Rural Policy Brief

Volume Five, Number Five (PB2000-5) June, 2000 RUPRI Rural Health Panel

Calculating and Using the Area Wage Index of the Medicare Inpatient Hospital Prospective Payment System

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The "Rural Policy Brief" series is published by the Rural Policy Research Institute. RUPRI provides objective analysis and facilitates dialogue concerning public policy impacts on rural people and places.

The Federal Office of Rural Health Policy is supporting this analysis of the Medicare wage index. The Rural Health Panel of the Rural Policy Research Institute (RUPRI) receives continuing support from RUPRI, the result of a Congressional Special Grant, administered through the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture.

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INTRODUCTION

When Congress created the Medicare Prospective Payment System (PPS) for hospitals in 1983, it established separate standardized payment amounts (national average costs per Medicare case) for inpatient services provided by urban and rural hospitals. The urban standardized amount was 25.3 percent greater than the rural standardized amount. This variation in payment was challenged by rural health advocates, and Congress responded in 1989 by beginning a five-year phase-out of the urban-rural differential in PPS payment rates.

Elimination of the urban-rural differential removed the chief source of payment variation between urban and rural hospitals. Remaining variation in standardized payment rates is attributable to a geographic-based labor adjustment to the standardized amount called the *area wage index*. Despite several efforts by Congress and the Health Care Financing Administration (HCFA) since 1985 to improve the calculation of the wage index, it remains a subject of controversy. Critics claim that the wage index does not correctly reflect geographic differences in the price of hospital labor.

This policy brief explains how the area wage index is calculated and used, and identifies the major unresolved issues related to its calculation and use. Technical explanations of data collection and calculation of the index have been simplified to promote better understanding.

USING THE AREA WAGE INDEX

Before discussing the calculation of the wage index, a brief review of hospital inpatient PPS might be useful. Hospital payment rates under the Medicare Prospective Payment System are determined by adjusting the standardized amount for variations in the types of cases treated and area wage levels. Each Medicare case is assigned to one of 511 diagnostic related groups (DRGs). A weight is associated with each DRG that indicates the relative amount of resources used to treat a patient whose condition falls within the diagnostic grouping. The payment a hospital receives is determined by multiplying the DRG weight by the standardized amount.

Before the standardized amount is multiplied by the DRG weight, it is adjusted to reflect area wage levels. HCFA has constructed an

Computation of the Area Wage Index

Data for the wage index calculations are gathered from non-federal, short-term, acute care hospitals on Worksheet S-3, Parts II & III of the Medicare Cost Report (Form HCFA-2552-96). Hospitals provide information on their wages, employee benefits, and hours. The average hourly wages for each PPS hospital used in the FY 2000 AWI calculation are listed in the *Federal Register* (July 30, 1999) on Table 3C. There is currently a four-year gap between the data on which the wage index is calculated and the year to which the index is applied. The wage index for FY 2000 was calculated using cost report data from FY 1996.

HCFA sums the total gross allowable wages of PPS-eligible hospitals within a defined labor market area and divides them by the total paid hours for the area. The result is an average hourly wage for the labor market area. (Average hourly rates for FY 2000 are published in the *Federal Register* (July 30, 1999) for metropolitan areas (Table 4D) and rural areas (Table 4E)). The average hourly rate for a defined labor market area is divided by the national average hourly wage (calculated by dividing total gross allowable wages for all PPS-eligible hospitals in the country by total paid hours). The result of this calculation is the area wage index for a defined labor market area.

The preceding is a simplified explanation of the method of calculating area wage indices. Issues such as geographic reclassification of specific hospitals, exclusion of audit outliers, and phase-out plans for certain job titles add steps to the calculation of actual area wage indices.

area wage index (AWI) for each urban and rural labor market. The index expresses the relationship between the average hospital wages in an area and the national average hospital wage as a ratio. (See the sidebar for an explanation of how the wage index is calculated.) For federal Fiscal Year 2000, AWI values range from a high of 1.5095 in Oakland, California, to a low of 0.7236 in rural Arkansas.

COMPONENTS OF THE HOSPITAL WAGE INDEX

The relative value of the wage index and its impact on payment are determined by three factors: 1) the percent of the standardized amount associated with labor; 2) the assignment of hospitals to labor market areas; and 3) the occupations used to calculate total hospital wages.

1) The Proportion of Labor Costs.

The standardized amount is divided into two parts, a labor-related portion, which accounts for approximately 71 percent of the total standardized amount, and a non-labor related portion. For every ten point difference (i.e., 0.1000) in the AWI, the standardized amount varies by approximately 7.1 percent. The effect of the differences in AWIs on reimbursement can be illustrated by the most extreme example: If hospitals in rural Arkansas and Oakland, California, treat patients with the same DRG, the rural Arkansas hospital will receive a payment from Medicare that is 41 percent less than the Oakland hospital. (See Table 1 for an example of the standardized rate calculation.) The 71 percent of the total standardized amount attributable to labor costs is based on a national average. The actual proportion of labor costs to total costs will vary from hospital to hospital.

