

**Use of the Hospice Benefit by Rural  
Medicare Beneficiaries**

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## **EXECUTIVE SUMMARY**

Medicare beneficiaries in rural areas are less likely to receive hospice care prior to death than their urban counterparts. Within rural environments, declining rates of hospice use are associated with lower population density and greater distance from urban areas. In contrast, in-hospital death rates for Medicare beneficiaries do not show any urban/rural gradient. Medicare hospice payment policies must be adjusted if the hospice benefit is to be an option for all terminally ill beneficiaries regardless of where they live.

## INTRODUCTION

The Medicare hospice benefit was initiated in 1982 as part of the Tax Equity and Fiscal Responsibility Act (TEFRA). The intent of the benefit was to save Medicare dollars while improving end-of-life care. In exchange for comprehensive hospice care, including medications, terminally ill beneficiaries with a 6-month or less life expectancy waive their right to curative care for their terminal condition.

The number of Medicare beneficiaries receiving hospice care has grown rapidly, more than doubling from 1992 to 1998 (GAO, 2000). However, hospice use rates vary considerably by state, and certain populations, including minority, low-income, older, and rural Medicare beneficiaries, are less likely to receive hospice care (Gordon, 1995; Kinzbrunner, 1995; Talamantes, Lawler, and Espino, 1995; GAO, 2000 MedPAC, 2000; Virnig, Kind, McBean, and Fisher, 2000). Recently, at the request of Congress, the Medicare Payment Advisory Commission (MedPAC) examined access to the hospice benefit, including rural and urban differences in hospice use. MedPAC concluded that the hospice use rate for rural Medicare beneficiaries increased significantly from 1992 to 2000, but is still only 75% of the urban rate (MedPAC, 2002a).

Lower hospice utilization among rural beneficiaries may have multiple causes. Rural areas may have a more limited supply of hospice services, due to a low volume of hospice patients and long distances to patients' homes, where the vast majority of hospice services are provided. The demand for hospice services may also be less, as a result of rural-urban differences in beneficiaries' demographic characteristics, physicians' hospice referral patterns, or community awareness of hospice.

Differences in hospice use rates raise questions about whether all beneficiaries have equal access to the Medicare hospice benefit, and the role of the Medicare program in ensuring access. Medicare is by far the largest payment source for hospice care, accounting for over three-fourths of hospice patients and revenues (National Hospice and Palliative Care Organization, 2002). Consequently, Medicare payment policies have a substantial influence on the financial viability of hospices. Overall, Medicare hospice per diem rates are lower for rural hospices than urban hospices, because the rates are adjusted using a hospice wage index (DHHS, 2001). At the same time, the rates are not adjusted for other differences in costs that may be significantly higher for rural hospices. For example, travel to patients' homes, including mileage and staff time, is likely to be much more costly for rural hospices. Small rural hospices also are less likely to benefit from economies of scale in purchasing pharmaceuticals and medical supplies, and may have more difficulty maintaining the required 24 hour per day, 7 days a week staffing levels. Finally, small rural hospices are more vulnerable to financial difficulties arising from trends affecting the entire hospice industry, such as declining lengths of stay.

The purpose of this paper is to examine in more detail the nature and extent of urban-rural differences in hospice use and key factors that may influence the use of hospice services in rural areas.

## **DATA AND METHODS**

This study used Medicare administrative data, derived from the 100% Denominator File for 1999, the 100% Medicare Analysis and Review (MedPAR) inpatient hospitalization file for 1999, the 100% hospice files for 1998 and 1999, and the Provider of Services (POS) file for 1999. Analysis was limited to beneficiaries living within the United States who were 65 years or older.

Age, sex, race, county of residence, and date of death were obtained from the denominator record. In-hospital death rate was calculated using the MedPAR and denominator records. A case was considered to be an in-hospital death if the patient had a discharge status of 'Discharged Dead.' The rate of hospice use among decedents was calculated using all individuals who died during 1999 as the denominator and all individuals dying while receiving hospice care in 1999 as the numerator. In-hospital death rates and in-hospice death rates were adjusted for age, sex and race (Lauderdale and Goldberg, 199; Arday, Arday, Monroe, and Zhang, 2000).

Rural areas were classified using Urban Influence Codes (UICs), which classify metropolitan counties in two groups based on the size of the metropolitan area, and non-metropolitan counties into seven groups, according to whether or not they are adjacent to a metropolitan area, and the size of the largest city within the county (U.S. Department of Agriculture, 2002). The UICs and Census Bureau regional designations were obtained from the 1999 Area Resource File.

