

CHAPTER 4

**Developing input-price indexes for
all health care settings**

R E C O M M E N D A T I O N

To implement an occupation-mix adjusted wage index in fiscal year 2005, the Secretary should collect data on wage rates by occupation in the fiscal year 2002 Medicare cost reports. Hospital-specific wage rates for each occupation should be supplemented by data on the mix of occupations for each provider type. The Secretary also should continue to improve the accuracy of the wage index by investigating differences in wages across areas for each type of provider and in the substitution of one occupation for another.

***YES: 14 • NO: 0 • NOT VOTING: 0 • ABSENT: 2**

***COMMISSIONERS' VOTING RESULTS**

Developing input-price indexes for all health care settings

Many of Medicare's prospective payment systems rely on the hospital wage index to adjust national average payment rates to reflect local market prices for labor and other inputs. However, the hospital wage index does not accurately reflect local market wage levels for two reasons. First, because the wage index is based on aggregate hospital wage data for each area, it combines differences in wage rates with differences in the mix of occupations, overstating wage levels in some markets and understating them in others. Second, although wage index values are calculated for 374 labor market areas, the areas often include two or more distinct labor markets. To address these problems, the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 required the Secretary to collect data on wage rates by occupation. The data will be used to construct a new wage index for application beginning October 1, 2004. The Commission recommends methods for collecting occupation-specific data for improving input-price indexes used in Medicare's payment systems as well as providing a basis for improving the labor market definitions.

In this chapter

- Current wage index policies
 - Limitations in the wage index
 - Strategies for improving the wage index
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Medicare uses separate payment systems to compensate each type of provider for furnishing covered services to beneficiaries. To ensure beneficiaries' access to high-quality care in the most appropriate clinical settings under the Medicare+Choice and traditional fee-for-service programs, Medicare's payment rates must approximate the costs efficient plans and providers would incur in furnishing services under the conditions of each local health care market (see Chapter 1). Consequently, Medicare's payment rates for services in each setting should accurately reflect the effects on providers' costs of local factors that are beyond their control.

Two factors account for most of the variation in providers' unit costs: differences in the mix of outputs they produce—often called their case mix—and variation in the level of market prices for labor and other inputs. Case-mix measurement systems are intended to capture differences in providers' expected costs associated with differences in their mixes of services, cases, or beneficiaries. Case-mix payment adjustments thus account for expected differences among providers in the quantity and mix of labor and other resources required to produce care, given their case mix.

Because case-mix payment adjustments account for expected differences in the quantity and mix of resources, the input-price adjustments in Medicare's payment systems should account only for differences in the market prices for these resources. Providers have some control over the mix and quantity of employees used, consistent with the local supply of nurses and other occupations and the kinds of services delivered.¹ They have limited ability, however, to affect market levels of input prices.

All of the prospective payment systems (PPSs) for facilities—hospitals, ambulatory surgery centers, skilled nursing facilities, rehabilitation facilities, psychiatric facilities, and long-term

hospitals—include (or will include) input-price adjustments that raise or lower national base payment rates to reflect local market wage levels.

Currently, the Health Care Financing Administration (HCFA) uses a single measure of geographic differences in area wage levels—the hospital wage index—to adjust the payment rates for services furnished in all facility settings.² There are significant issues regarding the current wage index: first, it is inaccurate because it is based on hospitals' total labor costs in each market area, reflecting differences in wage rates for each occupation and differences in the mix of occupations employed; second, it is inaccurate for skilled nursing facilities, home health agencies and others because they employ different mixes of occupations than do hospitals; and third, problems with the labor market definitions and the age of the data used for the wage index affect the accuracy of payment across all types of facility services.

Current wage index policies

Congress has required input price adjustments for payment for almost all facility services as well as physician payment. To implement such adjustments, HCFA has developed methods for collecting data and calculating the wage index. The Congress has required HCFA to define labor market areas using the Office of Management and Budget's metropolitan and non-metropolitan areas. Congress has addressed deficiencies in the use of these areas to describe health care markets for labor by allowing hospitals to be reassigned from one geographic area to another.

