

Hospital price inflation: what does the new PPI tell us?

*To expand coverage of Producer Price Indexes
in the services industry,
the Bureau has designed a survey
to study inflation in the hospital industry*

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Since 1983, health care spending has increased dramatically in the United States. According to the Health Care Financing Administration, personal health care expenditures made up 9.3 percent of gross domestic product in 1983, but 10 years later, such expenditures climbed to 12.3 percent of gross domestic product.¹ This increasing share of gross domestic product warrants a closer look into pricing and inflation measures in the health care industry. To accomplish this, the Bureau of Labor Statistics analyzed the hospital care industry because it represents one-third of personal health care expenditures—the largest expenditure category.

As part of an overall strategy designed to expand service industry coverage in the Producer Price Index (PPI), the Bureau of Labor Statistics began a survey design study for the hospital industry in 1989. Preliminary research included extensive discussions with representatives from more than 20 hospital establishments, the Health Care Financing Administration, the BLS Consumer Price Index (CPI) program, and the American Hospital Association. Sample collection began in January 1992, and by the following year, the PPI for the hospital industry was published. Other hospital industry price statistics have been available for some time. In fact, BLS has published the CPI for hospitals and related services since 1977. Also, the Health Care Financing Administration publishes a quarterly input price index to provide measures for Congress to adjust Medicare program reimbursements to health care providers.

This article profiles the new PPI hospital industry price indexes. It highlights the survey sample and design, analyzes hospital price inflation as measured by the PPI, summarizes the results, and briefly compares the hospital industry measures of the PPI with those of the CPI.

Scope of the survey and sample

Producer Price Indexes measure average changes in prices received by domestic producers for their output. The entire marketed output of domestic producers is in scope for the Producer Price Index. Traditionally, most of the price index data published by the Producer Price Index is obtained through probability sampling of mining and manufacturing industries. However, over the last 6 years, data collection and price index publication has expanded to include more service industries.

Industry definition. According to the *Standard Industrial Classification Manual* (SIC Manual), inpatient medical care is provided in three separate industries: SIC 8062, general medical and surgical hospitals; SIC 8063, psychiatric hospitals; and SIC 8069, specialty hospitals, except psychiatric.² The majority of the hospital service revenues are accrued by general medical and surgical hospitals. Therefore, the remaining discussion will focus exclusively on SIC 8062. The PPI follows the SIC Manual definition for general medical and surgical hospitals (SIC 8062): establishments primarily engaged in providing general

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medical, surgical, and other hospital services. Such services range from providing room, board, and nursing services to the provision of highly specialized diagnostic, surgical, and therapeutic services. These establishments have an organized medical staff, inpatient beds, and equipment and facilities for providing complete health care. Convalescent homes with extended care facilities, sometimes referred to as convalescent hospitals, are classified in industry 8051. Associations or groups that limit their services to providing insurance coverage against hospitalization or medical costs are classified in insurance carriers (SIC major group 63).

Because the SIC Manual does not explicitly distinguish between hospitals with respect to ownership or control, Federal hospitals, such as those associated with the military, Veterans Administration, and the National Institutes of Health, also are included in the hospital industry. However, these establishments are excluded from the PPI sample of hospitals because there are no measurable economic transactions between hospital and patient at these Federal hospitals—services are rendered free to the patient from a budget allocated to a Federal entity.

Identifying output and repriceable service. Two approaches were considered before selecting a unit of output for the industry. The first was a very disaggregate point of view that would monitor price changes for specific supply items or services. For example, one might track price changes for a chest x-ray. This approach places little burden on the reporter. However, given the thousands of different supplies and services rendered in a hospital, achieving a representative price index for the industry's output may require a much larger sample size. In addition, the list price of a supply item, for example, valium, may be difficult to connect to an actual transaction containing discount information so critical for accurate price index measurement. Anecdotal evidence gathered during the early stages of the PPI's hospital index development suggested "cost shifting" is a common occurrence in hospital industry pricing. For example, the discrete service price of a chest x-ray might not be based on the actual costs of performing chest x-rays alone. The price also might contain a contribution to help pay for the hospital's new magnetic resonance imaging machine.

The second approach, which PPI analysts selected, contends that the consumption of health care services does not occur in piecemeal fashion. Hospitals admit patients seeking aid for real (or suspected) medical conditions. These establishments are not selling items such as prescription drugs separately. What is being sold is a *combination* of medical supplies, drugs, and ancillary services designed and administered by a trained medical staff. For an inpatient, the duration of these services coincides with the patient's length of stay. In the case of an outpatient, nominal hospital output is the total

revenue realized for medical supplies, drugs, and ancillary services accruing from a single hospital visit.

Next, analysts had to consider the custom nature of hospital services and its impact on data collection. While standard protocols exist for patient groups suffering common maladies, there really is no "cookbook approach;" each incident of hospital care is different. Every patient represents a unique combination of gender, age, life-style, sensitivity to drugs, allergies, medical history, genetics, mental attitude, immunity to infection, complicating secondary medical conditions, and so forth. Adding to the complex nature of patient differences, there are also philosophical differences within the medical community. Depending on the physician's personal experience, expertise, and preferences, many different combinations of inputs may be used to successfully treat seemingly identically diagnosed patients.

