals were of a long-term nature, nearly two-thirds of inpatient days were long-term care related (625).

The most common type of long-term care unit in rural hospitals appears to be the separate skilled nursing facility (SNF). About 21 percent of all rural hospitals have "distinct part" SNFs (table 5-5) (625). Swing bed care—whereby a certain proportion of hospital beds may "swing" between acute and skilled nursing or intermediate long-term care as needed—is another common form of long-term care provided in rural hospitals (see ch. 6).

Size of Hospital Medical Staffs

Rural hospitals have substantially fewer medical staff physicians than urban community hospitals of comparable size (table 5-6). As expected, among rural hospitals, larger hospitals have considerably more staff physicians.⁷ However, not all staff differences can be explained by hospital size. Hospitals in frontier areas, for example, have substantially fewer physician staff than all comparably sized rural hospitals. This may reflect differences in the range of services and technology available, lower admissions, and greater difficulty attracting and retaining physicians in more isolated areas (625).

⁷See ch. 10 for differences in the number of staff physicians by specialty.

Table 5-8-Total Medical Staff in Community Hospitals^a With Fewer Than 300 Beds, by Hospital Location, Type, and Bed Size, 1987

Hospital type	Mean number of total hospital medical staff by bed size category					All hospitals under 300 beds
	6-24	25-49	50-99	100-199	200-299	
Metro.	17.7	32.8	56.7	115.0	184.5	116.0
Nonmetro	6.4	10.9	21.2	42.5	77.6	24.2
Sole community hospitals ^b	6.2	10.1	20.4	45.3	80.2	21.5
Frontier hospitals	4.3	6.3	11.9	22.1	9.0 ^c	8.3

^aCommunity hospitals defined here as all non-Federal short-stay, nonspecialty hospitals (see app. C).

^bAs defined for Medicare purposes (see app. C).

^cRepresents only one hospital.

SOURCE: Office of Technology Assessment, 1990. Data from the American Hospital Association's 1987 Annual Survey of Hospitals.

HOSPITAL UTILIZATION AND COMPETITION

Hospital Inpatient Utilization

Inpatient service utilization in both rural and urban community hospitals has been in steady decline since the early 1980s (see table 5-1), but declines have been greater in rural hospitals. From 1984 to 1988, admissions to rural hospitals dropped about two and one-half times as much as admissions to urban hospitals. While urban hospital occupancy rates dropped to about 68 percent in 1988, occupancy levels for rural hospitals declined nearly twice as much to a low of 55 percent,⁸ despite their relatively greater rate of bed elimination and a 7 percent increase in the average length of stay (to 7.4 days) in rural hospitals. (Longer lengths of stay enhance average occupancy but not necessarily the hospital's financial condition. Medicare, for example, usually pays a fixed rate per patient discharged, regardless of the patient's length of stay.) Although they made up 46 percent of community hospitals in 1988, rural hospitals accounted for only about 19 percent of all hospital admissions and inpatient days (35).

Within rural hospitals, declines in admissions and inpatient days were somewhat greater among large than among small hospitals (table 5-7). This trend is the reverse of that for urban hospitals (where declines were generally greatest among those hospitals with fewer than 100 beds) (30).

By 1987, these trends had resulted in substantial differences in inpatient utilization among types of

Table 5-7-Changes in Utilization of Community Hospitals^a by Hospital Location and Bed Size, 1984-87

Bed size	Percent change, 1984-87:	
	Admissions	Inpatient days
Nonmetro	-19.5	-15.3
6-24	-17.9	-13.1
25-49	-16.1	-12.0
50-99	-18.2	-13.6
100-199	-24.4	-19.1
200-299	-9.7	-8.1
300 or more	-23.8	-20.1
Metro	-7.6	-10.6
6-24	-9.9	-8.2
25-49	-14.9	-14.8
50-99	-13.3	-13.1
100-199	-1.6	-3.1
200-299	-2.3	-3.9
300 or more	-10.2	-13.8

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from the Annual Survey of Hospitals, 1984-87.

rural hospitals (table 5-8). Compared with rural hospitals in general, for example, hospitals in frontier areas (two-thirds of which have fewer than 50 beds) had less than one-third as many admissions per hospital. Frontier hospitals also had lower average occupancy rates, a lower proportion of Medicare inpatient days, and a higher proportion of Medicaid days. SCHs had similar but less pronounced characteristics. RRCs, on the other hand, were not only larger but had higher occupancy

⁸Occupancy rates here are based on the hospital's total number of beds (both acute care and other).

Table 5-8-Utilization of Nonmetropolitan Community Hospitals^a by Hospital Type and Bed Size, 1987

Hospital type	Number of hospitals	Admissions per hospital	Inpatient days per hospital			Occupancy rate (percent) ^b
			Total	Percent Medicare	Percent Medicaid	
Total nonmetro						
6-24 beds.	200	418	2,265	45	11	31
25-49.	817	918	5,241	47	12	38
50-99.	893	1,854	13,520	41	18	51
100-199.	539	3,842	29,749	39	20	59
200-299.	135	7,325	54,516	43	15	64
300 or more.	37	12,603	97,143	41	14	70
Total	2,621	2,295	16,710	43	16	48

Sole community^c						
6-24 beds.	38	390	2,174	38	15	31
25-49.	111	892	5,616	40	17	42
50-99.	97	1,935	13,881	38	19	53
100-199.	50	4,311	30,015	39	20	60
200-299.	13	7,144	55,048	42	17	65
300 or more.	4	11,600	85,878	47	17	65
Total	313	2,097	14,736	39	18	48

Frontier						
6-24 beds.	55	333	2,010	39	13	29
25-49.	127	641	4,827	38	16	38
50-99.	81	980	14,918	24	28	62
100-199.	13	1,572	31,803	18	37	70
200-299.	1	1,270	76,727	8	49	90
300 or more.	0	0	0	0	0	0
Total	277	725	8,744	33	20	45

Rural referral centers ^d	217	7,545	48,151	48	9	61

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

^bOccupancy rates are based on the hospital's total number of beds (both acute care and other).

^cAs defined for Medicare purposes (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

levels, a higher proportion of Medicare days, and a lower proportion of Medicaid days than did other rural hospitals. Occupancy rates for all rural hospitals declined as bed size decreased, ranging from 70 Percent for hospitals with 300 or more beds to only 31 percent for hospitals with fewer than 25 beds (625).⁹

Excessive bed supply is one potential reason for the recent decline in hospital inpatient utilization. As noted in box 5-A, the Hill-Burton program (Public Law 79-725) successfully increased the supply of hospital beds, particularly in low-income rural areas. By 1986, the ratio of community hospital beds to population was about 4 beds per 1,000 persons in

both urban and rural areas (table 5-10) (figure 5-3), and in 14 States, ratios were actually higher in rural areas (382). As a legacy of the massive hospital construction resulting from the Hill-Burton era, many small rural hospitals lie within reasonable driving distance of other hospitals. One study, for example, found that 84 percent of all rural hospitals were less than 30 road miles from another hospital (589). A relatively high bed-to-population ratio in rural areas of sparse population may sometimes be justified by the need for remote hospitals to staff enough beds to handle unexpected fluctuations in inpatient demand caused by disasters and major accidents. However, this rationale cannot explain

⁹In general, occupancy rates for acute-care beds in rural hospitals were smaller than total bed occupancy levels. Acute care bed occupancy also declined as bed size decreased (625).

Box 5-A—The Hill-Burton Program

Use and Distribution of Funds

Congress enacted the Hospital Survey and Construction (“Hill-Burton”) Act (Public Law 79-725) in 1946 in response to a widely perceived shortage of hospital beds, particularly in rural areas. States were eligible to receive Federal matching grants to assist in surveying State needs; developing statewide plans for constructing nonprofit, nongovernmental hospitals; and constructing the facilities. Amendments to the Act in 1964 (Public Law 88-443) made construction funds available for the modernization or replacement of facilities, set minimum structural and design standards affecting safety and efficiency of operations, required funded hospitals and other facilities to provide free care to persons unable to pay, and authorized studies to demonstrate the coordinated use of hospital and other health care facilities. In 1970, a loan guarantee component was added to Hill-Burton whereby the Federal Government would cover a portion of the interest cost and guarantee payment of the principal of loans to funded facilities (335).

The legislation required State plans to abide by Federal standards of adequacy in defining bed need. Until 1965, such standards were simply defined as the ratio of beds to population—the number of general beds should equal but not exceed 4.5 beds for every 1,000 residents, except in sparsely populated areas. Critics argued that such a standard was arbitrary, as demand for hospital care could vary in areas of similar population (335).

Hill-Burton sought to equalize the distribution of hospital facilities between rural and urban areas. Above a minimum amount allotted to every State, the program allocated funds based on State population size and per capita income. Per capita income entered the formula twice (both as a measure of a State’s bed and financial need) to give less affluent as well as more rural States an advantage. Within States, rural areas again were to be given priority for funds (this provision was eliminated in 1970) (131,335).

By 1974, when the Hill-Burton program was abolished, over 10,700 projects had been funded; about one-third were for new facilities and the remainder for modernization. The total cost of the projects was \$12.8 billion, of which the Federal Government contributed over \$3.7 billion. Over one-half of the funded projects were for new or modernized short-term hospitals (5,787), representing 71 percent of the total amount of Hill-Burton funds. About 30 percent of all hospitals built between 1949 and 1962 used Hill-Burton monies (335).

Impact on Rural Areas

As intended, Hill-Burton funds for short-term hospital projects were concentrated in less populated areas (table 5-9). About 75 percent of all projects and 67 percent of total Hill-Burton funds between 1948 and 1971 were devoted to communities with fewer than 50,000 residents. Nearly 44 percent of the projects were in communities of less than 10,000 residents.

Little is known about the impact of the program in rural areas of particular States. One study in Minnesota found substantial differences in the allocation of Hill-Burton funds between urban and rural areas of the State from 1950 to 1973. Average per capita funds for hospitals in rural counties were one-third greater than funds for hospitals in urban counties; rural counties received almost twice as many general hospital beds per 100,000 residents under the program as did urban counties. However, 13 of the 78 rural counties received no Hill-Burton support. Also, of those rural counties obtaining support, the most rural and economically disadvantaged did not receive the expected higher proportion of program funds. Some of these areas may have had insufficient resources to support a new or modernized facility (264).

The Hill-Burton program did substantially increase the number of short-term hospital beds. From 1947 to 1970, short-term hospital beds per 1,000 people increased from 3.3 to 4.3 in the United States (335). By 1986, the ratio of community hospital beds in both rural and urban areas was about 4 beds per 1,000 people, although variation among and within individual States was substantial (see table 5-10 and figure 5-3). In 14 States, bed-to-population ratios were actually higher in rural than in urban areas (382). The Hill-Burton program had no authority to limit bed supply. By the 1970s, it was widely perceived that Hill-Burton had actually contributed to an oversupply of general hospital beds in many areas of the country.

Although it had a substantial effect on bed supply, the Hill-Burton program did not significantly affect the redistribution of physicians (264). Also, there is little indication that Hill-Burton’s attempt to demonstrate the coordinated use of hospital and other health care facilities fostered the integration and regionalization of health services in rural communities.

Table 5-9—Distribution of Hill-Burton Short-Term Hospital Projects and Population, by Community Size, 1948-71

Community size (1960)	Total percent of projects	Percent of total Hill-Burton funds	Percent of 1960 U.S. population
Fewer than 10,000	43.4	28.9	45.7
10,000-24, 999	19.8	22.0	9.8
25,000-49, 999	11.6	16.3	8.3
50,000 and more	25.1	32.9	36.2
Total	100.0	100.0	100.0

NOTE: Totals may not add to 100 percent due to rounding.

SOURCE: J. Lave and L. Lave, The Hospital Construction Act: An Evaluation of the Hill-Burton Program, 1948-1973 (Washington, DC: The American Enterprise Institute, 1974).

Table 5-10-Community Hospital Beds per 1,000 Population and Occupancy by Hospital Location, 1986

Beds per 1,000 population		Occupancy rate ^a (Percent)		Beds per 1,000 population		Occupancy rate ^a (Percent)			
Nonmetro	Metro	Nonmetro	Metro	Nonmetro	Metro	Nonmetro	Metro		
Alabama	4.4	5.3	54	65	Montana	5.7	5.9	57	62
Alaska	1.7	2.8	55	59	Nebraska	5.6	6.2	51	61
Arizona	2.4	3.3	53	65	Nevada	2.8	3.6	44	49
Arkansas	4.1	5.3	49	67	New Hampshire	4.0	2.6	65	66
California.	2.7	3.1	49	63	New Jersey	0.0	3.9	0	75
Colorado	4.4	3.2	54	61	New Mexico	2.5	3.1	58	61
Connecticut	2.8	3.2	56	74	New York.	4.3	4.4	75	82
Delaware	2.8	3.8	69	67	North Carolina	3.3	3.7	59	69
Dist. of Columbia. . .	0.0	7.5	0	78	North Dakota	6.9	7.7	59	63
Florida	3.6	4.4	53	63	Ohio.	3.4	4.7	50	66
Georgia	4.3	4.1	61	66	Oklahoma	3.8	4.1	46	63
Hawaii	3.2	2.2	66	78	Oregon	3.2	3.1	47	59
Idaho	3.6	2.9	53	67	Pennsylvania	4.0	4.7	66	71
Illinois.	4.3	4.6	54	66	Rhode Island	3.0	3.6	63	76
Indiana	3.2	4.6	49	61	South Carolina	3.1	3.6	66	71
Iowa.	4.4	6.2	53	63	South Dakota	6.4	6.6	54	63
Kansas	6.0	4.0	47	63	Tennessee	4.2	5.7	55	66
Kentucky	3.7	5.2	61	65	Texas	3.6	3.8	40	59
Louisiana	3.5	4.9	46	61	Utah.	2.4	2.7	42	62
Maine	3.6	5.2	62	73	Vermont	3.7	4.7	63	81
Maryland	3.4	3.2	73	73	Virginia	3.7	3.5	62	70
Massachusetts	3.7	4.3	65	69	Washington	3.2	2.8	44	61
Michigan	3.6	4.1	54	67	West Virginia	4.3	6.4	57	63
Minnesota	6.1	4.5	61	65	Wisconsin	4.7	4.4	61	60
Mississippi	5.1	4.7	54	67	Wyoming	4.6	3.8	51	49
Missouri	3.6	5.7	51	67	Total U.S.	4.0	4.1	55	67

^aOccupancy rates are based on the hospital's total number of beds (both acute care and other).

SOURCE: M. Merlis, "Rural Hospitals," U.S. Congress, Congressional Research Service, Washington, DC, no. 89-296 EPW, May 2, 1989.