Source and content of hospital wage data

HCFA collects compensation data—wages, salaries, employee benefits,

contract and home-office labor costs, and related paid hours of employment—through the annual cost reports filed by hospitals and skilled nursing facilities. At present, the agency uses only data from hospitals subject to the hospital inpatient PPS to calculate the wage index. The index is recalculated annually, using the most recent data available. Cost report data from hospital reporting periods beginning during fiscal year (FY) 1997 were used to calculate the wage index for payments in FY 2001.

In their cost reports, hospitals provide information regarding total compensation and paid hours for three groups of organizational units:

- all inpatient and outpatient departments;
- skilled nursing facility (SNF) subproviders, if any; and
- other subproviders, including rehabilitation and psychiatric units, home health agencies (HHAs), and other units excluded from the inpatient PPS.

Hospitals also report total compensation data for four groups of workers:

- all workers;
- physicians performing work related to Part A services (serving in an administrative capacity, such as a medical director position, performing quality control functions);
- teaching physicians and residents (these data are collected through a special survey of teaching hospitals); and
- certified registered nurse anesthetists (CRNAs).

After extensive review and editing by its central office staff and hospitals' fiscal intermediaries, HCFA had viable FY 1997 data for almost all PPS hospitals.

1 Providers' choices also may be constrained by law and regulation. For example, California is in the process of establishing minimum nurse staffing ratios for hospitals and a number of states have specific staffing ratios for nursing homes.

2 For Medicare+Choice plans, HCFA uses the hospital wage index and the geographic practice cost indexes from the physician fee schedule to adjust the national portion of the blended national/county capitation rate.

Constructing the hospital wage index

HCFA calculates hospital wage index values for 325 urban and 49 rural labor market areas.³ Urban labor markets are based on the definitions of metropolitan statistical areas (MSAs) and New England county metropolitan areas issued by the U.S. Office of Management and Budget. Statewide rural labor markets are defined as the collection of all non-MSA counties in each state.

Constructing area wage index values involves five steps:

- Data for individual hospitals are adjusted to exclude compensation and hours for workers in non-acute units and hospital employees performing general and administrative functions related to the non-acute units. In addition, HCFA is gradually (over five years) removing from the wage index compensation for teaching physicians, residents, and CRNAs.⁴
- Each hospital's data are adjusted to reflect a common time period. Because hospitals' cost report data reflect varying hospital-specific fiscal year end dates, HCFA adjusts each facility's wage data by an inflation factor based on the national employment cost index for hospital workers from the Bureau of Labor Statistics (BLS). This adjustment inflates or deflates each hospital's total wages to reflect the mid-point of FY 1997 (March 30, 1997).
- Each hospital is assigned to the labor market to which it has been reclassified by law or by actions of the Medicare Geographic Classification Review Board.
- The average hourly wage is calculated for each labor market area and for the nation. The sum of

adjusted total wages for all hospitals in the area is divided by the sum of their adjusted total hours. HCFA also calculates a comparable aggregate national average hourly wage based on the simple sums of adjusted total wages and hours for all hospitals in all labor market areas.

- The wage index value for each area is the ratio of the average hourly wage in the area to the national average hourly wage.

Hospital reclassifications and changes in the wage index

To address inequities in labor market definitions, particularly for rural hospitals located near the edges of urban areas, Medicare policy allows for reclassification from one area to another. Under the law, hospitals may request reclassification to an adjacent labor market area if they meet certain criteria. Generally, hospitals must meet two conditions:

- They must be within 15 miles from the border of the area to which they seek to be reassigned.
- Their average hourly wage rate must exceed 106 percent of the average hourly wage in their actual labor market location and 82 percent (rural hospitals) or 84 percent (urban hospitals) of the average wage rate in the adjacent area.

In FY 2001, 490 hospitals (a little less than 10 percent of hospitals receiving PPS payments) are reclassified for the wage index because they met these or related criteria.

HCFA must apply complex statutory rules to recalculate the aggregate average hourly wage rates for labor market areas affected by reclassification. These rules determine whether the reclassified hospitals' wage data are included in the

calculation of the aggregate wage rate for the area they were reassigned to and the area they were reassigned from.