2) Defining Labor Market Area

HCFA uses the Office of Management and Budget's definition of metropolitan areas (MAs) to designate urban areas. All areas outside of MAs are designated rural areas. HCFA calculates a separate AWI for each MA. All rural areas within a state are assigned to the same labor market for calculating the rural AWI. The labor market definitions currently used by HCFA may not adequately reflect variations in relative labor costs among hospitals. Two hospitals just across state borders from each other may be truly in the same labor market, but under the labor market area definitions currently in

use, they are assigned to different labor markets. Also, two rural hospitals within the same state that are not actually in the same labor market are assigned to the same labor market by current definitions. Two examples illustrate the issue.

Rural hospitals in Washington have an area wage index of 1.0446 and rural hospitals in neighboring Oregon have a wage index of 0.9873. Both states border Idaho, whose rural hospitals have an area wage index of only 0.8651. A hospital in rural Idaho would receive 12.3 percent less than a hospital in rural Washington for treating a patient with the same DRG and 8.8 percent less than a rural hospital in Oregon (see Table 1), even though the three hospitals are, arguably, in the same labor market and compete with each other for employees. This is an example of differences in payment that occur in some cases *across labor market area boundaries* using the current definitions of labor market areas.

A single, statewide rural labor market may be *too large in many states to recognize differences among hospitals* in the amounts they pay for labor. For example, HCFA considers the hospitals in Rio Grande City and Perryton, Texas, to be in the same labor market, even though they are more than 700 miles apart. While rural hospitals within other states are closer together than the two used in this example, some of them may be in different labor markets. Labor prices within rural areas of a state may vary according to a host of characteristics that influence the wages paid to employees. For example, wage rates may be influenced by the predominant industry of an area (e.g., agriculture versus tourism) and the level of competition for employees (e.g., proximity to other hospitals). Wage indices based on the average labor costs of hospitals in large market areas may not account adequately for variations in the amounts hospitals pay their employees.

Congress has addressed some of these labor market area definition issues by creating the Medicare Geographic Classification Review Board to evaluate and grant hospital requests for reclassification of their wage index from one labor market area to another.

3) Occupations Used to Calculate Total Wages

As detailed in the box on page 2, the AWI is based on the average hourly salary of a labor market, calculated from the total salaries and hours of all personnel. Accordingly, higher priced personnel will drive up the average hourly salary. Therefore, the *mix of occupations* employed by hospitals, as well as the *prevailing wage rate,* will influence the wage index and, thereby, Medicare payment.

A simplified example of the effect of occupational mix on the area wage index is presented in Table 2. In this example, hospitals employ only two occupational classes: registered nurses and nursing assistants. The salaries paid to registered nurses and nursing assistants are the same in both labor markets, but the mix is different. In the “high” occupational mix wage area, 80 percent of the employees are registered nurses, and in the “low” occupational mix wage area, only 50 percent of the employees are registered nurses. Although the amounts paid to the same types of hospital employees are identical in these two labor markets, the difference in occupational mix yields a different wage index: the “high” occupational mix area wage index is 1.0182 and the “low” occupational mix area wage index is 0.9091. Assuming a standardized amount of $3,889, the difference in payment per case due to the occupational mix is $301.66.

Obviously, the inclusion in the wage index calculation of high-priced occupational titles that tend to

be employed disproportionately in urban areas, such as teaching physicians, will skew the wage index values in favor of urban hospitals. If the *relative cost of labor* is higher in urban labor market areas than in rural ones, some would ague, then urban hospitals should receive higher labor-related payments. However, if urban hospitals are compensated for their higher labor expenditures elsewhere by graduate medical education or Part A payments, then they receive a double payment. HCFA acknowledges that double payments exist for teaching physicians, residents, and CRNAs and beginning in fiscal year 2000 it began a five-year transition to eliminate wage and hour data for these positions from the wage index calculation (*Federal Register,* July 30, 1999).

Critics argue that the wage index should measure only the *relative price of labor*. In other words, the wage index should measure geographic differences in the salary scales of hospitals rather than the average salaries paid by hospitals. Under existing policy, hospitals report total compensation and total hours to HCFA without regard to occupational status. HCFA then calculates an average wage for an area using these data. The current wage index, therefore, reflects variations in the price *and* occupational mix of labor.

Research conducted a decade ago showed that failure to adjust for occupational mix over-compensated large urban hospitals that employed more professional employees. Pope (1989) found that the average difference between the 1988 PPS wage index and a fixed-occupation-mix index was approximately two percent, but that occupational-mix distortions are substantially larger than average for a small proportion of labor market areas. For example, he found that hospitals in the rural south were substantially under-compensated. In 1990, the Prospective Payment Assessment Commission (1991) found that eliminating variation due to occupational-mix would increase wage index values in more than 75 percent of rural areas. The average rate of increase in rural areas was 1.8 percent, however, wage index increases in some areas were three to six times higher than the average .