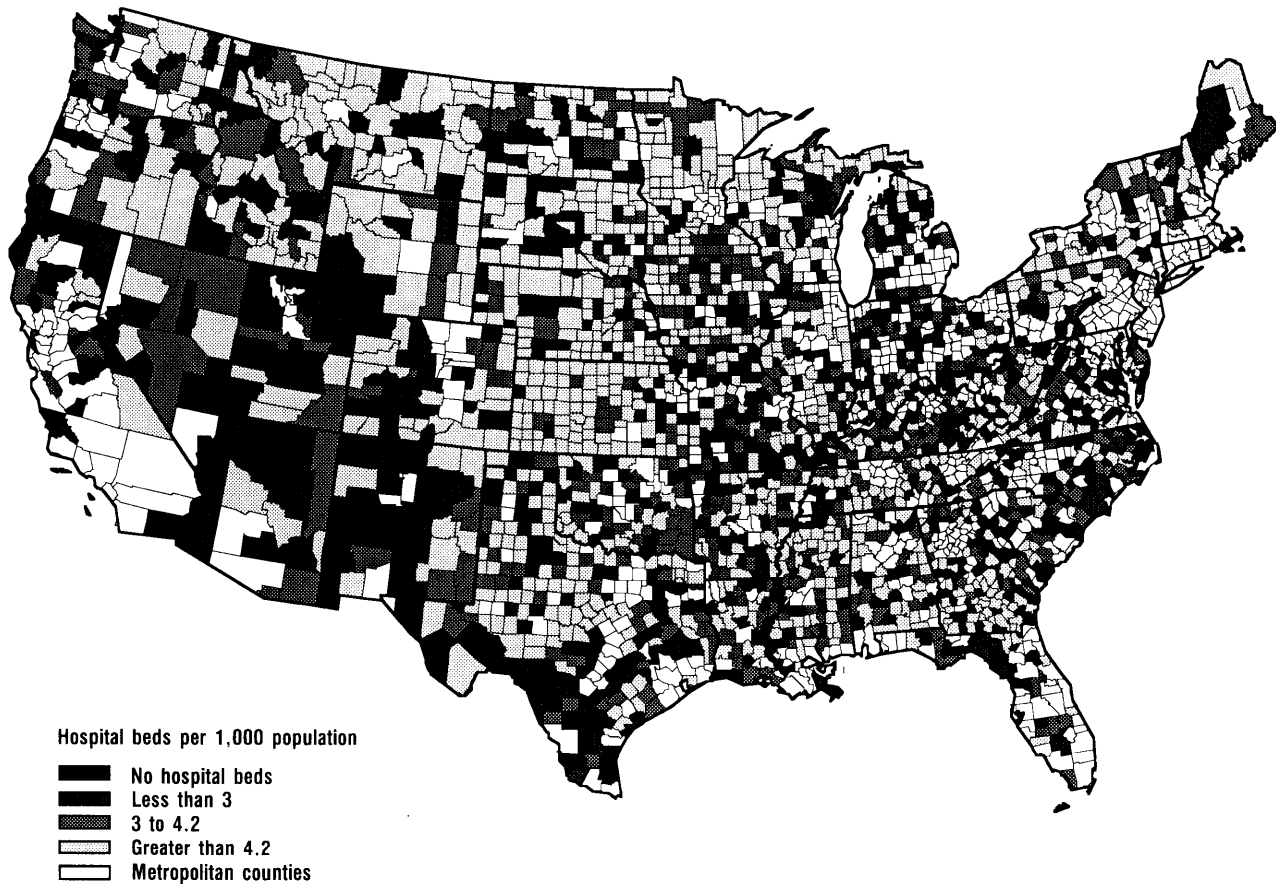
the high bed-to-population ratios in more densely populated rural areas.

Other potential factors affecting changes in inpatient utilization include changes in medical practice, urban competition, and payment incentives.

Changes in Medical Practice--Changes in medical technology have enabled physicians and other providers to care for many patients in outpatient and

nonhospital settings. As simple low-risk cases (e.g., cataract surgery) are increasingly cared for outside the hospital, the remaining inpatients are likely, on average, to have more serious medical problems requiring more intensive care and longer lengths of stay. This is probably a contributing factor in the trends toward both lower admissions and longer lengths of stay. In a recent study of hospital use by Medicare beneficiaries in five States from 1984 to

Figure 5-3-Short-Term Hospital Beds to Population Ratio, 1986 (by nonmetropolitan county)



SOURCE: T.C. Ricketts, Rural Health Research Center, University of North Carolina at Chapel Hill, NC. Analysis of unpublished Area Resource File data (provided by the U.S. Health Resources and Services Administration) conducted under contract with the Office of Technology Assessment. 1989 and 1990.

1986, the largest declines in hospital admission rates were for conditions that many physicians believe do not usually require hospitalization (e.g., simple pneumonia). On the other hand, rates of admissions involving some degree of subspecialty care and high technology (e.g., heart transplants) rose slightly during this period. The impact of these trends is significant for small rural hospitals. Those cases winning less consensus on the need for hospitalization typically represent the largest proportion of admissions to these hospitals (134).

Attractiveness and Utility of Urban Resources—*The* more rapid adoption of new, sophisticated technologies by urban hospitals may lure rural residents who perceive these hospitals to be providing superior care. Also, many rural residents travel to large urban hospitals to obtain specialized care not

locally available. A recent study found this occurrence to be increasing. From 1984 to 1986, the volume of “technology-intensive” Medicare admissions in a five-State sample of rural hospitals either declined or rose at a much slower rate than the volume of such admissions to urban hospitals (134).

Pressures of Payers—*During the 1980s,* Medicare and other health care payers implemented cost containment measures that increased incentives for hospitals to discharge patients quickly. Medicare also intensified sanctions by Peer Review Organizations (PROs) for admissions deemed unnecessary (486). PRO efforts and other factors (e.g., changes in medical practice) are thought to have restricted “social admissions” of patients admitted to or allowed to stay in an acute-care setting who do not require an acute level of care. The effect of such



Photo credit: Gail Mooney

Small rural hospitals unable to support full-time physician specialists must often rely on itinerant physicians. Dr. Littleton, a radiologist, travels as needed to hospitals in 12 States.

factors on rural hospital utilization has not been studied.

Lower utilization is believed to affect the quality of certain inpatient services. Studies of various surgical procedures (e.g., total hip replacement) have found that worse outcomes tend to occur at lower volumes (495,620). Referral of patients needing such procedures to larger hospitals maybe both economical and quality-enhancing.

Many small rural hospitals, unable to provide a sufficient volume of surgery to support a regular physician, employ itinerant surgeons (surgeons who travel to hospitals to operate on scheduled elective patients and typically are unavailable for followup care). A recent study of such hospitals found that the use of itinerant surgery may contribute to higher rates of poor quality care. In the 28 percent of small rural hospitals sampled that used itinerant surgeons, 16 percent of the cases treated by these surgeons had adverse outcomes (695). In such situations, there appears to be a tradeoff for the patient between

having available some care of questionable quality and having no care available at all. Possible remedies for this predicament include: 1) voluntary regionalization of services to consolidate lower volume services and improve quality, and 2) selective contracting whereby payers stipulate that beneficiaries use only certain facilities for specific kinds of care.

Hospital Outpatient Utilization and Ambulatory Surgery

The number and volume of hospital services provided in outpatient settings increased rapidly in the 1980s, and the growth of outpatient visits was actually greater for rural than urban hospitals (table 5-11). From 1984 to 1988, total outpatient visits to rural hospitals increased by over one-third, and outpatient visits to the emergency room rose nearly 13 percent (35).

The increasing demand for outpatient care is reflected in the growth of new outpatient departments in many rural hospitals. From 1982 to 1985, the number of rural hospital outpatient departments rose 48 percent (31). By 1987, 60 percent of rural community hospitals had outpatient departments (625). As table 5-12 shows, the likelihood that rural hospitals have outpatient departments increases with the size of the hospital. Frontier hospitals are less likely and rural referral centers are more likely to have outpatient departments.¹⁰

The amount of surgery performed on hospital outpatients has increased dramatically in recent years. In 1984, about 28 percent of all surgeries in urban hospitals and 26 percent of rural hospital surgeries were performed on an ambulatory basis (table 5-11). By 1988, outpatient surgery accounted for one-half of total surgeries in rural hospitals and over 46 percent in urban hospitals (35). The number of hospitals providing ambulatory surgery has also grown rapidly. In 1980, only 65 percent of all community hospitals (rural and urban) performed ambulatory surgery (490). By 1987, 93 percent of rural hospitals provided ambulatory surgery (table 5-12). Larger hospitals are more likely to offer ambulatory surgery; nearly all rural hospitals with 200 or more beds provided this service, compared with only 77 percent of hospitals with fewer than 25

¹⁰The percentage of hospitals with outpatient departments underrepresents the total number of hospitals actually delivering outpatient services. Most hospitals typically provide a substantial portion of nonurgent care in their emergency rooms.

Table 5-n-Community Hospital^a Outpatient Utilization by Hospital Location, 1984-88

	1984	1985	1986	1987	1988	Percent change 1984-88
Total Outpatient visits (thousands)						
Nonmetro.	38,819	39,810	42,899	46,996	51,823	33.5
Metro.	173,142	178,907	189,013	198,528	217,306	25.5
Emergency room visits ^b (thousands)						
Nonmetro.	15,654	16,139	16,674	17,068	17,665	12.8
Metro.	57,326	58,408	59,928	61,219	63,595	10.9
Percent of total. surgeries done on outpatient basis						
Nonmetro.	26.3	34.7	42.1	45.9	49.8	89.3
Metro.	28.1	34.5	39.9	43.4	46.2	64.4

^aCommunity hospitals defined as all non-Federal, short-term general and other special service hospitals.

^bOutpatient visits primarily for true emergencies.

SOURCE: American Hospital Association, *Hospital Statistics* (Chicago, IL: AHA, 1985-89 eds.).

Table 5-12-Select Ambulatory Care Services Provided in Nonmetropolitan Community Hospitals^a by Bed Size and Hospital Type, 1987

Hospital	Number/percent having			
	Outpatient department		Ambulatory surgery	
	Number	Percent	Number	Percent
6-24 beds.	100	55	141	77
25-49.	402	53	682	91
50-99.	498	60	785	95
100-199.	337	64	509	97
200-299.	100	76	131	99
300 or more beds.	29	78	37	100
Total nonmetro.	1,466	60	2,285	93
Sole community hospitals	173	60	254	89
Frontier hospitals.	137	53	199	77
Rural referral centers ^c	157	73	213	99

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).

^bpercent with organized, distinct outpatient departments. The percent of hospitals actually providing outpatient services is higher.

^cAs defined for Medicare purposes (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from American Hospital Association's 1987 Annual Survey of Hospitals.

beds (625). These smaller hospitals (many of them frontier hospitals) may have difficulty attracting surgeons and the necessary volume of surgical cases.

Although most ambulatory surgery is performed in hospital outpatient departments, there has been dramatic growth in the number and activity of separate, freestanding ambulatory surgery centers

(ASCs). The number of ASCs tripled from 1983 to 1988, increasing from 239 to 983; the number of surgical operations performed by ASCs grew by 368 percent during this time (489). Little information exists on the nature of ASCs in rural areas. Only about 15 percent of ASCs are located in rural communities (99), presumably because centers rely on large volumes of service to cover fixed costs and sustain a profit.

Competition for Patients

Competition From Urban Providers

Anecdotal information suggests that some urban hospitals and physicians are expanding their service areas into rural communities in order to increase their patient base. Expansion tactics may include:

- advertisements stressing the quality of care and leading-edge technology available in the city;
- rural-based outpatient clinics, from which patients are referred to urban hospitals for diagnosis and treatment; and
- urban facilities such as ASCs and urgent care centers that target rural communities in order to capture their mobile and better-paying patients (leaving rural providers to provide less lucrative emergency care and care for more disabled and nonpaying patients).

Whether based on real or perceived better-quality care in urban hospitals, a trend toward urban-based care can be self-sustaining, reducing the confidence that rural physicians and their patients have in the local hospital.

Competition with urban-based managed care plans (e.g., health maintenance organizations) may be especially troublesome for some rural hospitals. The selective contracting process between hospitals and managed care plans emphasizes price discounts in exchange for an assured patient volume. A rural hospital may have to reduce its patient fees in order to compete for patients covered by the plans (157). Patients in these plans may be required or encouraged to use nearby urban hospitals rather than their local facilities. Also, since many of the utilization and cost control measures imposed by managed care plans are intended to limit hospitalization, participation by rural hospitals in these plans may further erode inpatient volume and revenues.

Local Competition

Competition among neighboring communities is inherent in rural life. For example, community pride in local school athletic teams may be evident in the competition and rivalry among small towns only a short distance apart. Competitive actions among rural health care providers commonly take three forms. First, competition may increase among rural hospitals operating in overlapping or adjacent market areas. One target for competition is physicians, who in turn may 'play the hospitals off against each other' in order to have the hospitals add more services, equipment, or other new technologies that directly benefit the physicians. In some cases, two local hospitals that engage actively in competition may not realize that both facilities are losing patients to larger urban hospitals.

Second, rural hospitals may compete with their own physicians for patients and revenues. Physicians can now provide many surgical and ancillary services (e.g., laboratory tests) in their offices that previously were offered in the hospital. The ability of a physician to provide certain services at lower cost and with fewer regulatory restrictions than the local hospital may help to increase the physician's office-based revenues and profits. Consequently, some well-established physicians may become less dependent on the local hospital for income and may begin to reduce their hospital practice.

Third, urban hospitals and physicians may establish affiliated networks of loyal hospitals and physicians in rural areas. In these situations, rural physicians may be given incentives to admit patients to affiliated rural or urban hospitals rather than to local unaffiliated facilities.

PRIMARY CARE FACILITY CHARACTERISTICS AND UTILIZATION¹¹

Number of Community Health Centers

Federally funded CHCs are important rural primary care providers. The number of CHCs receiving Federal grants has diminished in the 1980s, and the rate of decline has been much greater for rural CHC grantees than for urban grantees. Table 5-13 shows that while the number of urban CHCs decreased by just 1 percent from 1984 to 1988, the number of CHCs in rural areas dropped 20 percent, from 399 to 319 centers (658). Variations among regions are enormous. The number of grantees in 3 of the 10 U.S. Department of Health and Human Services (DHHS) administrative regions¹² remained unchanged or increased, while in 1 Midwestern region the number of rural grantees was reduced by one-half. Part of the decline was due to CHC mergers in the mid-1980s as part of an initiative by the U.S. Public Health Service. In 1988, 61 percent of all CHC grantees were in rural communities. Nearly one-third of these were located in the Southeast.

The decline in rural CHC grantees does not necessarily mean there are fewer delivery settings, since many centers have more than one service site. From 1984 to 1988, the total number of rural CHC service sites appears to have remained relatively constant, although definitional and data collection changes made by DHHS in 1986 make comparisons difficult.¹³ From 1986 to 1988, the total number of rural CHC service sites decreased, but at one-third the rate of decline of rural grantees (table 5-13). The opposite was true of urban CHCs—the number of total service sites dropped nearly twice as fast as the number of grantees. In 1988, there were a total of

¹¹Although no nationwide data are available on local health departments, many rural LHDs are known to offer primary care services (see ch. 6 for examples).

¹²The DHHS regions are shown in app. F.

¹³The first year CHCs began using standard definitions to report their number of service sites was 1986. The total number of service sites is a count of the number of Federal grantees and permanent satellite clinics. It is not intended to include administrative sites where no clinic services are provided or specialty clinics operating under the same roof as other clinics (585).

Table 5-13—Number of Federally Funded Community Health Center (CHC) Grantees and Service Sites by Rural/Urban Status and Region, 1984-88a

Centers	1984		1985		1986		1987		1988		Percent change 1984-88	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Grantees												
Region ^b I	16	22	15	22	13	24	12	24	12	24	-25	9
II	24	43	24	43	23	44	22	40	20	35	-17	-19
III	65	25	63	24	62	23	54	23	52	22	-20	-12
IV	140	31	141	31	127	34	110	33	104	33	-26	6
V	39	26	37	27	35	28	33	27	31	27	-21	4
VI	37	15	34	16	40	17	37	17	38	17	3	13
VII	12	11	10	11	9	11	6	12	6	12	-50	9
VIII	24	7	25	7	26	8	21	7	20	7	-17	0
IX	26	22	26	21	29	22	30	24	30	23	15	5
X	16	7	16	7	18	7	16	7	16	7	0	0
Total	399	209	391	209	382	218	329	214	319	207	-20	-1
Total service sites ^c . . .	763	433	791	402	838	464	821	428	793	417	4	-4

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCs as rural and urban approximate a center's location in either a nonmetropolitan or metropolitan area.