When hospitals are reclassified, the aggregate hourly wage rate declines in the area they were reclassified from (because the reclassified hospitals' wage rates must be greater than 106 percent of the aggregate average wage for their area before reclassification). To protect the remaining hospitals in rural labor markets, the aggregate hourly wage rate (and hence the wage index) is not permitted to decrease as a result of reclassification. The wage index in an urban area that loses hospitals by reclassification is allowed to decrease. Urban hospitals are protected to a limited degree, however, by a provision in the law that establishes an urban wage index floor at the statewide rural wage index for their state. In FY 2001, this provision affects the wage indexes for 193 hospitals located in 34 MSAs.

Hospitals located in areas affected by the entry of reclassified hospitals are protected from significant declines in the wage index. When reclassification would reduce the index by more than 1 percent, the hospitals actually located in the area get a wage index calculated as if no reclassification had occurred; hospitals reassigned into the area receive a wage index that reflects aggregate average wages after including their data.

As a result of these policies and annual updates of the data, the wage index values for some labor market areas and for individual hospitals may change substantially from one year to the next.⁵ For FY 2001, HCFA estimates that changes in the underlying data—without reclassification—would have increased the wage index by more than 5 percent in 21 labor market areas and decreased the wage index by more than 5 percent in 15 labor markets. However, these large changes would affect only about 200 urban hospitals and 2 rural hospitals, suggesting

3 Six urban labor markets and one rural market are in Puerto Rico; wage indexes are not calculated for other outlying areas, such as Guam and the U.S. Virgin Islands.

4 The rationale for this change is that services furnished by all three groups are reimbursed outside of the inpatient PPS. Thus, their compensation is not included in the cost base for PPS payments and should be excluded from the wage index. To execute the phase out, HCFA calculates separate wage indexes with and without their compensation, which are currently blended together in fixed proportions (60 percent with and 40 percent without in FY 2001).

5 In the BIPA, Congress has ameliorated the effect of changes in reclassification by making reclassifications effective for three years.

that wage index volatility resulting from new data may be largely concentrated in smaller urban labor markets.

Hospital reclassifications often have significant effects on PPS payments for hospitals that are granted (or lose) reassignment to another area. For example, 114 rural hospitals are newly reclassified to urban or other rural areas in FY 2001. These hospitals are expected to receive a 4.9 percent increase in PPS payments per case because of reclassification alone. The comparable increase for the 35 newly reclassified urban hospitals is 4.7 percent.

Changes in the wage index from reclassification cannot affect the overall amount of PPS payments to hospitals, so the increase in payments from reclassification is subtracted from the total payments for all hospitals. The downward adjustment in payments resulting from this budget neutrality adjustment in FY 2001 is -0.5 percent.

Limitations in the wage index

Analysts have criticized the wage index for failing to accurately measure differences in hospital wage rates across market areas for three reasons:

- it uses aggregate wages and hours for each labor market area, combining differences in wage rates with differences among areas in the occupational mix of employment,
- the labor market areas are frequently too large to represent labor markets accurately, and
- the wage patterns it reflects are four years old.

In addition, it is unlikely that the index accurately reflects differences in wage rates across market areas for skilled nursing facilities, home health agencies and other provider types.

Differences in occupational mix

The objective of the adjuster is to account for differences beyond providers' control (local market prices) and not for geographic differences associated with case mix or management decisions (the mix of labor). Thus, the use of aggregate wages may distort the wage index by elevating the average wage per hour where hospitals employ a costly mix of labor and depressing the average wage where hospitals employ a relatively inexpensive mix. These inaccuracies may have substantial effects on payment accuracy and subsequently on payment distribution among hospitals in the inpatient PPS. Moreover, the same payment accuracy (and distribution) problems are likely to affect other payment systems in which the hospital wage index is used, such as those for services furnished in SNFs, HHAs, outpatient departments, rehabilitation facilities, and ambulatory surgery centers (ASCs).

If relative wage rates among occupations are similar across market areas, the wage index measures true differences in market wage levels only if occupational mix is constant across markets. One study used data from the BLS hospital industry wage survey (with occupation-specific data for 23 large MSAs) and the American Hospital Association's (AHA) annual survey to calculate a fixed occupational-mix index for all MSAs and statewide rural areas (Pope 1989). After excluding physicians and residents, Pope found that an index that measured differences in the complexity of occupations employed by hospitals ranged from 0.959 for the 5th percentile to 1.032 for the 95th percentile. Because the wage index is applied to 71 percent of PPS inpatient operating payments, this difference implies that hospitals in areas with the most costly occupational mix are overpaid by 2.3 percent (3.2 percent times 71 percent), while those with the least costly occupational mix are underpaid by 2.9

percent.⁶ Moreover, if the wage index was adjusted to remove occupational-mix differences, the values for many urban areas (which tend to employ a more costly mix of employees) would fall while those for many small urban and rural markets would rise.⁷