Hospice location, organizational structure, and ownership were obtained from the 1999 POS file. Hospice volume was calculated as the number of individual Medicare beneficiaries for whom the hospice received payments in FY 1999. The volume analysis was limited to the 1,987 hospices that were Medicare certified in 1997 or earlier, to ensure that patterns related to start up were not interpreted as stable patient volume.

All analyses were conducted using the SAS statistical package. Rates of hospice use and inpatient death were calculated using direct standardization techniques controlling for age, sex and race (Selvin, 1991). Logistic regression was used to test for linear trends of level of urban influence on age, sex and race adjusted rates of death in hospice.

## **RESULTS**

In 1999, beneficiaries residing in rural areas accounted for almost one-fourth (24.3%) of the 1.76 million deaths in the Medicare aged population. Rural deaths were almost evenly split between rural areas adjacent to urban areas (13.4% of all deaths) and not adjacent to an urban area (10.9% of all deaths).

### **Hospice Use Rates**

Rates of hospice use among the Medicare population were significantly associated with geographic location, with declining rates of hospice associated with more rural environments (Table 1). The rate of hospice use in the most remote rural areas was only 56% of the rate in the most urban areas. Grouping the nine urban influence codes into three levels, this pattern of hospice use was maintained, with the highest rate of hospice use for urban areas (22.2%), followed by rural adjacent areas (17.0%) and the lowest rates in rural non-adjacent areas (15.2%).

However, in contrast to hospice use patterns, there was no association between level of urban influence and in-hospital death rate. Rates of in-hospital death were constant across the 3-level grouping (32.8% in urban, 32.4% in rural adjacent and 32.5% in rural non-adjacent areas). Figures 1 and 2 graphically illustrate the different patterns of in-hospice and hospital death rates. Although hospice use varied considerably by region, the pattern of decreasing hospice use with decreasing urban influence was maintained across all four census regions (Table 2).

These rural-urban differences in hospice use are unlikely to result from differences in patient demographics, since they are maintained across age, sex, and race groups, as well as regions of the country. They are also unlikely to be the result of rural-urban differences in health status. Overall mortality rates are higher in rural than in urban areas, suggesting that the per-

**TABLE 1**

**Rate of In-Hospice Death and In-Hospital Death by Urban Influence Code for Elderly Medicare Beneficiaries, 1999**

<b>Category</b>	<b>Urban Influence Code</b>	<b>Number of Deaths</b>	<b>In-Hospice Death Rate*</b>	<b>In-Hospital Death Rate*</b>
Urban	Metro areas, 1 million population or more.	786,842	22.8%	33.6%
	Metro areas, less than 1 million population.	545,655	21.4%	31.9%
Rural Adjacent	Adjacent to a large metro area, with a city of 10,000+.	28,288	18.9%	31.3%
	Adjacent to a large metro area, no city of 10,000+.	21,548	18.0%	32.0%
	Adjacent to a small metro area, with a city of 10,000+.	79,513	16.7%	32.4%
	Adjacent to a small metro area, no city of 10,000+.	107,277	16.8%	32.8%
Rural Non-Adjacent	Not adjacent to a metro area, with a city of 10,000+.	75,898	16.3%	32.8%
	Not adjacent to a metro area, with a city 2,500-9,999.	84,479	15.1%	32.7%
	Not adjacent to a metro area and no city or a city less than 2,500 population.	31,595	12.8%	31.5%

**Source:** Medicare Hospice File and Denominator File, 1999; Area Resource File, 1999.

**NOTES:** In-hospice and in-hospital death rates are age, sex and race adjusted. In-hospice and in-hospital death rates are based on fee-for-service Medicare beneficiaries, because hospital encounter data are not available for Medicare managed care enrollees. Hospice use rates are largely similar for the fee-for-service and entire Medicare elderly populations, with the exception of slightly lower use rates among fee-for-service beneficiaries in urban areas, where managed care enrollment is concentrated.