^aFederal Fiscal Years.

^bFederal Department of Health and Human Services regions. See app. F for geographic display of regions.

^cTotal rider of Community Health Center (CHC) service sites includes the number of Federal grantees and permanent federally supported satellite clinics. They are not intended to include administrative sites where no clinic services are provided or specialty clinics operating under the same roof as other clinics. Grantees may have more than one service site. Total service site data for 1984 and 1985 may be inaccurate; reporting by grantees improved beginning in 1986 with the use of standard definitions (see text).

SOURCE: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance, **Rockville, MD**, unpublished data for rural community health centers 1984-88 from the BCRR file, provided by E. Sullivan, 1989. E. Sullivan, Bureau of Health Care Delivery and Assistance, Health Resources and Services Administration, U.S. Department of Health and Human Services, **Rockville, MD**, OTA personal communication, April 1990.

793 rural CHC service sites, or an average of 2.5 sites per rural CHC grantee (585).

Community Health Center Services

Little documentation is available on the range of services provided in rural CHCs. Traditionally, CHCs were intended to serve as sources of integrated and comprehensive primary care and preventive services, which would pay particular attention to needs of the poor (see ch. 3). Grantees were required to form a broad array of referral and cooperative linkages with other area providers that could deliver those services CHCs did not provide themselves. Early studies of rural CHCs and primary care programs often did not focus on their specific mix of services, but rather on the effectiveness of center organizational forms and operating efficiencies and their impact on patient health status and clinic self-sufficiency.

It may be difficult for small rural CHCs to provide a range of services comparable to that of larger centers, especially if the rural centers serve small populations. Many rural CHCs have apparently reduced the scope of services that supplement their delivery of basic primary medical care. In a survey of rural CHCs in 1986 and 1987, many centers reported having to reduce or eliminate services such as nutrition education that often are not covered by insurance. Also, according to the survey, worsening of the local economy was a factor in the increase in the proportion of CHCs (from 31 to 34 percent) that were unable to deliver some mandated basic primary care services (307).

Community Health Center Utilization

Federally funded CHCs in rural areas have experienced a surge in demand for primary care services. From 1984 to 1988, the number of visits to rural CHCs increased 18.5 percent, or 14 percent per CHC service site¹⁴ (table 5-14) (585,658). Encounters with CHC-based primary care physicians accounted for most of this rise in demand, increasing 34 percent. Because the number of physicians rose at a faster rate than visits for the period, the number

of patient encounters per primary care physician declined slightly (by 2 percent) (658).

There was considerable variation among DHHS regions in annual encounters per primary care physician from 1984 to 1988 (table 5-15).¹⁵ Change in encounters per physician ranged from a drop of 12 percent in Region VIII to an increase of 14 percent in Region IX. Three of the 10 regions in 1988 had average annual encounters per physician that were below 4,200, the minimum level of productivity usually considered acceptable by DHHS, which administers the grant program (658).

One possible explanation for the sharp rise in demand in rural CHCs is rising rates of uninsuredness. CHCs and other publicly funded health centers (e.g., county health departments) are commonly viewed as sources of basic health care open to everyone, regardless of one's ability to pay. A survey of rural CHC operations from 1986 to 1987 found that most of the new patient users could not pay the full costs of their care. Of the new users of rural CHCs, 83 percent were reported to have no public or private insurance or lacked the income necessary to pay the medical care fees (307).

Number of Certified Rural Health Clinics

Many rural CHCs and other primary care providers are eligible to become certified rural health clinics (RHCs). RHCs receive cost-based rates of payment from Medicare and Medicaid if they offer the services of a midlevel practitioner at least 50 percent of the time¹⁶, and if they are located in a nonurbanized Medically Underserved Area (MUA) or Health Manpower Shortage Area (HMSA).¹⁷ When the RHC program was established in 1977 by Public Law 95-210, some health care experts estimated there would be nearly 2,000 rural clinics certified by Medicare as RHCs by 1990 (588). As of April 1989, there were 470 certified RHCs in 37 States; about one-half were in just 8 States (table 5-16) (653a). Even though over 2,000 nonmetro counties are designated as MUAs or HMSAs, few actually have RHCs (figure 5-4) (511). The Federal Government is reported to have actually certified

¹⁴ Service sites of CHCs include Federal grantees and any permanent federally Supported satellite clinics.

¹⁵ See app. F for geographic display Of regions.

¹⁶ In 1989, Congress (Public Law 101-239) reduced from 60 to 50 percent the minimum amount of time a midlevel practitioner must be on site during RHC operations.

¹⁷ See ch. 11 for a discussion of MUAs and HMSAs.

Table 5-14--Utilization of Rural Federally Funded Community Health Center Grantees and Service Sites, 1984-88

Utilization	1984	1985	1986	1987	1988	Percent change 1984-88
Total patient encounters . . .	9,315,177	9,484,803	10,056,534	10,798,460	11,041,636	18.5
Number of rural CHC grantees.	399	391	382	329	319	-20.0
Average patient encounters per rural CHC grantee.	23,346	24,258	26,326	32,822	34,613	48.3
Number of rural CHC service sites.	763	791	838	821	793	3.9
Average patient encounters per rural CHC service site..	12,209	11,191	12,001	13,153	13,924	14.0

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCs as rural approximate a center's location in a nonmetropolitan area.

^aIncludes encounters both on and off the center site.

^bThe total number of rural CHC service sites includes Federal grantees and Permanent federally supported satellite clinics. They are not intended to include administrative sites where no clinic services are provided, or speciality clinics operating under the same roof as other clinics. Grantees may have more than one service site. Total service site data for 1984 and 1985 may be inaccurate; reporting by grantees improved beginning in 1986 with the use of standard definitions (see text).

SOURCE: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance, Rockville, MD, unpublished 1984-88 data for rural community health centers from the BCRR file, provided by E. Sullivan, 1989; E. Sullivan, Bureau of Health Care Delivery and Assistance, U.S. Department of Health and Human Services, personal communication, April 1990.

Table 5-15--Primary Care Physician Utilization in Rural Federally Funded Community Health Centers by Region, 1984-88

Region ^a	Patient encounters per primary care physician					Percent change 1984-88
	1984	1985	1986	1987	1988	
I	3,880	3,733	3,857	3,951	3,829	-1.3
II	5,479	5,537	5,582	5,189	4,905	-10.5
III	4,270	4,361	4,352	4,345	4,534	6.2
IV	4,486	4,308	4,153	4,012	4,227	-5.8
V	4,531	4,406	4,273	4,338	4,490	-0.1
VI	4,540	4,566	4,396	4,262	4,412	-2.8
VII	4,281	4,486	4,155	3,997	4,280	0
VIII	4,378	3,599	3,879	3,982	3,866	-11.7
IX	4,188	4,083	4,193	4,408	4,774	14.0
X	3,655	3,716	3,648	3,241	3,810	4.2
Total	4,532	4,456	4,384	4,283	4,431	-2.2

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCs as rural approximate a center's location in a nonmetropolitan area.

^aFederal Department of Health and Human Services regions. See app. F for geographic display of regions.

SOURCE: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance, Rockville, MD, unpublished 1984-88 data for rural community health centers from the BCRR file, provided by E. Sullivan, 1989.

over 800 rural health clinics since 1978, but nearly one-half have withdrawn from the program for various reasons, including concerns over RHC regulations (see ch. 7)(588).

Independent or freestanding clinics account for about 95 percent of all RHCs. Only 25 RHCs are provider-based clinics (i.e., sponsored by a hospital, nursing home, or home health agency) (653a).

Table 5-16-Number of Certified Rural Health Clinics^a, and Nonmetropolitan Counties in Which Clinics Could Qualify for Certification, by State, 1989

State	Certified rural health clinics			Number of nonmetro counties ^b designated as either a HMSA ^c or an MUA ^c
	Total	Independent	Provider-based	
California	52	49	3	21
North Carolina	38	35	3	73
West Virginia	28	28	0	45
Pennsylvania	28	28	0	31
Tennessee	26	26	0	68
Maine	25	25	0	13
New York	24	24	0	26
New Mexico	22	16	6	29
South Dakota	22	21	1	57
Georgia	21	21	0	116
Florida	18	18	0	35
Ohio	17	17	0	37
Alaska	16	16	0	0*
Oregon	13	13	0	25
Colorado	13	13	0	36
Washington	13	12	1	24
Iowa	13	12	1	66
Idaho	8	8	0	30
Mississippi	8	8	0	75
Utah	8	6	2	16
Vermont	6	6	0	12
Kentucky	6	1	5	89
Nevada	5	5	0	13
Alabama	5	5	0	48
Arizona	5	4	1	12
Kansas	5	3	2	69
Illinois	4	4	0	65
Minnesota	4	4	0	61
Wisconsin	3	3	0	48
Rhode Island	3	3	0	0*
Montana	2	2	0	40
New Hampshire	2	2	0	4
Virginia	2	2	0	61
South Carolina	2	2	0	34
Maryland	1	1	0	8
Texas	1	1	0	186
Wyoming	1	1	0	20
Arkansas	0	0	0	65
Connecticut	0	0	0	1
Delaware	0	0	0	1
Hawaii	0	0	0	0
Indiana	0	0	0	41
Louisiana	0	0	0	45
Massachusetts	0	0	0	2
Michigan	0	0	0	49
Missouri	0	0	0	87
North Dakota	0	0	0	44
New Jersey	0	0	0	0*
Nebraska	0	0	0	78
Oklahoma	0	0	0	51
Total U.S.	470	445	25	2058 ^d

*These States have no nonmetro counties. Alaska was considered a single metro county in this analysis.

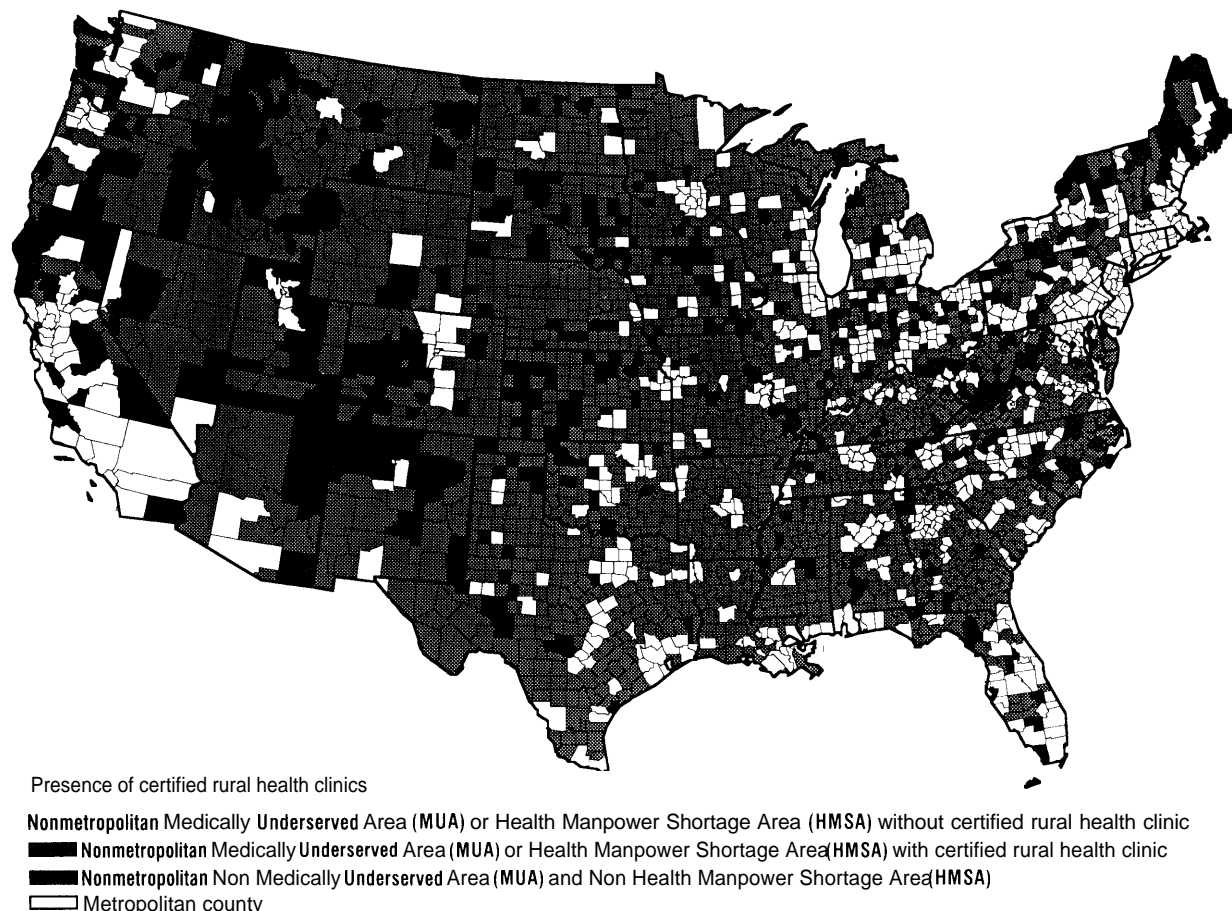
^aClinics certified under the Rural Health Clinics Act (Public Law 95-210) as of April, 1989.

^bThis is an underestimate of the number of counties that qualify under Public Law 95-210, since it only includes nonmetro counties. Nonurbanized metro counties may also qualify.

^cPrimary care Health Manpower Shortage Areas, 1986. Medically Underserved Areas as of 1981. Includes whole and partial-county designations.

^dThis may be a slight overestimate since MUA designations can cross State boundaries.

SOURCES: U.S. Department of Health and Human Services, Health Care Financing Administration, Baltimore, MD, unpublished data on certified rural health clinics, provided to OTA by C. Ricketts, Rural Health Research Center, University of North Carolina, Chapel Hill, and analysis of unpublished data (provided by the U.S. Health Resources and Services Administration) conducted under contract to Office of Technology Assessment, 1989.

Figure 5-4-Certified Rural Health Clinics, 1988 (by nonmetropolitan MUA or HMSA county status)

SOURCE: T.C. Ricketts, Rural Health Research Center, University of North Carolina at Chapel Hill, NC. Analysis of unpublished Area Resource File data (provided by the U.S. Health Resources and Services Administration) conducted under contract with the Office of Technology Assessment, 1989 and 1990.

HEALTH MAINTENANCE ORGANIZATIONS

Health maintenance organizations (HMOs) provide a specified, often comprehensive set of services to an enrolled population on a prepaid basis. HMOs in rural areas showed substantial growth in the early 1980s. As of June 1984, there were 118 HMOs serving rural areas in 34 States, and 19 of these were based in rural areas. This was a substantial increase over the 79 HMOs serving rural areas in 1981. The number of rural residents estimated to be served by HMOs in 1984 was approximately 500,000, or about 1.7 percent of the total rural population (127).

More recently, the number of HMOs nationwide has declined slightly; 6.6 percent fewer HMOs

existed in 1988 than in 1987 (491). No information is available on recent trends for HMOs serving rural areas, but it is unlikely that the overall presence of HMOs in rural areas has increased. Possible reasons for the small rural HMO presence include:

- limited prospects for enrollment due to the relatively low number of large employers in many rural areas,
- continued resistance of some rural physicians to participation in HMOs,
- lack of available capital for development (Federal funds for HMO development have **ceased**), and
- concerns of rural HMOs serving Medicare patients about the adequacy of Medicare payments and how they are calculated.

HOSPITAL FINANCIAL VIABILITY

Revenue Issues

Demand for Uncompensated Care

An increasing number of persons seeking care are unable to pay for it (see ch. 2). Most uninsured persons are employed. In rural areas residents are often self-employed; they work in agriculture or small businesses without insurance benefits.