Labor market size

MSAs and statewide rural areas are frequently too large to capture homogeneous labor markets for health care workers. Earlier research (ProPAC 1990) showed systematic differences in hospital wage levels within many urban and rural labor market areas. Hospitals in outlying suburban counties generally appear to face lower market wage rates than those located in the central core of the same MSA. Similarly, hospitals located in outlying rural areas appear to face lower wage rates than those located in counties adjacent to MSAs.

Other research, based on time-series and cross-sectional data for 1990–1997, suggests that these differences are still substantial (Dalton et al. 2000). The research indicates that many MSAs have two submarkets with distinct wage rates. Among statewide rural areas, the study found three distinct sub-markets within each state-wide rural area, related to the size of the urbanized population in the county (rather than whether or not the county is adjacent to an urban area).

Research on labor market definitions has faced barriers. The lack of occupation-specific wage data makes it difficult to determine whether observed differences in hourly wage rates among submarkets within MSAs and statewide rural areas represent true differences in wage levels or differences in the mix of occupations employed by hospitals, reflecting variation in the range of services, mission or other hospital characteristics. Thus, researchers often have been stymied in evaluating potential alternative labor market definitions by their inability to separate differences in market wage levels from differences in occupational mix.

6 Hospitals' PPS capital payments also are affected because the geographic adjustment factor used to adjust the federal capital rate is based on the wage index.

7 The Prospective Payment Assessment Commission (ProPAC 1990) used data from the AHA survey and the U.S. Census to study differences in the mix of occupations across labor market areas. This study found occupational-mix differences similar to those Pope presented.

Refinement of labor market areas is dependent on the availability of occupation-specific wage data. Additionally, beginning in 2003, the Census Bureau will change the MSAs based on the results of the 2000 census. Refining the definitions of market areas should await these events.

Timeliness of wage data

By the time the wage index is applied to adjust payments, the underlying wage data are four years old. Although the age of the data has often been cited as an important problem, very little research is available on this issue.

To test the question of whether the four-year data lag compromises the accuracy of the wage index, Dalton (2000) compared the performance of two wage indexes in accounting for the variation in hospitals' current hourly wage rates. One index (the old index), based on four-year-old data, was similar to that now used to adjust PPS payments in the current period. The other index (the current period index) was based on current hourly wage data.⁸ Using regression analysis, Dalton determined the percent of hourly wage variation explained by the two indexes for each year from 1990 through 1996. Although the explanatory power of the old index was always slightly lower than that of the current period index, after 1992 their explanatory power was nearly equal. These results suggest that relative wage levels across geographic areas do not change much over time. The availability of data by occupation will allow a more thorough investigation of this issue in the future.

Strategies for improving the wage index

MedPAC has supported refining the hospital wage index to eliminate differences attributable to occupational mix. The BIPA requires the Secretary to collect data at least once every three years on the mix of hospital employees and use

these data to adjust the hospital wage index beginning October 1, 2004. Improvements in labor market definitions also depend on the availability of these data. To implement the BIPA requirement, the Secretary will need to decide on data content and collection methods.

Collecting data from each type of provider/setting

Accurately measuring geographic variation in wage rates requires two types of information: wage rates for a representative selection of the occupational categories employed by all types of health care providers in all labor market areas, and (fixed) national labor shares for the same occupational categories for each type of provider. One issue is whether to collect these data from all providers. Collecting hospital data would be sufficient if hospitals generally dominate the demand side of the labor market in most areas and other provider types represent a small share of the total market demand for workers in the specific occupations.

Even if hospitals do not dominate the market and other providers pay higher or lower wage rates than do hospitals for the same occupations, the differences between types of providers may be fairly constant across areas. That is, the difference in nurses' wages between San Francisco and West Virginia might be the same for nurses employed by nursing homes and those employed by hospitals. If this is the case, accurate wage indexes could be built using only hospital wage rate data.