**Figure 1: County—Level Hospice Rate Prior to Death: CY 1999**

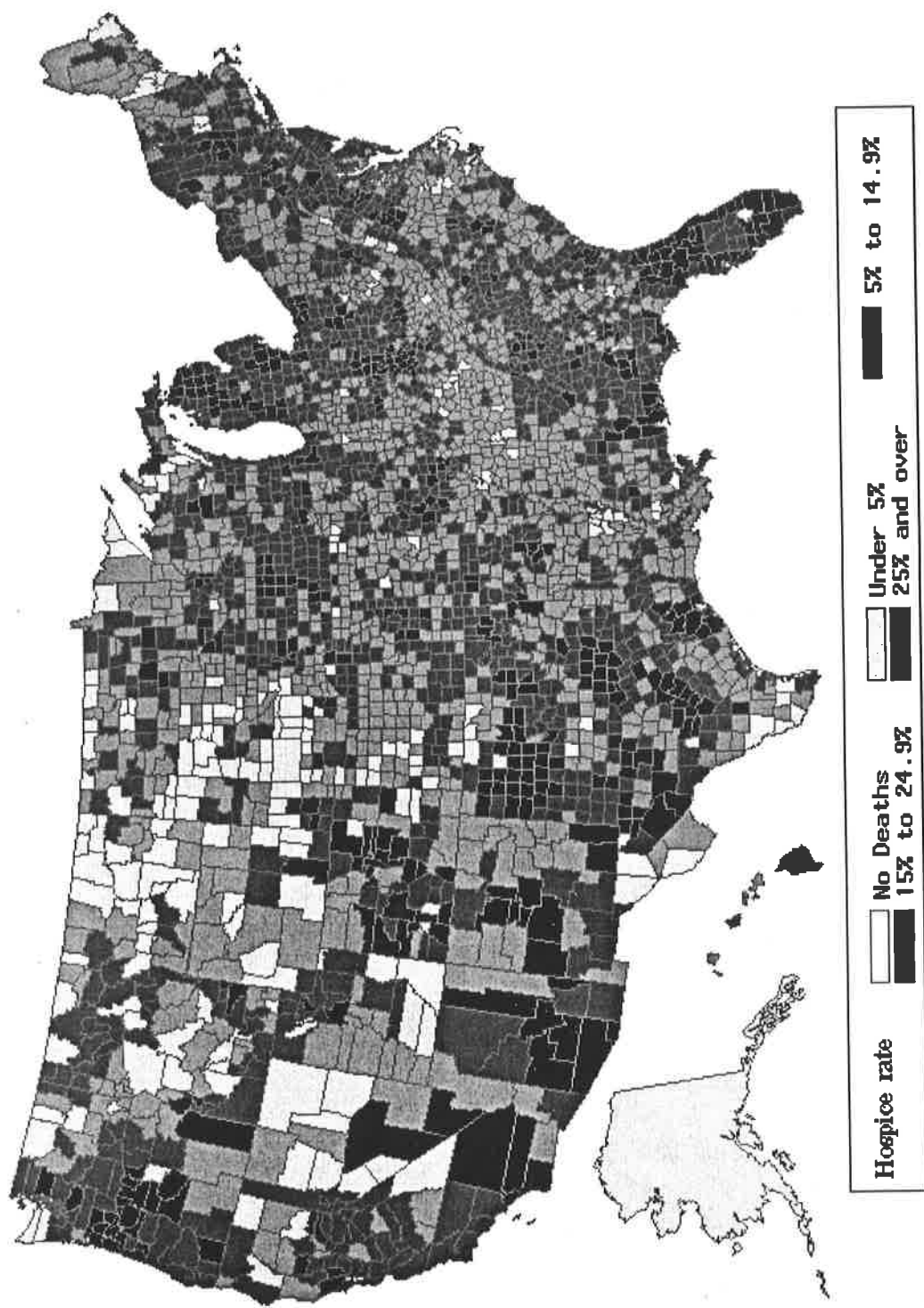
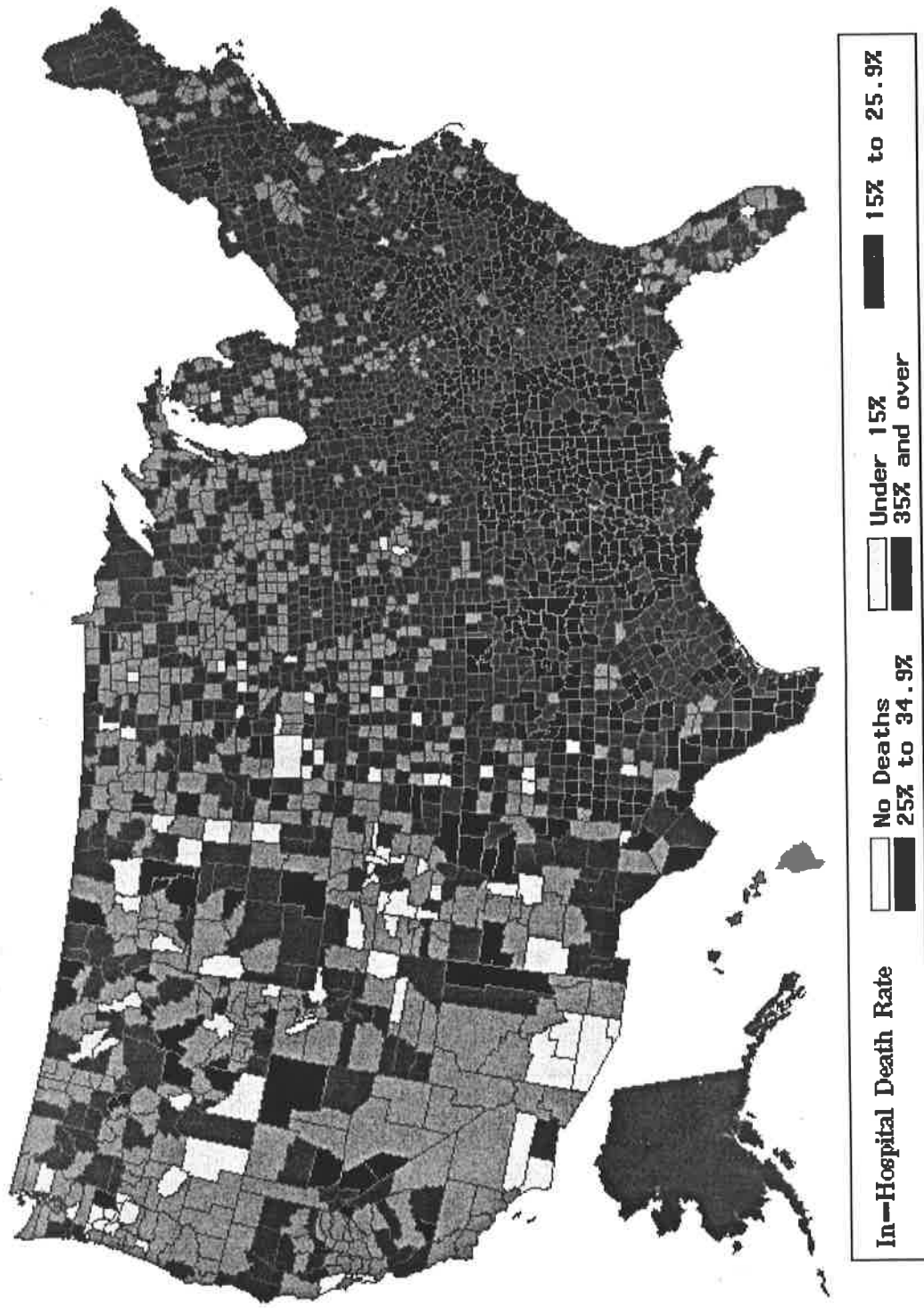