Hospitals are providing increasing amounts of care for which it takes longer to receive payment, or care for which they will receive little or no payment at all. As table 5-17 shows, the average number of days it takes rural hospitals to collect the full amount of a bill rose 7 percent from 1984 to 1987, to 75 days. In 1987, the average period an account was outstanding was highest for rural hospitals with under 50 beds (30). It is unclear how much of the increase between 1984 and 1987 may be attributed to problems with patient collections, payment delays from third party insurers, or hospital billing errors that delay payment. Regardless of the cause, this overall increase in the time it takes hospitals to collect payments suggests a decrease in available cash to cover expenses.

The amount of uncompensated care provided in rural hospitals increased over 26 percent from 1984 to 1987, to nearly \$1.5 billion (about \$565,000 per hospital) (table 5-18). The largest proportional increases were in the smallest facilities. The amount of uncompensated care increased by 59 percent in hospitals with fewer than 25 beds, and it grew over 35 percent in facilities of 25 to 49 beds. (The amount of uncompensated care in urban hospitals also increased during the period, rising 33 percent to over \$11 billion or over \$3.7 million per hospital (30).) A study of rural hospitals in Florida found that 13 percent of their patients in 1985 did not pay the full bill, compared with 10 percent for the State's urban hospitals. The average rural hospital provided inpatient care to about one charity patient for each day of the year (194).

Uncompensated care has always existed in hospitals; in fact, hospitals receiving Hill-Burton funds were required to provide a certain amount of uncompensated care (box 5-B). When the distribution of uncompensated care becomes uneven, however, hospitals providing the most such care and

Table 5-17—Average Days in Patient Accounts Receivable*for Community Hospitals^b, by Hospital Location and Bed Size, 1984 and 1987

Hospital	1984	1987
Metro.	69.0	76.0
Nonmetro.	70.0	75.0
6-24 beds.	81.4	81.2
25-49	75.8	81.3
50-99	71.3	74.6
100-199.	68.7	74.8
200-299	70.5	73.1
300 or more	65.5	71.2

*Defined as net patient receivables multiplied by 365 days divided by net patient revenue. Net patient revenue consists of gross patient revenue less deductions for contractual adjustments, bad debts, and charity.

^bCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from the Annual Survey of Hospitals, 1984-1987.

bearing the heaviest social burden are placed at a competitive disadvantage that may ultimately threaten their survival. All States provide financial assistance to hospitals to cover some of the costs of such care, either as adjustments under the Medicaid hospital payment system or through direct subsidies (491). However, these subsidies do not necessarily cover the full costs of such care, and some hospitals are concerned that these programs will be unable to support the future indigent service loads.

Reliance on Public Payment and Funding Sources

Most rural community hospitals depend to a significant degree on public sources of payment. As shown in table 5-19, 52 percent of all rural hospital net patient revenue in 1986 came from government sources. Medicare revenues play a particularly large role. In 1986, nearly 42 percent of all patient revenue of rural hospitals was derived from serving Medicare patients (30). (For urban hospitals, the figure was 39 percent.) While three-fourths of hospitals with 25 to 99 beds received more than 42 percent of their patient revenue from Medicare, hospitals with fewer than 25 beds and hospitals with at least 100 beds relied much less on Medicare revenues (table 5-20) (32).

The greater dependency on Medicare revenues in rural than in urban hospitals may be a result of the

Table 5-18-Aggregate Uncompensated Care in Community Hospitals^a by Hospital Location and Bed Size, 1984-87

Hospital	Uncompensated care (millions of dollars)				Percent change 1984-87
	1984	1985	1986	1987	
Metro.	\$8,377	\$8,301	\$10,320	\$11,174	33.4
Nonmetro.	1,162	1,225	1,344	1,468	26.3
6-24 beds.	8	9	11	13	59.0
25-49.	107	116	141	145	35.5
50-99.	294	314	353	376	27.9
100-199.	425	454	485	507	19.3
200-299.	185	196	223	255	37.8
300 or more	143	135	131	171	19.6

NOTE: Uncompensated care costs include deductions from hospital revenue attributable to bad debt and charity care.

^aCommunity hospitals defined as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from the Annual Survey of Hospitals, 1984-87.

high rural concentration of elderly residents, who typically are less mobile and may be more likely than other rural residents to receive care at the local hospital. Medicaid revenues, on the other hand, are a slightly lower percentage of total patient revenues in rural than in urban hospitals (8.7 percent v. 9.6 percent in 1986) (table 5-19). This is not necessarily a positive factor for rural hospitals however; poor rural residents are less likely than poor urban ones to be eligible for Medicaid (see ch. 2), and fewer Medicaid patients may mean more charity patients.¹⁸

Rural hospitals increasingly depend on State and local tax subsidies. Table 5-21 shows that in 1987, 69 percent of rural community hospitals received non-Federal tax appropriations worth over \$216 million. The average tax appropriation per hospital doubled from 1984 to 1987. Very large rural hospitals receive the largest State and local subsidies, with the smallest hospitals a somewhat distant second.

Many of the health care dollars that might help support rural hospitals are spent outside the community. A study of 3 rural communities in Washington, each with a hospital of 50 or fewer beds, found that about one-half the residents' expenditures for care were not spent in those communities. In 1985, the total expenditures for health services by residents in

the three communities was just under \$31 million; the revenues needed to support the communities' local health care services was approximately \$14.5 million, of which 62 percent was for the hospital (46).

Difficulties in Shifting Costs

Faced with providing uncompensated care, a health facility has three options to cover the loss:

- private or public subsidy (e.g. charitable donations),
- recouping sufficient extra revenue from paying patients, or
- internal cross-subsidy from other profitable activities and investments.

Rural hospitals are at a particular disadvantage in trying to realize additional reimbursement, because their small size makes it difficult to spread costs to large numbers of paying patients. Hospitals with a high proportion of Medicare and Medicaid patients have additional problems with cost-shifting, since these sources of payment are relatively inflexible.

A recent study in Wisconsin found that 18 to 35 percent of charges by rural Wisconsin hospitals to private-pay patients were required to cover revenue shortfalls from Medicare, Medicaid, and charity care. The smaller hospitals (with an average daily

¹⁸In many States, Medicaid payment levels for hospital and physician care remain significantly below provider costs or charges for such care (see ch. 3).

Box 5-B—The Hill-Burton Uncompensated Care Obligation

A crucial continuing element of the Hill-Burton program (see box 5-A) is the “free-care” obligation of hospitals and other health facilities **that** received its construction funds to provide a reasonable volume of services to persons unable to pay. In addition, health facilities agreed to “community service” (i.e., to make their services available to all persons residing in their geographic areas).

The free-care obligation is a time-limited commitment, usually for 20 years from the date the assisted project opened for service. The amount of service each facility is committed to provide is determined through a formula based on the facility’s operating budget and the amount of assistance received. Persons whose incomes fall below the Federal poverty guidelines are eligible for free care at facilities that are still under the free-care obligation (320).

The community service obligation is not time-limited; it applies as long as the facility is in operation. It does not require the facility to provide general services at no charge, as long as the facility has fulfilled its free-care obligation. However, the community service obligation does prohibit a hospital from denying emergency services to persons because they are unable to pay (320).

census of 35 patients) had the largest average cost shift, equal to 35 percent of charges (563).

Medicare’s Impact on Hospital Operating Margins

This section briefly examines the contribution of Medicare’s Prospective payment system (PPS) to the revenue and fiscal health of rural hospitals. In the fifth year under PPS (roughly 1988), average Medicare payments per case to rural hospitals were 43 percent¹⁹ lower than those to urban hospitals (494). This difference in payment roughly parallels that in average operating costs per case (table 5-22). Within rural hospitals, the smallest hospitals have the lowest per-case costs (93a). *The* gap between payments and costs has worsened over time.

Table 5-19—Sources of Net Patient Revenue^a of Community Hospitals,^b by Hospital Location, 1986

	Nonmetro hospitals	Metro hospitals	All hospitals
Percent Medicare. . . .	41.9	38.6	39.1
Percent Medicaid. . . .	8.7	9.6	9.5
Percent other Government.	1.0	1.8	1.7
Percent total non-Government.	48.4	50.0	49.7
Total.	100.0	100.0	100.0

^aNet patient revenue consists of gross patient revenue less deductions for contractual adjustments, bad debts, and charity care.
^bCommunity hospitals defined as all non-Federal, short-term general and other special service hospitals.

SOURCE : American Hospital Association, Chicago, IL, unpublished data from the Annual Survey of Hospitals, 1984-87.

Table 5-20-Distribution of Hospitals by Medicare Percentage of Net Patient Revenue^a, 1986

	Medicare Percentage of net patient revenue:		
	0-42	43-52	53+
<u>Percent distribution of hospitals:</u>			
Total hospitals.	53	38	9
Nonmetro hospitals			
6-24 beds.	75	12	13
25-49	23	61	16
50-99	26	64	10
100-199	74	21	6
200 or more	67	31	3
Total nonmetro.	41	48	11

^aNet patient revenue consists of gross patient revenue less deductions for contractual adjustments, bad debts, and charity care.

SOURCE : American Hospital Association, Profile of Small or Rural Hospitals 1980-86 (Chicago, IL: AHA, 1988).

Through the first 5 years of PPS, Medicare payments per case rose an average of 7.4 percent a year while operating costs per Medicare case increased 8 percent annually (495).²⁰

¹⁹Preliminary estimate.

²⁰PPS years 1 through 5 correspond roughly to Federal fiscal years 1984 to 1988. In the first year of PPS, average increases in per-case payments were noticeably higher than in later years. Although PPS had intended to restrict payments in its first years to be no higher or lower than would have occurred under cost-based reimbursement, Medicare revenues for hospitals initially increased much faster than hospital costs.

Table 5-21-Community Hospitals^a Receiving Tax Appropriations From State and Local Governments, by Hospital Location and Bed Size, 1984 and 1987

Hospital	1984			1987		
	Number	Percent	Tax appropriations per hospital	Number	Percent	Tax appropriations per hospital
Metro.,	2,468	81	\$881,104	2,441	81	\$1,230,534
Nonmetro.,	1,762	65	79,556	1,791	69	120,680
6-24 beds.,	77	42	130,153	97	51	170,118
25-49.,	410	51	105,889	514	64	102,309
50-99.,	635	68	75,904	583	65	103,045
100-199.,	480	79	67,480	441	82	138,474
200-299.,	118	90	28,892	123	91	14,586
300 or more.,	42	91	65,297	33	87	730,703

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, unpublished data from the Annual Survey of Hospitals, 1984-1987.

Table 5-22—Average PPS Operating Costs Per Case of Hospitals in the Fifth Year of PPS, by Hospital Location and Type

Hospital type ^a	Average costs per case	Percentage difference from average costs per case for all hospitals
Metro.,	\$4,746	10.4
Nonmetro.,	2,899	-32.5
Under 50 beds.,	2,494	-42.0
50-99.,	2,624	-40.0
100-169.,	2,983	-30.6
170 beds and over. . .	3,410	-20.7
Rural referral.,	3,455	-19.6
Sole community.,	2,938	-31.7
Other nonmetro.,	2,633	-38.7

NOTE: PPS stands for Medicare's prospective payment system. Hospitals in Maryland and New Jersey are excluded. Fifth-year PPS roughly corresponds to Federal fiscal year 1988.

^aAll PPS hospitals.

SOURCE: J. Boulanger, Prospective Payment Assessment Commission, Washington, DC, personal communication, April 1990.

As a consequence of the trends in Medicare payments and costs, Medicare PPS operating margins²¹ declined substantially for both rural and urban hospitals after the first 2 years of PPS (table 5-23). Eleven percent of rural hospitals had negative

margins for 4 of the first 5 PPS years, and by year 5, over one-half of rural hospitals had negative margins (table 5-24). The smallest rural hospitals (with under 50 beds) fared the worst; 10 percent of hospitals in this group had margins lower than minus 49 percent (495).

Designated SCHs receive special treatment under PPS (see ch. 3), but—at least until recent changes in the payment law—this special treatment has not actually translated into financial protection. In PPS year 5, the average Medicare operating margin of SCHs was minus 4.2 percent, and the bottom 10 percent of SCHs had margins averaging minus 45 percent (table 5-24). In fact, depending on their costs, some SCHs would have received higher Medicare payments under national rates—one reason why some sole providers have not sought the SCH designation (487). New payment rules may enhance SCH operating margins, at least for Medicare-related services (see ch. 3).²²

The poor operating performance of rural hospitals under Medicare is not explained by the high percentage of Medicare patients served. In PPS year 4, rural hospitals with few Medicare days had larger negative Medicare margins than did those with moderate shares of Medicare days. Furthermore, those rural hospitals with the smallest proportion of

²¹The Medicare operating margin indicates how a hospital is faring financially on the services it provides to Medicare patients. It is equal to revenues received under PPS less the operating costs covered by PPS payments, divided by PPS revenues and then multiplied by 100. Medicare revenues and costs for services not covered under PPS, such as capital expenditures and direct medical education costs, are excluded (382). A surplus or positive margin occurs when revenues exceed costs, and a loss or negative margin follows when the opposite is true.

²²Changes made by Congress in 1989 (Public Law 101-239) are intended to more effectively match Medicare payments to costs of SCHs and rural hospitals with fewer than 100 beds and at least 60 percent Medicare patients or days of care (see ch. 3).

Table 5-23-Hospital PPS Operating Margins for the First 5 Years of PPS, by Hospital Location and Type

Hospital type ^b	Annual operating margins (percent) ^a					Percentage of hospitals with 4 years of negative margins in first 5 years
	PPS 1	PPS 2	PPS 3	PPS 4	PPS 5	
Metro.	15.8	15.5	11.3	6.8	3.6	3.2
Nonmetro.	8.4	8.8	3.1	-0.3	-2.3	10.7
Under 50 beds.	6.4	6.0	-0.9	-2.3	-3.5	11.9
50-99.	8.4	7.4	1.4	-1.6	-4.0	11.3
100-169.	8.8	8.1	3.0	-0.7	-0.5	7.5
170 beds and over.	9.4	12.4	6.9	2.4	-1.8	6.9
Rural referral.	9.5	13.4	8.2	4.3	-0.1	3.5
Sole community.	6.9	6.2	1.2	-2.7	-4.2	13.2
Other nonmetro.	8.0	6.5	0.3	-2.8	-3.4	11.1

NOTE: PPS stands for Medicare's prospective payment system. Hospitals in Maryland and New Jersey are excluded; hospitals in Massachusetts and New York are included beginning in PPS 3.

^aPPS 1-PPS 5 roughly corresponds to Federal fiscal years 1984-88.

^bAll PPS hospitals.

SOURCE: Prospective Payment Assessment Commission, Medicare Prospective Payment and the American Health Care System: Report to Congress (Washington, DC: U.S. Government Printing Office, June 1990).

Table 5-24-Fifth-Year Hospital PPS Operating Margins: Means and Percentiles by Hospital Location and Type

Hospital type ^a	Mean percent	10th percentile	50th percentile	90th percentile
All hospitals.	2.6	-28.3	-0.5	18.6
Metro.	3.6	-22.2	1.2	19.7
Nonmetro.	-2.3	-33.9	-2.6	17.2
Under 50 beds.	-3.5	-48.5	-2.4	20.4
50-99.	-4.0	-28.2	-3.2	14.0
100-169.	-0.5	-28.2	-1.8	13.3
170 beds and over.	-1.8	-16.8	-1.7	14.8
Rural referral.	-0.1	-14.8	1.1	15.5
Sole community.	-4.2	-45.0	-6.3	14.5
Other nonmetro.	-3.4	-35.2	-2.6	18.0

NOTE: PPS stands for Medicare's prospective payment system. Hospitals in Maryland and New Jersey are excluded. The fifth year PPS roughly corresponds to Federal fiscal year 1988.