Data on the mix of labor hours for each occupation, however, should be collected for each provider type. A report on wage rates in skilled nursing facilities (ProPAC 1992) suggested that nursing-facility data may be important because of the differential impact of state laws and regulations on nursing home occupational mix. Differing state standards for nursing staff time in SNFs, for example, may require varying proportions of nurses among states. Finally, the staffing used in

each type of provider will differ because of the nature of the care delivered by the facilities (acute, post-acute and ambulatory).

The number of occupations needed depends on several factors, besides the cost of collection. One is how much occupational mix varies among providers within a provider type. If occupational mix varies little, geographic differences in wage rates can be captured accurately by measuring wage rates for only a few prominent categories. Similarly, if wage relatives across occupational categories are similar among market areas, accurate wage indexes can be obtained based on a few occupational categories.

Although much of the hospital work force is employed in health-related occupations, a substantial portion consists of general occupations, such as accountants, administrative staff, housekeepers, dietary workers, and other categories regularly employed outside the health industry. Wage rates may differ across areas in a different way for health-related occupations than for occupations employed in the general economy.

Finally, to the extent that the wage ratios between occupations differ across market areas, providers in different markets have financial incentives to substitute one kind of labor for another. Thus, the occupations selected should include those that exhibit different geographic patterns from other occupations. Collecting the right data may ensure measurement accuracy even if labor substitution occurs, but only if the wage rates for the involved labor categories are included.

Method of data collection

Two strategies exist for collecting wage data. HCFA could contract with the BLS to conduct sample surveys of health care providers in all labor market areas, or the same information could be collected through the annual cost reports providers submit to HCFA.

The BLS approach, while better conceptually, may not be feasible for collecting comprehensive data. All BLS

⁸ If the geographic pattern of wage rates across market areas changed substantially over the four-year interim period, the old index should account for much less of the variation in current hourly wage rates than the current index.

surveys are voluntary; conducting a mandatory survey for HCFA might jeopardize health providers' willingness to cooperate in the agency's other survey efforts. Moreover, prior experience indicates that a voluntary survey would likely have a poor response rate. Although a BLS survey may not work for collecting wage rate information, it could be used to collect information on the mix of occupations employed by provider type.

Collecting data through the annual provider cost reports is more feasible. Cost reports are required for all facilities (except ASCs) and their accuracy is attested in writing under penalty of law by each provider. HCFA already has specific editing, auditing, and educational processes for ensuring accuracy of the current wage data in the cost reports. To meet the congressional deadline for implementing occupational mix adjustment, the FY 2002 wage data collection worksheet (S-3) in the cost report would have to be modified to add lines for wage rates and hours for the selected occupations. To help ensure accuracy as well as diminish the burden on hospitals and others, the instructions should be provided to hospitals and others prior to October 2001.

RECOMMENDATION

To implement an occupation-mix adjusted wage index in fiscal year 2005, the Secretary should collect data on wage rates by occupation in the fiscal year 2002 Medicare cost reports. Hospital-specific wage rates for each occupation should be supplemented by data on the mix of occupations for each provider type. The Secretary also should continue to improve the accuracy of the wage index by investigating differences in wages across areas for each type of provider and in the substitution of one occupation for another.

Collecting data for the improved wage index will involve several issues. First, the Commission recommends using hospital-specific data on wage rates for each occupation to minimize the administrative burden for HCFA and providers. Second, HCFA should identify the minimum set of occupational categories that could be used for all types of providers, although the occupational mix categories should not be so broad that differences in skill mix reflecting training and experience (which substantially affect wage rates) are lost.

The Secretary should continue to improve the wage index by investigating whether hospital data are adequate to capture geographic differences in wage rates for other providers. For instance, differences in unionization might create small differences in the relative wage rates across areas for nursing homes compared with those for hospitals.

Finally, the Secretary should examine whether including variation in the mix of occupations by area is always inappropriate. If the gap between registered nurse and aide wages differs across market areas, for instance, hospital managers may react by changing their occupational mix to the most efficient for that area. The availability of occupation-specific data will make it possible to examine whether differences in occupational mix are attributable to local market conditions that affect hospitals' willingness to substitute one type of employee for another based on cost. Pope suggests that "unless the degree of substitution is large, the (occupation-mix-adjusted wage) index is close to the true, substitution-adjusted wage index." ■

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