Figure 2: County—Level In—Hospital Death Rate: CY 1999



**TABLE 2**

**Hospice Use Rates for Elderly Medicare Beneficiaries by Census Region  
and Urban Influence Code, 1999**

<b>Census Region</b>	<b>Urban</b>	<b>Rural Adjacent</b>	<b>Rural Non-Adjacent</b>
Northeast	16.5%	15.5% <sup>a</sup>	12.5% <sup>a,b</sup>
South	24.5%	17.4% <sup>a</sup>	14.5% <sup>a,b</sup>
Midwest	23.2%	16.6% <sup>a</sup>	15.9% <sup>a,b</sup>
West	24.9%	19.3% <sup>a</sup>	16.3% <sup>a,b</sup>

**Source:** Medicare Hospice File and Denominator File, 1999; Area Resource File, 1999.

<sup>a</sup>p<.001 vs. urban

<sup>b</sup>p<.0001, test for trend using logistic regression

population need for end-of-life care services may be greater in rural areas (Ricketts, Johnson-Webb, and Randolph, 1999).

Overall, 56% of hospice users had cancer diagnoses. The remaining hospice users had diagnoses including congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD) and Alzheimer's disease. The percentage of hospice users with cancer diagnoses was similar in rural adjacent and non-adjacent areas (60.2% and 60.6%, respectively) (Table 3). In contrast, in urban areas only 55% of hospice users had cancer diagnoses.

### **County Analysis**

In 1999, more than two-thirds of urban counties had a hospice physically located in the county, compared to one-third of rural adjacent and rural non-adjacent counties (Table 4). Although many hospices serve patients in multiple counties, the physical presence of a hospice in a county was associated with a higher in-hospice death rate among Medicare beneficiaries. Within each urban/rural grouping, in-hospice death rates were significantly higher ( $p < .0001$ ) in counties with a hospice than counties without a hospice: urban (22.4% vs 20.9%); rural adjacent (17.8% vs 16.3%); and rural non-adjacent (16.4% vs 13.9%).

Virtually all urban counties and the vast majority of rural adjacent counties had at least a minimal level of hospice use among Medicare beneficiaries, as measured by having at least five hospice users and by having hospice use rates of at least 5% in 1999 (Table 4). However, 22% of rural non-adjacent counties did not have five or more hospice users, and 14% of rural non-adjacent counties had less than 5% hospice use rates.

**TABLE 3**

**Proportion of Elderly Medicare Hospice Users with Cancer and Non-Cancer  
Diagnosis by Location, 1999**

	<b>Urban</b>	<b>Rural Adjacent</b>	<b>Rural Non-Adjacent</b>
Cancer Diagnosis	55.0%	60.2%	60.6%
Non-Cancer Diagnosis	45.0%	39.8%	39.4%

Source: Medicare Hospice File, 1999

**TABLE 4**

**Proportion of Counties with a Hospice by Location and Measures of Minimal Hospice Use  
Among Elderly Medicare Beneficiaries, 1999**

	<b>Urban</b>	<b>Rural Adjacent</b>	<b>Rural Non-Adjacent</b>
Percent of counties with a hospice physically located in the county	69.0%	33.0%	34.0%
Percent of counties with 5 or more hospice users	100.0%	95.4%	78.3%
Percent of Counties with at least 5% hospice use rate	99.3%	96.6%	86.3%

**Source:** Medicare Hospice File and Denominator File, 1999; Area Resource File, 1999.

**NOTES:** Eighteen rural non-adjacent counties had fewer than 5 Medicare beneficiary deaths in 1999 and were not included in this calculation. Hospice location was based on the hospice address in the Medicare Provider of Service file; some hospices have satellite locations that are not listed in the file.

## **Hospice Analysis**

Hospices in rural adjacent and especially in rural non-adjacent areas are more likely to be hospital-based while urban hospices are more likely to be freestanding (Table 5). Proprietary hospices are less common and government-owned hospices are much more common in rural areas than in urban areas.

In FY 1999, 55% of rural non-adjacent hospices and 37% of rural adjacent hospices had less than 50 patients annually, compared to only 13% of urban hospices (Table 6). The median number of Medicare patients per year treated by a hospice varied significantly across level of urban influence, ranging from 44 and 65 patients for rural non-adjacent and rural adjacent hospices, respectively, to 177 patients for urban hospices.

Defining low volume as an average daily census of three patients in FY 1999, 28% of rural non-adjacent hospices were low volume, compared to 15% of rural adjacent hospices and 5% of urban hospices. These low volume hospices provided care to 6% of rural non-adjacent hospice users, 2% of rural adjacent hospice users and less than 1% of urban hospice users.

Overall, the median hospice-level reimbursement from Medicare in FY 1999 was \$1,421 per day. In stark contrast, low volume hospices had median Medicare reimbursement of only \$163 per day. This low level of revenue illustrates the difficulties low volume hospices experience staffing for the required 24-hour per day, 7 day per week availability of hospice and spreading fixed costs across a small number of patients. It also underscores the potential for a few high cost patients to have a significant negative impact on the hospice's financial status.