^aAll PPS hospitals.

SOURCE: Prospective Payment Assessment Commission, Medicare Prospective Payment and the American Health Care System: Report to Congress (Washington, DC: U.S. Government Printing Office, June 1990).

Medicare days have shown poorer Medicare margins since the beginning of PPS (492).

Ambulatory Surgery and Medicare Payment

Rural hospitals have found revenue from outpatient services increasingly important to their survival. In 1987, over 23 percent of all gross patient revenue in rural hospitals was from outpatient services; this proportion represents an increase of more than 50 percent since 1984 (table 5-25). Smaller rural hospitals had the greatest dependence on outpatient revenue. By comparison, less than 19

percent of patient revenue in urban hospitals was from outpatient sources (30).

Medicare payment for ambulatory surgery can be a major source of outpatient revenue. Current Medicare payment for hospital outpatient surgery is based on the lesser of reasonable costs or a blend of hospital costs and freestanding ambulatory surgery center (ASC) rates. Freestanding ASCs currently receive lower payment rates from Medicare, and they reportedly have lower fixed costs than do hospitals. A recent analysis found that hospital

Table 5-25-Community Hospitals:^aGross Outpatient Revenue From Outpatients as a Percent of Total Gross Patient Revenue, by Hospital Location and Bed Size, 1984 and 1987

	1984	1987
Metro hospitals.	14.1	18.5
Nonmetro hospitals.	15.3	23.5
6-24 beds.	20.7	34.3
25-49.	17.2	27.6
50-99.	16.1	25.5
100-199.	15.2	23.5
200-299.	14.3	20.7
300-399.	14.1	18.5
400-499.	12.8	18.1
500 or more.	9.1	13.9

NOTE: Gross patient revenue consists of revenue based on full established rates from services rendered to patients, including payments received from or on behalf of individual patients.

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from Annual Survey of Hospitals, 1984-87.

outpatient surgery costs are significantly greater than the current blended payment rate (table 5-26) (490). Hospitals reimbursed under the blended rate receive payments that are 19 percent lower than their per-case costs.²³

Medicare expenses for outpatient care have increased dramatically in recent years, and Congress has directed that a prospective payment system be developed for such care (see ch. 3). A danger exists that more stringent outpatient payment controls could further increase the risk of survival for many rural hospitals. A 1989 study found that if proposed per-case payment rates to ASCs were applied to rural hospitals, they would be 38 percent less than hospital costs (table 5-26) (490). Outpatient surgery costs for a hospital service may be greater than ASC costs for that service for a number of reasons:

- Most hospitals, in an effort to lower inpatient costs under PPS, have allocated portions of inpatient care and overhead expenses to outpatient services, whose cost thus becomes overstated.

- ASCs may "skim" the least-complicated cases and better-paying patients, leaving competing hospitals with the more complex and uncompensated cases.
- At least 85 percent of ASCs are located in urban areas (99). ASCs can generate low costs through specializing in high-volume services. Rural hospitals, on the other hand, generally have low surgical volumes due to low population density in their service areas.
- Hospitals generally provide a wider range of needed services than do ASCs, including more nonroutine care and standby capacity for emergencies that result in higher fixed costs. Other requirements associated with the need to accommodate intensive care in hospitals (higher costs of skilled staff and supplies) may also add to cost differences between hospitals and ASCs.

Incentives for rural hospitals to provide more efficient outpatient care may well be appropriate. A payment system that assumes that rural hospitals can achieve the high-volume efficiencies of ASCs, however, will probably be insufficient to cover costs and may further threaten hospital survival.

Costs and Operating Margins

Fed by rising amounts of uncompensated care and inflexible or inadequate reimbursement from public payers, total expenditures of rural hospitals have been growing faster than total revenues. From 1984 to 1987, total expenses for rural hospitals rose by 15.8 percent, while revenues increased by only 14.4 percent (table 5-27). The smallest rural hospitals experienced the largest shortfalls; total expenses for hospitals with fewer than 25 beds increased by 28.5 percent, while total revenues rose by only 21.9 percent (30).

By 1987, the smallest rural hospitals also had the highest total expenses per inpatient day—\$724 for hospitals with fewer than 25 beds, compared with \$534 for all rural hospitals (table 5-28) (625). Small SCHs and frontier hospitals had especially high expenses per day, suggesting that the very smallest and most isolated rural hospitals have the greatest difficulty providing a sufficient volume of services to cover their freed expenses. Expenses also increased with size for very large hospitals, possibly reflecting the delivery of more complex care. For

²³The analysis did not account for any improvements in hospital efficiency brought about by reforms under Medicare's prospective payment system.

Table 5-26--Mean Hospital Costs Per Case Compared With Mean Proposed ASC Payments Per Case and Blended Rate Payments Per Case, by Hospital Location and Bed Size

Hospital type	Percent of total ASC-approved surgical cases	(A) Facility costs per case ^a	(B) Proposed ASC payment per case ^b	(c) Blended rate payment per case ^c	Difference between columns (A) and (B)		Difference between columns (A) and (C)	
					<u>costs per case</u>		<u>costs per case</u>	
					dollars	percent	dollars	percent
All.....	100	\$640	\$394	\$517	-\$246	-38	-\$123	-19
Metro.....	81	675	414	545	-261	-39	-130	-19
Nonmetro.....	19	580	361	471	-219	-38	-110	-19
Under 50 beds.....	2	551	338	445	-213	-39	-107	-19
50-99.....	5	592	360	476	-232	-39	-116	-20
100-169.....	6	611	379	495	-231	-38	-116	-19
170 beds and over...	6	563	386	474	-176	-31	-88	-16

NOTE: ASC stands for ambulatory surgery center. Cost and payment estimates based on outpatient department surgical bills from October 1, 1987 through June 30, 1988.

^aThe U.S. Health Care Financing Administration estimated costs for each bill by applying hospital-specific departmental cost-to-charge ratios from the Medicare Cost Report to charges on the outpatient department bill.

^bASC payment per case is adjusted to reflect area wage indices.

^cThe blended rate payment equals 50 percent facility Costs plus 50 percent proposed ASC Payment.

SOURCE: Prospective Payment Assessment Commission, Medicare Payment for Hospital Outpatient Surgery: The Views of the Prospective Payment Assessment Commission (Washington, DC: U.S. Government Printing Office, April 1989).

Table 5-27—Changes in Total Revenue and Expenses for Community Hospitals^a by Hospital Location and Bed Size, 1984 and 1987

	Percent change 1984 to 1987	
	Total revenues	Total expenses
Nonmetro hospitals	14.4	15.8
6-24 beds.	21.9	28.5
25-49.	21.0	23.7
50-99.	16.9	18.7
100-199.	6.9	7.8
200-299.	25.9	27.4
300 or more	10.5	10.0
Metro hospitals	23.9	25.0

^aCommunity hospitals defined here as all nonFederal, short-term general and other special service hospitals.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from Annual Survey of Hospitals, 1984-1987.

rural hospitals of a given size, total expenses were highest in nonprofit hospitals and lowest in government-owned facilities (table 5-29)(625).

Since expenses were increasing faster than revenues from 1984 to 1987, patient and total hospital margins declined in both rural and urban hospitals for the period²⁴(table 5-30). In 1987, urban hospitals experienced the poorest patient margins (minus 3.7 percent), while rural hospitals had the worst total margins (plus 3.2 percent). Nearly all rural hospitals had negative patient margins by 1987 (as low as minus 21.5 percent for hospitals with fewer than 25 beds); most rural hospitals (except those with under 50 beds) were able to achieve positive total margins. Larger rural hospitals generally had better patient and total margins than smaller rural hospitals. Small rural hospitals were more dependent on nonpatient revenues (e.g., tax appropriations) than were larger hospitals, but even these revenues were not sufficient to result in positive total margins (30).

Operating with a negative margin in any single year does not necessarily mean financial distress. Negative margins may be present in financially sound hospitals in a year when the hospital is faced with paying for large or unexpected facility renovations or major equipment. Conversely, hospitals plagued with serious financial problems may have

managed to avoid a negative margin in a given year. The presence of negative margins over a long period of **time**, however, suggests deteriorating financial health (690).

A study of the financial condition of rural hospitals during the second, third, and fourth years of PPS (roughly 1985 through 1987) compared rural hospitals with positive Medicare operating margins (“winners”) with ones with negative Medicare operating margins (“losers”) (table 5-31). “Winners” were larger in size, had higher occupancy rates, had more discharges per hospital, and had substantially lower **costs** per patient than “losers.” Also, “winner” hospitals in the fourth year of PPS were paid by Medicare slightly less per discharge than “losers,” leading the study to conclude that **cost** per patient, not Medicare payments, was the “primary determinant” of whether a rural hospital was profitable (696).

About 44 percent of all “loser” hospitals would have “broken even” on Medicare patients (Medicare revenues **at least equal costs**) in PPS year 4 if they had: 1) **received up to 10** percent more revenue per Medicare discharge, or 2) lowered their **cost per discharge** an equal proportion. Another 25 percent of “loser” hospitals would have **achieved break-even status if they** had obtained up to 20 percent additional Medicare revenue (696). These **estimates** only apply to additional revenues needed for rural hospitals to break even serving Medicare patients; it is not clear what impact the added Medicare revenues would have had on the overall operating margins and profitability of these hospitals.

Access to Capital

Many rural hospitals’ physical plants and equipment, funded with Federal assistance under the Hill-Burton program in the 1950s and 1960s, maybe in need of replacement, renovation, or modernization (363); although **little is known** about the **extent** and nature of what is required. Needed changes may include conversion of some of the facility from inpatient to other kinds of services and investment in diagnostic, therapeutic, and administrative resources. Hospitals that have had to use their cash reserves to maintain operations have fewer resources available

²⁴The patient margin compares total patient revenues (i.e., payments from all patients or insurers) with total costs. Total hospital margin compares revenues from all sources (including private contributions, local government subsidies, investment income) with total costs. Total hospital margin provides a clearer indication of a hospital’s overall financial condition than patient margin.

Table 5-28--Total Mean Expenses Per Inpatient Day for Nonmetropolitan Community Hospitals^a by Bed Size, 1987

Bed size	Nonmetropolitan hospitals	Sole community hospitals	Hospitals in frontier areas	Rural referral centers
6-24	\$724	\$948	\$903	NA
25-49.	585	686	535	\$221
50-99.	494	572	277	681
100-199.	466	560	260	633
200-299.	482	473	87	551
300-399.	517	518	NA	513
400-499.	519	429	NA	495
500 or more.	566	NA	NA	584
Total	\$534	\$651	\$518	\$588

NOTE: NA = not applicable.

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).^bAs defined for Medicare purposes (see app. C).

SOURCE: Office of Technology Assessment, 1990. Data from the American Hospital Association's 1987 Annual Survey of Hospitals.

Table 5-29--Total Expenses Per Nonmetropolitan Community Hospital^a by Ownership and Bed Size, 1987

Bed size	Type of Ownership					
	Government		Nonprofit		For-profit	
	Number	Mean expense per hospital ^b	Number	Mean expense per hospital ^b	Number	Mean expense per hospital ^b
6-24.	118	\$1,262	66	\$1,478	16	\$1,556
25-49.	423	2,474	324	3,087	70	2,825
50-99.	362	5,164	432	6,448	99	6,258
100-199.	165	10,787	305	14,087	69	21,080
200-299.	23	25,113	102	25,874	10	22,932
300 or more.	7	47,847	30	\$51,378	NA	NA
Total	1,098	\$5,243	1,259	\$9,818	264	\$7,216

NOTE: NA = not applicable.

^aCommunity hospitals defined here as all non-Federal, short-stay, nonspecialty hospitals (see app. C).^bIn thousands of dollars.

SOURCE: Office of Technology Assessment, 1990. Data from the American Hospital Association's 1987 Annual Survey of Hospitals.

to help fund such projects. Therefore, outside capital is often needed.

The sources of outside funding for capital projects in rural hospitals have changed over the years. Until the early 1970s, hospitals derived most of their capital for major purposes from Hill-Burton construction grants and charitable contributions. The Hill-Burton grant program ended at a time when charitable contributions as a proportion of capital funds were also declining. However, commercial

loan programs under Section 242 of the Federal Housing Act developed in the 1970s, enabling nonprofit hospitals to dramatically improve their access to capital financing for construction and renovation projects. The creation of the Medicare and Medicaid payment programs in the 1960s also allowed hospitals to be reimbursed a share of reasonable capital costs (primarily interest and depreciation) related to the institutions' Medicare and Medicaid patient load.²⁵ Since 1986, however,

²⁵In some States, Medicaid does not pay hospitals for capital in the same way as Medicare (474).



Photo credit: Peter Beeson

Some small rural hospitals built with Hill-Burton funds during the 1950s and 1960s are now in need of major renovation.

Table 5-30-Community Hospital^a Net Patient Margins and Net Total Margins, by Hospital Location and Bed Size, 1984 and 1987

	Net patient margin ^b (Percent)		Total net hospital margin ^c (Percent)	
	1984	1987	1984	1987
Metro hospitals. . . .	-1.9	-3.7	5.2	4.4
Nonmetro hospitals. . .	-0.9	-2.7	4.3	3.2
6-24 beds.	-13.9	-21.5	0.9	-4.5
25-49	-6.5	-10.1	1.5	-0.7
50-99	-1.9	-3.8	3.5	2.0
100-199	0.5	-1.0	4.9	4.1
200-299	1.2	-0.3	5.5	4.4
300-399	1.7	-0.3	5.8	5.9
400-499	0.8	0.4	5.4	6.4
500 or more	-4.9	-0.5	4.8	6.0

^aCommunity hospitals defined here as all nonFederal, short-term general and other special service hospitals.

^bThe net patient margin is equal to Patient revenues minus total costs, divided by patient revenues, multiplied by 100.

^cThe net total hospital margin is equal to total revenues (including those from sources other than patients and insurers) minus total costs, divided by total revenues, multiplied by 100.

SOURCE: American Hospital Association, Chicago, IL, unpublished data from Annual Survey of Hospitals, 1984-1987.

hospitals have not been reimbursed for Medicare's full share (Public Law 99-509). (In 1989, Medicare paid 85 percent of capital costs (Public Law 101-239).)

The largest single mechanism of debt financing for nonprofit hospitals is now tax-exempt revenue bonds. Tax-exempt financing is inherently attractive

Table 5-31-Comparison of Nonmetropolitan Hospitals Having Positive and Negative Medicare PPS Operating Margins, PPS Years 2 Through 4

	Hospitals during PPS 2-4 ^a		Hospitals during PPS 4 ^b	
	Positive margins	Negative margins	Positive margins	Negative margins
PPS revenue per discharge. . .	\$2,674	\$2,634	\$2,721	\$2,770
Cost per discharge. . . .	\$2,414	\$2,909	\$2,468	\$3,121
Average hospital size (beds). . . .	70	63	NA	NA
Total discharges per hospital. . .	2,069	1,601	1,902	1,678
Staff per occupied bed. . . .	4.95	5.29	5.14	5.51
Medicare length of stay (days). . .	6.54	7.08	6.42	7.17

NOTE: PPS stands for Medicare's prospective payment system. Table excludes rural referral centers, hospitals in States exempt from PPS, those with cost report periods of less than 10 months or more than 14 months, those with no Medicare discharges or more than 20,000 Medicare discharges, and those with a ratio of Medicare PPS costs-to-discharges of less than 100 or more than 15,000. NA = not available.

^aRoughly corresponds to Federal fiscal years 1985-87.

^bRoughly corresponds to Federal fiscal year 1987.