Over time, HCFA has made several efforts to improve the wage index by changing the mix of occupational titles included in the calculation. As mentioned previously, beginning in FY 2000 it began to phase-out teaching physicians, residents, and CRNAs from the calculation. Examples of other occupational mix changes include: allowing contracted physicians, as well as employed physicians, to be added to the mix[1] and inclusion in the mix of the administrative salaries for certain positions hired under management contracts (e.g., hospital chief executive officer, chief operating officer, chief financial officer, and nursing administrator). No studies of the effect of occupational mix on the wage index and PPS payments have been performed since these modifications were made.

ISSUES RELATED TO THE USE OF THE AREA WAGE INDEX

The Balanced Budget Act of 1997 created new Medicare prospective payment systems for skilled nursing facilities and home health agencies. Congress decided to use the *inpatient hospital wage index* to adjust the labor-related portion of standardized amounts paid to skilled nursing facilities and home health agencies. Critics argue that it is inappropriate to use the hospital wage index for these other providers, because the mix of employees and the wages paid to them in skilled nursing facilities and home health

[1] Hospitals in some states are prohibited from employing physicians by corporate practice of medicine statutes. Hospitals in these states were unable to include physician Part A expenses because they were incurred under contract rather than directly. Beginning in FY 1999, contract physician costs were included in the wage index.

agencies differ widely from those of hospitals.

Rural hospitals that have diversified into skilled nursing and home health have another concern. If the hospital wage index does indeed under-compensate rural hospitals, extending its use to skilled nursing facilities and home health agencies will exacerbate the under-payment. The expanded use of the hospital wage index could affect a substantial number of rural hospitals. In 1996, one-third of rural hospitals provided nursing home care in distinct-part units, and approximately two-thirds provided home health services. Twenty-one percent of rural hospitals provided both nursing home and home health services (Moscovice, Wellever, and Stensland, 1999). The cumulative effect of the use of the hospital wage index on diversified providers has not been measured.

SUMMARY

What influence does occupational mix have on payments? What would be the distributional effect on rural hospitals of redefining labor market areas? What would be the combined effect on payments and Medicare margins of implementing both a change in labor market area definition and adjustments for occupational mix? What impact does the use of the hospital wage index for skilled nursing facilities and home health agencies have on the financial condition of diversified rural hospitals? These are empirical question that await analysis. They are not, however, simple questions that can be answered quickly.

While we wait for answers, the policy debate continues. A future policy brief will attempt to establish a context for the debate by summarizing the positions of participants, reviewing the evaluation and implementation of wage index enhancements, and suggesting future wage index issues. Ideally, an improved understanding of issues related to the calculation and uses of the area wage index will focus the policy debate and sharpen the research agenda.

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TABLE 1
Adjusted Standardized Amounts for Example Labor Market Areas
Using Fiscal Year 2000 National Adjusted Operating Standardized Amounts and Area Wage Indices

	Labor-related Portion of Standardized Amount	Area Wage Index	Geographically Adjusted Labor-related Portion of Standardized Amount (col. 1 x col. 2)	Nonlabor-related Portion of Standardized Amount	Standardized Amount (col. 3 + col. 4)
	1	2	3	4	5
Labor Market Area					
Oakland, CA	$2,764.70	1.5095	$4,173.31	$1,123.76	$5,297.07
Arkansas, rural	$2,764.70	0.7236	$2,000.54	$1,123.76	$3,124.30
Washington, rural	$2,764.70	1.0446	$2,888.01	$1,123.76	$4,011.77
Oregon, rural	$2,764.70	0.9873	$2,729.59	$1,123.76	$3,853.35
Idaho, rural	$2,764.70	0.8651	$2,391.74	$1,123.76	$3,515.50

Source: Health Care Financing Administration, Changes to the Hospital Inpatient Prospective Payment System and Fiscal Year 2000 Rates; Final Rule. *Federal Register,* Vol. 64, No. 146, July 30, 1999, 41490-41538.

TABLE 2
Example of the Effect of Occupational Mix on PPS Payments

	"High" Occupational Mix Wage Area	"Low" Occupational Mix Wage Area
Registered Nurse hourly wage	$12.00	$12.00
Nursing Assistant hourly wage	$8.00	$8.00
Registered Nurse percent of workforce	80%	50%
Nursing Assistant percent of workforce	20%	50%
Average area wage	$11.20	$10.00
Average national wage	$11.00	$11.00
Area wage index (average area wage / average national wage)	1.0182	0.9091
Standardized amount (total)	$3,889.00	$3,889.00
(Labor-related portion)	$2,765.00	$2,765.00
(Nonlabor-related portion)	$1,124.00	$1,124.00
Adjusted standardized amount = (labor-related potion x AWI) + nonlabor-related portion	$3,939.32	$3,637.66
Payment differential due to occupational mix		$301.66