TABLE 5

Medicare Certified Hospices by Location, Organizational Type, and Ownership, 1999  
(n=2254)

	Urban	Rural Adjacent	Rural Non-Adjacent	Total
<b>Organizational Type</b>				
Hospital-based	255 (18.4%)	115 (30.5%)	190 (38.9%)	560 (24.8%)
Home health agency-based	503 (36.2%)	129 (34.2%)	136 (27.9%)	768 (34.1%)
Freestanding	613 (44.1%)	131 (34.7%)	160 (32.8%)	904 (40.1%)
Skilled nursing facility-based	18 (1.3%)	2 (0.5%)	2 (0.4%)	22 (1.0%)
<b>Ownership</b>				
Non-profit	864 (62.2%)	251 (66.6%)	288 (59.0%)	1403 (62.2%)
Proprietary	458 (33.0%)	67 (17.8%)	91 (18.6%)	616 (27.3%)
Government	43 (3.1%)	36 (9.5%)	75 (15.4%)	154 (6.8%)
Other	24 (1.7%)	23 (6.1%)	34 (7.0%)	81 (3.6%)

Source: Medicare Provider of Service File, 1999; Area Resource File, 1999.



**TABLE 6**

**Distribution of Medicare Patients by Hospice Location, Fiscal Year 1999  
(n=1987)**

	<b>Urban</b>	<b>Rural Adjacent</b>	<b>Rural Non-Adjacent</b>
<b>Number of Hospices with Annual Medicare Patient Volume</b>			
<25 patients	61 (5.0%)	53 (15.7%)	123 (29.4%)
25-49 patients	98 (8.0%)	72 (21.4%)	105 (25.1%)
50-75 patients	103 (8.4%)	71 (21.1%)	71 (17.0%)
>75 patients	970 (78.7%)	141 (41.8%)	119 (28.5%)
<b>Median Annual Number of Patients</b>	178	65	44

**Source:** Medicare Hospice File and Provider of Service File, 1999; Area Resource File, 1999

**NOTES:** Analysis based on the 1,987 hospices that were certified in 1997 or earlier.

## DISCUSSION

The results of this analysis indicate that geographic location and population density are important factors influencing access to hospice services for Medicare beneficiaries. The study also shows that a significant proportion of hospices in rural areas have low patient volumes, leaving them vulnerable to financial instability. These findings are supported by case studies of hospices serving rural beneficiaries and a recent actuarial analysis of hospice costs and revenues, which suggest that many hospices, especially small rural hospices, are likely to have costs that are not adequately covered by the current Medicare payment system (Huskamp, Buntin, Wang, and Newhouse, 2001; Cheung, Fitch, and Pyenson, 2001; Casey, Moscovice, Virnig, and Kind, forthcoming).

Previous MedPAC research found statistically significant relationships between the volume of services provided and costs per case for both inpatient and outpatient hospital services, after controlling for cost-related factors in the Medicare payment system (MedPAC, 2001). A volume-cost relationship has also been found for ambulance services (Mohr, Cheng, and Mueller, 2001). Although the Medicare program does not specifically take patient volume into account in establishing payment rates for these providers, it has implemented special payment programs for small rural hospitals, and special payment provisions for ambulance services provided to rural beneficiaries. The sole community hospital program, the small rural Medicare dependent hospital program, and the critical access hospital (CAH) program offer small rural hospitals cost-based alternatives to the prospective payment system (PPS) for inpatient services (and for outpatient services for CAHs). Medicare also established increased

payments for ambulance services furnished in rural areas under the new ambulance services fee schedule, which includes a mileage component (CMS, 2002).

A lack of reliable data on travel costs has hampered efforts to examine rural-urban differences in the costs of providing home health services (MedPAC, 2001; 2002a). However, the home health PPS includes a case-mix adjustment and an outlier policy for high cost patients, which can be very helpful to low volume home health agencies. In addition, Medicare payments for home health services in rural areas were increased by 10% for a 2 year period beginning April 1, 2001. MedPAC recently recommended an additional 2 year extension of the 10% add-on, due to concerns about a more rapid decline in the proportion of rural beneficiaries using home health care from 1997-99, and the fact that rural areas lost a larger proportion of their home health agencies than urban areas. (MedPAC, 2001; 2002b).

## **POLICY RECOMMENDATIONS**

Medicare hospice payment rates were increased 5% across-the-board in 2001, but no special payment provisions have been implemented for low volume or rural hospices. The results of this study reinforce recommendations made by MedPAC and others that the Medicare program evaluate hospice payment rates to ensure that they are consistent with the costs of providing appropriate care, as soon as hospice cost data are available (MedPAC, 2002a; Huskamp, Buntin, Wang, and Newhouse, 2001). In particular, it will be very important to analyze rural-urban differences in hospice travel costs, and to consider adopting a patient-level outlier policy for high-cost hospice cases.

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