SOURCE: U.S. Department of Health and Human Services, Office of Inspector General, Status of Rural Hospitals Under the Medicare Part A Prospective Payment System (Washington, DC: OIG, July 1989).

to borrowers because the interest income is not subject to Federal tax, and thus interest rates are substantially below those of the taxable market. Such financing may be less profitable for lenders, however, and the potential for loan repayment becomes a more important consideration (368,691). Borrowing hospitals may be subject to greater scrutiny by these lenders, possibly adding to their difficulties in obtaining capital. Recently, smaller and declining operating margins of hospitals may have weakened their creditworthiness with lenders.

A variety of public and private financing methods have been used by rural facilities to provide the capital to fund major projects. Donations and local fund drives remain an important source of capital funding in many rural communities. Hospitals may lease expensive equipment to avoid large capital outlays. The Farmers Home Administration has

been a popular source of low-cost funds for non-profit rural hospitals, CHCs, and other health care facilities, although its application review process is often criticized as being slow and cumbersome (251). Rural hospitals have relied heavily on local banks for capital funding, but their often higher interest rates and tightening credit restrictions have made many less competitive with urban banks. Also, according to a 1989 survey, 18 States have established financing programs to make capital funds available to nonprofit hospitals and other facilities; at least 2 State programs focus on the particular capital needs of rural facilities. These programs' funds, however, are often narrowly restricted, and hospitals with poor credit ratings may have difficulty qualifying (474).

The proportion of rural hospitals obtaining new capital debt is small but growing (table 5-32). Fewer small than large rural hospitals obtained new capital debt from 1984 to 1987, perhaps because of the inability of small rural hospitals to acquire capital financing (30). This trend might also be explained by the increasing amounts of unborrowed funding available to small hospitals for capital projects. The amount of funds given to hospital endowments and restricted for facility construction/renovation and other purposes increased significantly for smaller rural hospitals. From 1984 to 1987, such funds rose nearly 59 percent for hospitals with 25 to 50 beds while declining 15 percent for hospitals with 100 to 199 beds (table 5-33) (30).

FINANCIAL VIABILITY OF COMMUNITY HEALTH CENTERS

Revenue Issues

Demand for Uncompensated Care

The number of persons receiving discounted or unpaid care in rural CHCs is also growing. A recent survey of rural CHCs reported that many CHC users were paying for services under a sliding fee scale, permitting patients with incomes up to 200 percent of poverty level to pay less than full charge (the exact amount paid is based on income and family size). In 1987, nearly one-half of all users of surveyed CHCs paid for services according to a sliding fee scale (table 5-34). The number of patients requiring subsidized service in rural CHCs in 1987 ranged from 82 percent of users in Region VI to only 7 percent in Region I (307).

Table 5-32-Community Hospitals^a Acquiring New Capital Debts, by Hospital Location and Bed Size, 1984 and 1987

Hospital	1984		1987	
	Number	Percent of total	Number	Percent of total
Metro.	565	18.4	729	24.2
Nonmetro.	342	12.7	503	19.4
6-24 beds.	11	6.0	23	12.0
25-49	84	10.5	135	16.8
50-99	114	12.2	169	18.9
100-199	94	15.5	122	22.8
200-299	24	18.3	36	26.7
300 or more	15	32.6	18	47.4

^aCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE : American Hospital Association, Chicago, IL, unpublished data from Annual Survey of Hospitals, 1984-1987.

The inability of rural CHCs to recoup the full charge is also reflected in the centers' overall collection rate. In 1988, just 48 percent of all charges—whether full or discounted—were collected. Regionally, rural CHC collection rates ranged from 82 percent of charges in Region I to just 26 percent of charges in Region II (658).

Reliance on Public Payment and Funding Sources

The proportion of rural CHC revenues that derive from public payment sources has increased noticeably in recent years. In 1984, Medicaid revenues were about 19 percent of total patient revenue; by 1988, the proportion had risen to nearly 25 percent (figure 5-5). During the same period, the proportion of total revenues collected directly from patients fell from 44 to 38 percent (658). These trends offer additional evidence that rural CHCs are serving increasing numbers of patients who are unable to pay for basic health care.

Despite overall increases in patient revenues, CHCs remain heavily dependent on government grant funding to cover expenses. Rural CHCs rely more heavily than others on Federal grants as a proportion of total revenue, even though the proportion has declined slightly in recent years (table 5-35) (585). Among rural CHCs, frontier CHCs are especially dependent on Federal funds. For the years 1985 through 1987, 30 frontier centers surveyed in

Table 5-33-Aggregate Funds^a Given to Endowments or Available for Plant Replacement/Expansion and Other Restricted Purposes in Community Hospitals^b, by Hospital Location and Bed Size, 1984-87

Hospital	1984	1985	1986	1987	Percent change 1984-87
Metro.	\$5, 175.3	\$5,231.0	\$5,736.0	\$6,021.2	16.3
Nonmetro.	848.5	915.9	903.7	879.0	3.6
6-24 beds.	6.3	4.5	8.1	9.1	44.4
25-49.	58.0	79.7	98.4	92.0	58.6
50-99.	193.5	218.6	247.9	260.7	34.7
100-199.	360.7	389.6	346.6	305.0	-15.4
200-299.	160.8	159.3	143.6	153.8	-4.4
300 or more	69.1	64.1	59.1	58.4	-15.5

^aIn millions of dollars. Only fund balances (balance remaining after subtracting hospital liabilities from assets) are reported.

^bCommunity hospitals defined here as all non-Federal, short-term general and other special service hospitals.

SOURCE: Annual Survey of Hospitals, Chicago, IL, unpublished data from Annual Survey of Hospitals, 1984-1987.

Table 5-34-Patients Requiring Subsidies in Rural Federally Funded Community Health Centers (CHCs) by Region, 1987

Region ^a	Total clinic users	All sliding fee users	Percent of total users
I	9,480	640	7
II	9,010	1,480	16
III	6,545	1,662	25
IV	8,811	5,541	63
V	9,045	3,117	34
VI	9,455	7,732	82
VII	5,004	1,504	30
VIII	4,855	3,068	62
IX	18,300	6,975	38
x	6,522	4,861	75
Total	8,776	4,311	49

NOTE: Users are averages per center. Rural CHCs are those identified by the U.S. Department of Health and Human Services regional offices that approximate a center's location in a nonmetropolitan area.

^aFederal Department of Health and Human Services regions (see app. F).

SOURCE: Joint Rural Health Task Force of the National Association of Community Health Centers, Washington, DC, and the National Rural Health Association, Kansas City, MO, Community Health Centers and the Rural Economy: The Struggle for Survival, December 1988.

5 States needed Federal grants to cover about 65 percent of their operating expenses (204).

The amount of Federal dollars granted to rural CHCs has been significantly less in recent years than

the amount of funds received by urban CHCs.²⁶ According to a recent analysis, rural CHCs in 1986 received nearly 60 percent fewer Federal grant dollars per center and 15 percent fewer grant dollars per patient than did urban CHCs (table 5-36).²⁷ From 1983 to 1986, the average amount of grant funds per patient in rural CHCs declined slightly, compared with an increase of 27 percent in per-patient funds to urban CHCs (272). It is difficult, however, to know whether rural CHCs receive inappropriately less Federal funding than urban CHCs without analyzing in more detail differences among centers in such factors as:

- patients' abilities to pay full charges;
- dependency on direct patient revenues (revenues from nongrant sources);
- scope and costs of center services and operations (e.g., extent of on-site ancillary services); and
- severity of health problems inpatients served.

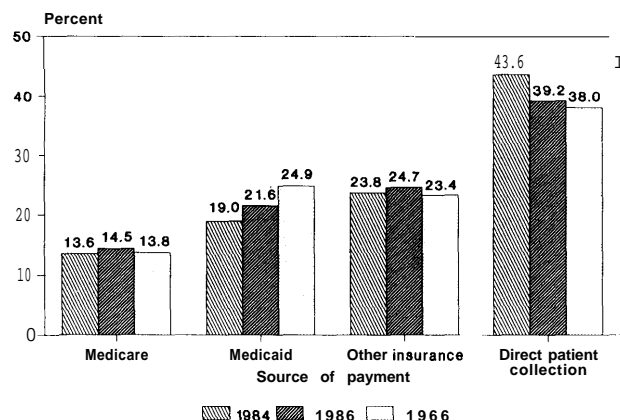
Costs and Operating Margins

As with hospitals, total expenses for rural CHCs have been rising faster than total revenue. Total expenses increased 19 percent between 1986 and 1988, compared with about 16 percent for total operating revenue (see table 5-35). In 1986, total revenue exceeded expenses in rural CHCs by \$8 million-about \$21,000 per center; by 1988, the margin was nearly eliminated. The proportion of

²⁶Differences in the proportion of basic grant monies distributed to rural and urban community/migrant health centers have slowly lessened since the mid-1980s (660).

²⁷Rural CHC grantees represent over 60 percent of the total CHC grantees, but they serve about the same number of users as urban CHC grantees (660).

Figure 5-5-Sources of Payment for Services in Rural Federally Funded Community Health Centers, 1984, 1986, and 1988^a



NOTE: Total may not equal 100 percent due to rounding.

^aTotal payments were \$105 million in 1984, \$128 million in 1986, and \$161 million in 1988.

SOURCE: Office of Technology Assessment, 1990. Data from U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance, Rockville, MD, unpublished 1984-88 data for rural community health centers from the BCRR File, provided by E. Sullivan, 1989.

revenue derived from Federal grant funds dropped by nearly 10 percent from 1986 to 1988, and the drop was barely balanced by the 26 percent increase in patient revenue for the period (see figure 5-5 and table 5-35) (585,658).

FACILITY CLOSURES

Facilities that cannot generate sufficient revenue to maintain their financial viability eventually close.²⁸ Where alternative sources of care are not easily available, facility closure could severely limit access to critical services by people living in the community. Where services are duplicative, on the other hand, facility closure may actually allow local health care resources to be allocated for better use. The following section describes the trends in rural facility closures and their potential consequences for access to care and general efficiency of the health delivery system.

Number of Hospital Closures

Rural community hospital closures totalled 237 from 1981 through 1989, with annual numbers rising steadily for most of that time (figure 5-6). Since 1986, more rural than urban hospitals have closed;

Table 5-35-Community Health Center (CHC) Revenue and Expenses, 1986 and 1988

	1986	1988	Percent change 1986-88
Number of CHCs			
Rural	382	319	-16.5
Total	600	526	-12.3
Total operating revenue^a (in millions of dollars)			
Rural	\$356	\$415	16.5
Total	\$877	\$997	13.7
Percent Federal grants of total revenue			
Rural	52%	47%	-9.6
Total	48%	43%	-10.4
Total expenses (in millions of dollars)			
Rural	\$348	\$414	19.0
Total	\$866	\$998	15.2

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCs as rural or urban approximate a centers location in either a nonmetropolitan or metropolitan area.

^aTotal operating revenue includes both revenue from patient charges and nonpatient revenue such as Federal grant funds.

SOURCE: E. Sullivan, Bureau of Health Care Delivery and Assistance, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD, personal communication, January 1989.

in 1989, rural hospital closures represented over two-thirds of all community hospital closures (328). A recent report predicts that, if these trends were to continue, 40 percent (about 2,700) of all U.S. hospitals would close or convert to other health care purposes by the year 2000 (415). Only three States (Rhode Island, Vermont and Wyoming) and the District of Columbia had no hospitals close between 1980 and 1989 (33,116).

Available figures on hospital closures are not always complete and useful measures of changes in access to basic health services. Annual AHA numbers on community hospital closures include as "closed" all hospitals that no longer provide acute inpatient care (as of the end of the year). Some of these hospitals may still have an acute-care license, or they may have remained in operation as a

²⁸There may be reasons other than financial hardship for the closure of health care facilities (e.g., government regulation, facility mergers).

Table 5-36-Geographic Distribution of Community Health Centers and Federal Funding, 1983-86

Location	Year			
	1983	1984	1985	1986
<i>Number of community health centers*</i>				
Rural	366	396	390	365
Urban	201	210	212	215
<i>Funding (in millions of dollars)</i>				
Rural	\$147	\$135	\$149	\$162
Urban	148	213	227	234
<i>Average funding per center (in thousands of dollars)</i>				
Rural	\$402	\$341	\$383	\$444
Urban	736	1014	1071	1088
<i>Average funding per patient (in dollars)</i>				
Rural	\$69	\$60	\$65	\$68
Urban	55	77	81	80

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCs as rural or urban approximate a center's location in either a nonmetropolitan or metropolitan area.

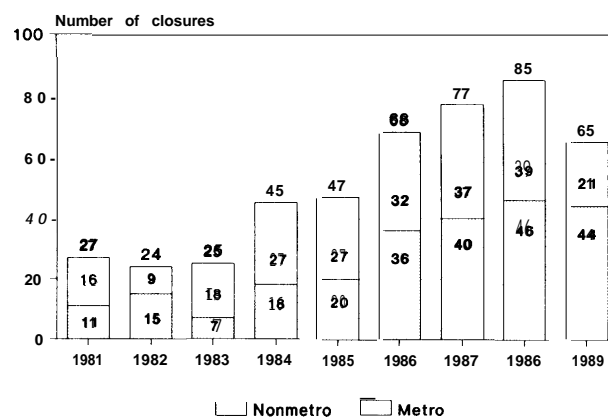
*Number varies slightly from reported figures of the U.S. Public Health Service.

SOURCE: R. Homer, "Impact of Federal Primary Care Policy in Rural Areas: Empirical Evidence From the Literature" *The Journal of Rural Health* 4(2):13-27, July 1988.

specialized hospital (e.g., a psychiatric facility) or converted to another type of health care facility (e.g., nursing home or ambulatory care clinic) (178). One-half of all rural hospitals that closed in 1987 had reopened as some kind of health care facility by May 1989 (see table 5-37) (692). At least one new rural hospital opened in 1988 (178).

Characteristics of Closed Hospitals

The typical recently closed rural hospital is small, for-profit, and located in the South. All of the 40 rural hospitals that closed in 1987, for example, had fewer than 200 beds; 65 percent of them had fewer than 50 beds. For-profit hospitals accounted for 40 percent of closed facilities in that year, compared with 35 percent for private nonprofit hospitals and 25 percent for government-owned hospitals (33). In 1988, rural hospitals in the South Atlantic, East

Figure 5-6-Closure of U.S. Community Hospitals by Metropolitan/Nonmetropolitan Status, 1981-89

SOURCE: Office of Technology Assessment, 1990. Data from P. Kralovek, Hospital Data Center, American Hospital Association, Chicago, IL, personal communication, April 1990.

South Central, and West South Central census regions accounted for 70 percent of all rural closures. Texas led all States with nine rural hospital closures (382).

Rural hospitals that closed in 1987 had significantly lower occupancy rates than both closed urban hospitals and all open facilities (table 5-37).²⁹ In interviews with State and local officials familiar with the closed facilities, factors most often related to closure for both rural and urban hospitals were declining occupancy and the resulting declines in revenue and increases in per-case costs (692).³⁰ Receiving urban PPS payment rates would have increased revenue and helped some of the closed hospitals, but the closed hospitals as a group would still have had negative total hospital and Medicare operating margins (694).

In a survey of 29 administrators of rural hospitals that closed in 1987, competition from other hospitals was cited as a key factor in closure by nearly 70 percent (table 5-38) (33). A study of rural hospitals for the period 1980 through 1987 found that closed rural hospitals were more often located in counties with many other hospitals and high ratios of hospital beds to population (409). Closed hospitals had also offered fewer services, had had proportionately more long-term care units, and were more likely to

²⁹This report defined closed facilities as those no longer providing general, short-term acute inpatient care. Hospitals closing and reopening, and those merging or sold to other hospitals in which the hospital remained open for acute inpatient care, were not included, resulting in fewer "closures" than implied from AHA data.

³⁰Similar characteristics were present for rural hospitals closing in 1988 (693).

Table 5-37—Characteristics of Community Hospital Closures in 1987, by Hospital Location

	Nonmetro	Metro
Total hospitals closed	37	32
Percent of all hospitals	1.5	1.2
Percent closed with under 50 beds... .	76	47
Occupancy rate (percent):		
Closed hospitals	21	30
All hospitals.	37	56
Average daily patient census of closures.	9.1	24.6
Percent of communities with closed hospitals having:		
General hospital within		
20 miles.	75	100
Emergency services within		
20 miles	78	100
Current use of closed hospitals		
Number reopened as hospital	4	4
Number reopened as long-term care facility	7	1
Number reopened as out-patient services/clinic.	4	12
Number reopened as specialty treatment facility.	3	3
Number vacant.	20	14

^aHospitals that stopped providing general, short-term, acute inpatient services in 1987. Hospitals closing and reopening, or merging or sold to other hospitals in 1987 are not included.

^bAs of May 1989. Sums are greater than total number closed due to 8 of the 69 hospitals providing more than one service as another healthcare facility.

SOURCE: U.S. Department of Health and Human Services, Office of Inspector General, Hospital Closure: 1987, (Washington, DC: OIG, May 1989).

be under for-profit ownership. Membership in a multihospital system was associated with a decreased risk of rural hospital closure (409).

Impact of Hospital Closures on Access to Care

Few generalizations can be made about the impact of rural hospital closure on access to care by local residents. Although in most cases the counties of closed hospitals contain other alternative hospitals, in some cases the closed hospital may have been the only source of care for a large area.

A study of hospital closures between 1980 and 1985 found that of the 85 rural counties with a community hospital closing, 6 were left without a hospital of any kind (408). A recent study found that

Table 5-38—Factors Related to Hospital Closure in 1987 as Reported by Nonmetropolitan Hospital Administrators^a

	Number reporting	Percent reporting
Fewer admissions.	28	96.6
Fewer days of care.	28	96.6
Annual operating losses.	25	86.2
Competition from other hospitals.	20	69.0
Reduced size of medical staff.	19	65.5
Lack of generosity of Medicaid program.	13	44.8
Lack of competency of top management.	12	41.4
Service cutbacks arising from Medicare PPS ^b	11	37.9
Employee cutbacks arising from Medicare PPS ^b	10	34.5
Unprofitable ancillary services.	10	34.5
Loss of key staff.	10	34.5
High numbers of uninsured patients.	9	31.0
Total respondents.	29	

NOTE: Reasons reported by less than 30 percent of administrators are not listed.

^aIncludes responses by 29 administrators.

^bPPS = Prospective Payment System.

SOURCE: American Hospital Association, Rural Hospital Closure: Management and Community Implications (Chicago, IL: AHA, 1989).

25 of the 156 rural community hospitals closing from 1980 to 1987 were the only general hospitals in their respective counties.³¹ All so-called "monopoly" closures were of hospitals with fewer than 100 beds. Most of the hospitals were for-profit owned and had experienced marked declines in admissions before they closed (252).

A study of hospital closures in 1987 found that the nearest general hospital for one-fourth of the rural communities with closures was more than 20 miles away, and residents in three of the communities with closures had to travel more than 30 miles for inpatient care. However, even before the hospitals closed, many residents were already bypassing their local hospitals to use other facilities for care (692).

³¹Only closures in the 48 contiguous States were included.

A recent study of rural hospitals in Minnesota judged 12 of the State's 95 small rural hospitals to be "financially vulnerable;" most had negative operating margins in each year from 1984 to 1987. Five were held to be in imminent danger of closing. If all 12 hospitals were to close, the number of rural residents located more than 30 minutes from a hospital would nearly double; about 5,800 residents would be more than 45 minutes from a hospital. (Currently, about 19,000 rural Minnesota residents in 14 counties must travel more than 30 minutes to reach the nearest hospital; fewer than 500 residents must travel more than 45 minutes (391).)

In addition to longer distances to receive acute care, hospital closures often lead to concerns regarding:

- *Rapid access to critical emergency and obstetric care*—Thirteen of twenty-nine administrators of closed hospitals believed that community residents needing trauma care would have greater problems receiving this service (33). Residents in eight of the rural communities with hospitals closing in 1987 had to travel more than 20 miles for emergency care, although all had available emergency transport services. In only one of the eight towns was ambulance travel time more than 30 minutes (692).
- *Maintaining access for the low-income and less mobile elderly*—Nearly three-fourths of surveyed administrators felt that closure would increase problems of access to hospital care for elderly patients; 35 percent believed that access would be impaired for many low-income persons (33).
- *The ability of communities to attract and maintain physicians and other providers*—Forty-one percent of the administrators believed that some community physicians would relocate due to closure (33).
- *Unfamiliarity with quality of care at remaining or alternative facilities.*

Efficiency of Hospital Closures

It is by no means clear that hospital closures are always undesirable. Hospitals may be in financial distress because they provide poor quality care, or because there are more hospitals than a community needs or can support. Thirty-one percent of surveyed administrators of rural hospitals closing in 1987 felt

the closure of the hospital would have an overall positive benefit to the community. They believed closure would reduce the oversupply of hospital beds and the community's reliance on outdated facilities (33).

Most small rural hospitals have low occupancy rates. Where more than one such hospital exists in a community, closing one hospital may strengthen the position of the other(s). Closure can benefit the community as a whole by lowering costs at the remaining hospital(s) (through increased utilization), and by enabling a sufficient patient base to justify a more extensive array of services. Although studies of hospital use in the 1970s found minimal cost savings resulting from hospital consolidation, average hospital occupancy rates were higher at the time of these studies, and savings maybe more likely today (382).

In some cases, however, use of another hospital by residents previously served by a closed hospital may not lower health care costs. If the alternative hospital provides more costly care than the closed hospital (e.g., if it is an urban hospital with high inpatient costs and receiving high payment rates), system costs may not decrease (382).

Even where hospitals have low utilization, there is a trade-off between health system cost savings through service consolidation and cost increases associated with reduced access to care. The trade-off becomes more critical as the distance of alternative hospitals from closing hospitals increases. If patients forego vital care because the source of acute care is inconveniently located, if they postpone care until their health problems are more expensive to treat, and if transportation and opportunity costs of reaching the new source of care are high, neither system costs nor community health may benefit from hospital closure.

Closure of Primary Care Facilities

Little is known about closures of primary care facilities, although some data for the 1980s are available. The number of federally supported CHCs in rural areas has declined in recent years. From 1984 to 1988, 75 CHC grantees closed and 51 opened (table 5-39). Most closures occurred in 1985 and 1986 during an active time for mergers of centers. Both activities may have been influenced by Federal policies that were intended to enhance affiliations among CHCs and other providers and

Table 5-39-Changes in Rural Community Health Center Grantees: Mergers, Closures, and New Starts, 1984-88

Year ^a	Mergers ^b	Closures ^c	New starts ^d	Went private ^e	Total
1984.	1	14	12	0	27
1985.	12	15	7	0	34
1986.	21	31	18	0	70
1987.	8	11	11	0	30
1988.	2	4 ^f	3	2	11
TOTAL.	44	75	51	2	172

NOTE: Definitions used by U.S. Department of Health and Human Services regional offices to identify CHCS as rural approximate a center's location in a nonmetropolitan area.

^aFederal fiscal year.

^bThose merging with another CHC.

^cThose closing or phasing out operations.

^dNew CHCs beginning operations that Year.

^eThose choosing to relinquish Federal support and become private.

^fIncluding 1 that phased out to become Part of 'hospital.

SOURCE: E. Sullivan, Bureau of Health Care Delivery and Assistance, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD, personal communication, January 1989.

improve center efficiency (585). No information is available on the areas where rural CHCs closed, or the reasons for closure.

A study of nurse practitioner and physician assistant (NP/PA) satellite centers established in the 1970s suggests that some of the reasons foreclosure of primary care facilities may have changed over time. In a national sample of 44 rural NP/PA satellite centers surveyed between 1975 and 1985, 12 had ceased to function, leaving their communities without immediate sources of primary care. Of the eight centers that closed before 1979, reasons given for closure included poor financial management, death of the backup physician, relocation of the town's major employer, the center's purchase by a physician who later left the area, and establishment of a new, physician-staffed clinic nearby. The average population of these communities (in 1980) was 1,960, yet by 1984, physician practices had located in all of them. For the four centers that closed after 1979, however, the major reason given was low service utilization. The average local population was

489, and no new providers were expected to locate in these towns soon (103).

POPULATION MOBILITY AND ACCESS TO CARE

Patient Outmigration

Regardless of whether local hospitals or clinics have closed, many rural residents have already decided to leave their local communities to obtain some or all needed services. Such action may be either for the purpose of receiving care locally unavailable (e.g., highly sophisticated tertiary care), or because residents choose not to use local services. A few studies have attempted to document this "outmigration" for hospital services in rural areas.

A 1988 study examining the patient travel patterns of Medicare beneficiaries in rural areas suggests that a significant number of patients relied on out-of-area institutions for inpatient care. The study compared rural hospitals' actual share of the number of Medicare residents in their market area who obtained care at any hospital. When a very narrow definition of a hospital's market area was used,³² 64 percent of all rural hospitals provided at least one-half of the total inpatient discharges of Medicare patients residing in their market area. Just 7 percent of rural hospitals (195) provided as much as 75 percent of the inpatient care used by Medicare patients from their narrow market area. When the widest market area definition was used, rural hospitals' market shares were smaller; only 46 percent of rural hospitals provided at least one-half of the inpatient discharges of area Medicare patients. For the most isolated hospitals—those that were 50 miles or more from the nearest hospital or were often inaccessible due to seasonal weather conditions—market shares were still surprisingly small. Using the widest market definition, fewer than 6 percent of these hospitals delivered as much as 75 percent of the inpatient care of area Medicare beneficiaries (589).

A New York study of travel patterns for inpatient care by rural residents during 1983 found that 71 percent of all hospitalizations of rural residents were in the patients' own county (table 5-40). The oldest rural residents were the least likely to travel for care;

³²The narrowest definition of a hospital's market area included only the ZIP codes nearest the hospitals and from which the facilities drew at least 50 percent of their Medicare patients. The widest definition included ZIP codes from which the hospital drew at least 75 percent of its Medicare patients.

Table 5-40-Sources of Inpatient Care for Rural Residents in New York State, 1983

	Metro hospitals	Nonmetro hospitals out of county	Nonmetro hospitals, in county
All nonmetro patients:			
Percent of discharges. . .	19.3	9.7	70.9
Percent of days.	22.3	9.1	68.7
Nonmetro patients over age 75:			
Percent of discharges. . .	10.2	8.0	81.7

SOURCES: M. Merlis, "Rural Hospitals," U.S. Congress, Congressional Research Service, Washington, DC, no. 89-296 EPW, May 1989; and C. Hogan, "Patterns of Travel for Rural Individuals Hospitalized in New York State: Relationship Between Distance, Destination and Case Mix," *Journal of Rural Health* 4(2):29-41, July 1988.

82 percent received care in their home county. Nearly two-thirds of all those who left their own county for inpatient care traveled to urban hospitals (265). Rural hospitals in New York have an abnormally high occupancy rate (84 percent in 1983, compared with 66 percent for rural hospitals nationally), so these outmigration rates are probably lower than would be found in other States (382).

Results of a survey of households in the service areas of six rural Washington hospitals likewise suggest that there are different outmigration patterns for different segments of the population. In this study, higher income households with private insurance were more likely than other households to leave their local community for hospitalization (table 5-41)(237).

Of those surveyed that had used a hospital outside their rural community, a large proportion (ranging from 41 to 63 percent) stated that the service they needed was unavailable in their local hospital. A similar proportion of respondents stated that they had been referred to the nonlocal hospital either by a local or nonlocal physician. Residents' use of a local physician was also associated with increased likelihood of using a local facility. When asked whether they would use the local hospital for specific medical conditions, respondents indicated less willingness to use the local hospital for more apparently complex services. Only one-fourth would not use the local hospital for the care of a broken



Photo credit: Peter Beeson

Poor road conditions in rural areas can lengthen travel times to health care facilities.

arm, but 90 percent would migrate elsewhere for cancer care (237). Similar usage patterns were observed in a recent five-State study that found that most rural Medicare beneficiaries needing specialized "high-tech" care traveled to urban hospitals (134).

Geographic Limitations to Access to Care

Time and Distance Between Hospitals

Geographical access to health care remains a critical issue in many rural areas. In one study that examined distances and travel times between rural hospitals, 84 percent of all rural hospitals were within 30 road miles of a neighboring hospital (table 5-42). Only 86 rural hospitals (3 percent) were more than 50 road miles from the nearest hospital. The Mountain region, with its rugged terrain and low population density, was a clear exception to national averages; fewer than one-half of rural hospitals in that region were within 30 road miles of the nearest alternative hospital. Of the 39 percent of all rural hospitals that were the sole hospitals in their counties, nearly 70 percent were less than 30 road miles from the nearest hospital (589).

Travel time is often considered a better indicator of distance between hospitals than road mileage,

Table 5-41—Household Characteristics for “Community C” by Hospital Utilization Experience, 1984-85

Household characteristics	Hospital Utilization				Overall
	Local hospital only	Local and nonlocal hospital	Nonlocal hospital only	Not hospitalized	
Income \$25,000 or more (percent).	21.6	28.2	35.9	24.4	26.3
All members 60 years old or older (percent).	26.1	26.5	20.7	24.7	24.5
Private insurance is expected principal hospital payer (percent)*.	44.3	44.9	55.0	45.4	46.8
Less than 30 minutes from local hospital (percent)*.	87.9	91.0	70.5	80.1	80.0
More than 10 years living in community (percent).	58.8	57.1	62.2	57.2	58.4
Personal physician status (percent):					
Local personal physician	79.9	74.3	34.3	56.8	59.5
Nonlocal personal physician	11.6	6.6	11.1	22.4	16.4
No personal physician	8.5	19.1	54.5	20.8	24.1
Number of respondents.	228	136	203	596	1,139
(percent of households)	20.0	11.9	17.8	52.3	100.0

NOTE: “Community C” refers to one of the rural communities in Washington included in a study of rural hospital utilization.

^aResponse is for the respondent but is utilized as a proxy for the household.

^bData are from “Community E”. These data are typical of all the communities except “Community C” where there were no meaningful differences.

SOURCE: G. Hart et al., *Rural Hospital Utilization: Who Stays and Who Goes?* Rural Health Working Paper Series, 1(2), WAMI Rural Health Research Center, University of Washington School of Medicine (Seattle, WA: March 1989).

Table 5-42--Regional Differences in Distances From Nonmetropolitan Hospitals to the Nearest Hospital

Census region	Road miles to nearest hospital					Total nonmetro hospitals
	Less than 20 miles ^a	20-29 miles	30-39 miles	40-49 miles	50 or more miles	
New England	49	21	8	4	3	85
Mid Atlantic	69	30	5	2	0	106
South Atlantic	225	98	25	12	1	361
East North Central	263	78	18	4	2	365
East South Central	233	74	20	2	0	329
West North Central	300	211	64	14	9	598
West South Central.	261	148	35	11	4	459
Mountain.	68	47	62	33	50	260
Pacific	86	21	15	8	17	147
Total	1,554	728	252	90	86	2,710

NOTE: Distances are approximately those from one hospital to the nearest hospital. Hospitals are those included in the 1984 American Hospital Association's Annual Survey of Hospitals.

^aIncludes all hospitals less than 15 “crow-fly” miles to the nearest hospital. These hospitals are all assumed to be less than 20 road miles from the nearest hospital.

SOURCE: **Systemetrics/McGraw Hill**, “Small Isolated Rural Hospitals: Alternative Criteria for Identification in Comparison with Current Sole Community Hospitals,” contract report prepared for the Prospective Payment Assessment Commission, Washington, DC, June 1988.

Table 5-43-Travel Time to Nearest Hospital for Nonmetropolitan Hospitals That Are More Than 15 "Crow Fly" Miles From the Nearest Hospital, 1984^a

Travel time to nearest hospital (minutes)	Number of hospitals more than 15 "crow-fly" miles from nearest hospital
Less than 30	848
30-39	402
40-44	90
45-49	52
50-54	45
55-59	31
60-69	87
90 or more	17
Total	1,572

^aExcludes three hospitals on islands.

SOURCE: Prospective Payment Assessment Commission, Technical Appendices to the Commission's March 1988 Report (Washington, DC: U.S. Government Printing Office, 1988).

because it may more accurately reflect actual travel conditions and is a more relevant indicator of access (e.g., elapsed time en route in emergency situations) In the above study, of the 42 percent of hospitals more than 15 "crow fly" miles from the nearest hospital (589), over one-half were less than 30 minutes from that hospital (table 5-43). Over 85 percent were less than 45 minutes from the closest hospital. For rural hospitals more than 25 road miles from the nearest hospital, there are extreme regional differences in travel time to the closest hospital. Rural hospitals in this category that were located in the Mountain and Pacific regions had average travel times of about 56 minutes, while travel times between rural hospitals in the West North Central region averaged 36 minutes (table 5-44)(488).

Sole Community Providers

In some rural communities, a single facility is the sole source of locally available, hospital-level health care. As of 1987, there were 367 Medicare-designated SCHs (see app. C), and the vast majority were located in rural areas.³³ Not all rural hospitals that qualify for SCH designation have applied for it,

Table 5-44-Travel Time and Distance to Nearest Hospital for Nonmetropolitan Hospitals More Than Twenty-Five Miles From the Nearest Hospital, 1984^a

Census region	Mean distance (miles)	Mean travel speed (mph)	Mean time (minutes)
New England	38	42	55
Mid Atlantic	30	42	43
South Atlantic	32	43	45
East North Central	33	48	41
West North Central	30	49	36
East South Central	32	52	37
West South Central	32	51	37
Mountain	45	49	56
Pacific	44	47	57
National average	36	49	45

^aIncludes an estimated 700 hospitals.

SOURCE: Prospective Payment Assessment Commission, Technical Appendices to the Commission's March 1988 Report (Washington, DC: U.S. Government Printing Office, 1988).

and some have elected to drop their designation because they have not found it financially advantageous. There is little evidence that the criteria for paying isolated rural hospitals have been sufficient to stabilize their financial condition (seep. 23); nor do the criteria appear satisfactory in ensuring accessibility to inpatient care and other services.³⁴

A 1988 study found that, by current SCH designation criteria, most eligible hospitals were not designated and most designated hospitals did not meet the criteria. Using 1984 hospital data, the study found that 211 rural hospitals were eligible for SCH status within the continental United States based on the criteria (table 5-45). Of the 308 rural hospitals actually designated as SCHs, only 92 met the designation criteria, suggesting that most designated hospitals may actually be within reasonable proximity of other hospitals (488). The current number of SCHs amounts to about 14 percent of rural hospitals (625).³⁵ If all eligibles were designated, the number of rural SCHs would expand from 308 to 427, or about 16 percent of all rural hospitals in 1987(488).

³³Some urban hospitals were "grandfathered in" as sole community hospitals at the time the new payment system was implemented.

³⁴In 1989, Congress modified criteria for qualification and payment of SCHs (Public Law 101-239)(see ch. 3). It lowered the minimum distance that a SCH must be from another hospital (certain exceptions would be reconsidered), required that new eligibility criteria based on travel time be developed, and required Medicare payments to be more effectively matched to SCH costs.

³⁵This percentage is based on the assumption that all of the 367 SCHs in 1987 were rural.

Table 5-45-Regional Distribution of Nonmetropolitan Hospitals by Sole Community Hospital (SCH) Status, 1984

Census region	SCH eligibles		Current SCH		Eligible current SCH	Eligible not current SCH	All nonmetro hospitals
	Number	Percent	Number	Percent	Number	Number	Number
New England	29	13.2	22	7.1	14	15	85
Mid Atlantic	17	7.3	1	0.3	NA	17	106
South Atlantic	9	3.6	19	6.2	2	7	361
East North Central	31	15.5	13	4.2	5	26	365
East South Central	3	1.8	11	3.6	1	2	329
West North Central	19	10.0	60	19.5	12	7	598
West South Central	10	5.0	24	7.8	3	7	459
Mountain	71	33.6	110	35.7	43	28	260
Pacific	22	10.0	48	15.6	12	10	147
Total	21	100.0	308	100.0	92	119	2,710

NOTE: NA = not applicable.

SOURCE: Prospective Payment Assessment Commission, *Technical Report to the Commission's March 1988 Report* (Washington, DC:U.S. Government Printing Office, 1988).

Most currently designated SCHs are located in the West.³⁶ The South has relatively few, probably because its rural hospitals are closer together (see table 5-44) and are less affected by extreme weather conditions. As a result, neither eligible noncurrent SCHs appear to serve a significant number of low-income rural areas (which are predominant in the South Atlantic and Central regions) (739).

This study also simulated the impact of four major alternative eligibility criteria. These included:

- *Substituting travel time for road mileage*—A 40-minute minimum travel time would add 197 hospitals unable to meet the current 50-mile requirement, bringing the total designated SCHs to 408.
- *Using sole-county provider status as a measure of isolation*—Including all community hospitals that are the sole provider in the county or are located 25 miles or 40 minutes from another hospital would make a total of 1,224 rural hospitals eligible to be SCHs.
- *Being located in a low-density frontier county* with 6 or fewer persons per square mile would qualify only 4 hospitals.³⁷
- *Serving Medicare beneficiaries in medically underserved areas*—This criterion is intended to measure mobility of the population and other

social needs for hospital services. It was tested in only four States.

The study concluded that relatively few rural facilities are physically remote from other hospitals, although for other reasons (e.g., differences in community need and hospital services) other hospitals may also be irreplaceable health care facilities (739).

Some rural community clinics are the sole providers of primary care services to their communities; however, such status has not allowed them any special protection by the Federal Government. Federally supported CHCs, and some rural clinics that receive State support in such States as North Carolina and Oregon, often serve remote communities unable to attract and support full-time physician practices or other health care providers. Little is known about the extent and nature of these sole community primary care facilities, or how critical their presence is to preserving access in areas affected by geographic isolation.

Frontier Areas

People living in frontier areas, where the nearest health care facility may be a great distance away, are faced by special problems of physical access to health care. Hospitals in frontier areas tend to be small in number and capacity, and the supporting

³⁶In 1987, 102 SCHs were located in frontier areas, all in the western half of the country. Nearly 37 percent of all frontier hospitals were designated SCHs (62S).

³⁷The number of hospitals identified by this analysis are considerably fewer than the number of hospitals shown to exist by OTA analyses in frontier areas (277 hospitals in areas with 6 or fewer persons per square mile) as noted earlier.

Table 5-46-Characteristics of Four Frontier Hospitals^a

Hospital	Number of licensed beds	Ownership and management	Distance to nearest hospital next level of care by size			Population of county and density (1980)
			50-100 beds	100-200 beds	200 or more beds	
Allen Memorial Hospital Moab, UT	38 acute-care ^b	County Hospital District	108 miles	120 miles	210 miles	8,241 2.2 persons per square mile
Garfield Memorial Hospital Panguitch, UT	20 acute-care ^b	Intermountain Health Care (nonprofit multi- hospital system)	0	110 miles	200 miles	3,673 .7 persons per square mile
Nye General Hospital Tonopah, NV	21 acute-care; 24 long-term care	County Hospital District	120 miles	210 miles	210 miles	9,048 .5 persons per square mile
William Bee Ririe Hospital Ely, NV	43 acute-care ^b	County Hospital District	189 miles	250 miles	250 miles	8,167 .9 persons per square mile

^aThose located in counties with less than six persons per square mile.

^bParticipates in swing-bed Program.

SOURCE: D. Berry et al., "Frontier Hospitals: Endangered Species and Public Policy Issue," Hospital and Health Services Administration 33(4):481-496, Winter 1988.

population is sparse and sometimes widespread. Berry et al. examined characteristics of four frontier hospitals in two States, including distances to the nearest hospital.³⁸ For three of the four facilities (all with fewer than 50 beds), the nearest hospital of any size was 108 miles away (table 5-46). Larger hospitals (with 200 or more beds), likely to provide more secondary and tertiary levels of inpatient care, were at least 200 miles from any of the four frontier hospitals. The authors noted that, given the facilities' frontier location, travel to the nearest hospital may be affected by poor road conditions and natural barriers as well as by distance. The three county-affiliated hospitals--all sole providers of hospital care and two located in counties with population densities of less than one person per square mile--were all experiencing financial problems and low occupancy.

As with hospitals, CHCs require a sufficient population to support them--a problem in many frontier areas. In 1989, there were 59 federally supported CHC delivery sites in frontier areas (table

5-47), about 7 percent of all rural CHC service sites (585).³⁹ No data are available on the population base of these centers or alternative sources of primary care in the areas they serve. As noted earlier, some CHCs serving very sparse, isolated populations need substantial ongoing subsidies to survive. However, many of the operating requirements important to receiving vital Federal funding (e.g., minimum physician productivity standards) are difficult to meet for some frontier centers, possibly limiting grant support and their overall development (see ch. 7). (In 1988, congressional reauthorization of the CHC program required that special consideration be given to supporting CHCs in frontier areas (Public Law 100-386).)

SUMMARY OF FINDINGS

Rural Community Hospitals

Most rural hospitals are small (nearly three-fourths have fewer than 100 beds) and nonprofit. In 1988, they represented 46 percent of all community hospitals. About 14 percent of all rural hospitals

³⁸The characteristics of these hospitals, including their distance from other hospitals, are not necessarily typical of frontier hospitals in general.

³⁹This figure represents the number of federally funded CHC service delivery sites in frontier areas, not the actual number of grantees (many CHC grantees have multiple sites). One source reports that there were 17 CHC grantees in frontier areas in 1986 (Senate Report 100-343). The completeness of these figures is questionable; efforts are being made by the Federal Government and frontier health officials to improve the data's accuracy.

Table 5-47-Federally Funded Community Health Center Service Sites Located in Frontier Areas^a by State, 1989

States	Number of frontier health centers
Colorado	8
Idaho	8
Nevada	6
Texas	6
South Dakota	5 ^b
Montana	4
New Mexico	4
Utah	4
Oregon	3
Washington	3
Minnesota	2
Wyoming	2
Arizona	1
California	1
North Dakota	1
New York	1
Total	59

NOTE: Number of community health centers indicate the total number of center service sites, including federally funded grantees.

^a_{frontier} is defined as counties with six or fewer persons per square mile.

^bIncluding 1 sit, transferred to the Indian Health Service in December 1989.

SOURCE: E. Sullivan, Bureau of Health Care Delivery and Assistance, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD, personal communication, April 1989.

were designated SCHs in 1987; hospitals located in frontier areas represented 11 percent of all rural hospitals and were smaller than other rural hospitals (two-thirds had fewer than 50 beds).

From 1984 to 1988, inpatient admissions in rural hospitals dropped 21 percent (compared with less than 8 percent for urban hospitals). By 1987, *inpatient occupancy levels were around 50 percent for all rural hospitals, becoming smaller as hospital size decreased* (31 percent for hospitals with under 25 beds). Hospitals in frontier areas had significantly fewer admissions and numbers of staff physicians than other similar-sized rural hospitals.

Rural hospitals are providing increased amounts of outpatient and long-term care services. From 1984 to 1988, outpatient visits increased about 34 percent (compared to 26 percent for urban hospitals).

By 1988, one-half of all hospital surgery was done on an outpatient basis; over 90 percent of all hospitals in 1987 performed ambulatory surgery. Also in 1987, of the 25 percent of hospitals that had a separate long-term care unit, long-term care beds constituted nearly one-half of total hospital beds. Frontier hospitals as a group had more long-term care units (40 percent) and less ambulatory surgery (77 percent) than other rural hospitals. Anecdotal information indicates that competition is increasing between rural and urban providers and locally among hospitals, physicians, and other providers.

As inpatient demand has declined, the receipt of revenue has become more of a problem. From 1984 to 1987, uncompensated care delivered by rural hospitals rose over 26 percent (increasing faster for smaller facilities), averaging over \$0.5 million per hospital in 1987. Average Medicare payments, which makeup over 40 percent of patient revenue, were actually slightly lower than average costs in 1987 in rural hospitals. Although they represent only about 9 percent of patient revenue, Medicaid payments are often significantly below related costs. In addition, as outpatient services (e.g., ambulatory surgery) have increased, hospitals (especially smaller facilities) have become more dependent on outpatient revenue, leading to concern over proposed future changes in payments for these services.

Total expenses have risen faster than total revenues (the smallest hospitals show the largest gap), leading to the decline in both patient and total hospital operating margins. By 1987, *nearly all rural hospitals had negative patient margins; those with under 50 beds also suffered negative total margins.*

Rural Community Health Centers

The number of CHC grantees fell 20 percent from 1984 to 1988, varying widely across regions, although the number of total CHC service sites remained relatively unchanged. In 1988, rural grantees made up 61 percent of all CHCs. From 1984 to 1988, patient visits to rural CHCs rose nearly 19 percent, again showing significant regional differences.

Most of the increase in CHC utilization appears to be for under- and uncompensated care. In 1987, nearly one-half of all CHC users received discounted

⁴⁰The actual period of time is hospitals' fourth year under Medicare's prospective paymentsystem.

care. Increasingly, CHCs are deriving more of their revenue from Medicaid patients and less from private pay patients. They also remain heavily dependent on Federal grant funds (which make up nearly one-half of total revenue). Total **expenses** have also increased faster than **total** revenue, nearly eliminating by 1988 any positive **total** operating margins for the average center.

Local health departments (LHDs) in rural areas are thought **to be a** valuable source of basic health **services** for many residents. **However**, little is known about the numbers and operating characteristics of rural LHDs.

Access to Care

By 1986, the ratio of community hospital beds to population was about the same overall in rural and urban areas. In 14 States, bed-to-population ratios were higher in rural areas.

Closures of financially troubled rural hospitals have increased; over twice as many closed in 1989 **as in** 1985. Most of the recent closures have been of small facilities with low inpatient utilization and occupancy, and most communities of closed hospitals appear **to have** reasonable **access to** emergency and acute care. A few closures, however, have been in communities with no local alternatives.

“Outmigration” for hospital care appears **to be** increasing among rural residents (even in isolated communities with local hospitals), although the full extent and nature of this trend is not well understood. Outmigration is occurring because either specialized care is unavailable locally or residents choose not to use locally available **services**.

Most rural hospitals are within close physical proximity (in **terms of** road miles and travel time) of another hospital, but extreme regional differences exist. Hospitals are much farther apart in less densely populated areas of the western part of the country. Most of the 367 designated SCHs are located in the western half of the Nation (102 are in frontier areas there). Only about 30 percent of all designated hospitals meet current SCH criteria.

In summary, major changes in the volume of services provided, coupled with substantial increases in the delivery of uncompensated care, have been contributors **to the rising** financial vulnerability of many rural hospitals and CHCs. Physical access **to** basic primary and hospital care remains a problem in many rural areas, particularly in less densely populated communities.