Therefore, actual treatment bundles, as represented by randomly selected patient bills, formed the model combinations of services and supplies tracked each month. These treatments may not be directly observed in subsequent months; however, the reporters constructed prices based on identical inputs. This technique removed any price variability resulting from a direct comparison of different patient bills.

The data. As in all PPI indexes, these hospital price indexes employed fixed base-period weights using 1987 industry revenue data from the U.S. Bureau of the Census. However, for SIC 8062, the census data does not support the development of value weights for the PPI taxonomy of hospital services. To fill this gap, frequency counts of diagnosis related groups³ were combined with medicare resource intensity values⁴ to distribute total industry revenue by diagnosis related group. These group values were summed according to major diagnostic categories to yield the weights shown in the right-hand column of table 1.

Although the vast majority of the revenue generated within the walls of a hospital comes from medically related services, there are some services provided (such as cafeteria services, laundry services, resident housing, gift shops, and so forth) that are not necessarily related to the well-being of the hospital patient. Price movements in this category are captured under the index for "other receipts." (See table 1.)

The sample. Ultimately, 358 hospitals were selected to represent the hospital industry. The number of price quotes requested of each sampled hospital ranged from 6 to 10, depending on the urban or rural designation and size of the hospital. The total potential number of price quotations was 2,983. (See appendix for sampling strategy and results. Table A-1 presents data by hospital location; urban or rural and by size. The actual collection results from PPI sampled hospitals along with the average for the overall PPI are presented in table A-

Table 1. PPI taxonomy for general medical and surgical hospitals, by industry code and revenue generated

[Base year = December 1992]

Industry product code	Index title	Estimated 1987 revenue (In thousands)
8062	General medical and surgical hospitals	\$171,144,879
8062P	Primary services	168,404,185
80621	Inpatient treatments	131,043,280
8062131	Medicare patients	41,684,243
806213101	All medical diagnosis related groups	22,198,315
806213103	All surgical diagnosis related groups	19,485,928
8062151	Medicaid patients	13,445,457
8062171	All other patients	75,913,580
806217101	Diseases and disorders of the nervous system	5,158,529
806217102	Diseases and disorders of the eye	349,449
806217103	Diseases and disorders of the ear, nose, mouth, and throat	1,347,874
806217104	Diseases and disorders of the respiratory system	7,255,222
806217105	Diseases and disorders of the circulatory system	14,011,231
806217106	Diseases and disorders of the digestive system	8,669,657
806217107	Diseases and disorders of the hepatobiliary system and pancreas	3,194,960
806217108	Diseases and disorders of the musculoskeletal system and connective tissue	8,469,972
806217109	Diseases and disorders of the skin, subcutaneous tissue and breast	2,030,131
806217111	Endocrine, nutritional, and metabolic diseases and disorders	1,897,007
806217112	Diseases and disorders of the kidney and urinary tract	2,895,432
806217113	Diseases and disorders of the male reproductive system	1,048,346
806217114	Diseases and disorders of the female reproductive system	2,945,354
806217115	Pregnancy, childbirth, and puerperium	4,326,508
806217116	Newborns and other neonates with conditions originating in the perinatal period	4,842,361
806217117	Diseases and disorders of the blood and blood forming organs and immunological disorders	615,695
806217118	Myeloproliferative diseases and disorders and poorly differentiated neoplasms	1,264,672
806217119	Infectious and parasitic diseases (systemic or unspecified sites)	1,480,997
806217121	Mental diseases and disorders	1,584,199
806217122	Alcohol/drug use and alcohol/drug induced organic mental disorders	66,562
806217123	Injuries, poisonings and toxic effect of drugs	1,480,997
806217124	Burns	232,966
806217125	Factors influencing health status and other contacts with health services	765,459
80623	Outpatient treatments	35,360,885
8062311	Medicare patients	4,742,519
8062331	Medicaid patients	2,362,939
8062351	All other patients	28,255,427
8062SM	Other receipts	4,740,714

2.) From the actual collection, PPI analysts also tabulated out-of-business, out-of-scope, and misclassified categories which were a result of errors in sampling frames. From these tabulations, analysts were able to derive the rate of productive data collection, which was somewhat higher for the hospitals index than for the PPI as a whole.

Types of prices

BLS consulted with industry representatives on possible pricing approaches before, during, and after a test of the chosen methodology. All sources agreed that tracking price change accurately is not possible using list prices alone. List prices frequently do not represent the actual payments received, that is, the transaction price received, by health care providers for services rendered. Of course, this is not to say "nobody pays retail." Paying the entire charged amount on the bill does occur. Thus, list prices are net transaction prices in some cases.

Where discounts, surcharges, or other price-setting mechanisms affected the hospital bills randomly selected during data collection visits, the PPI captured and monitored those "adjustments to price" through time. Consequently, many different forms of reimbursement (that is, price types) were en-

Table 2. Percent distribution of collected price data by type of price

[Base year = December 1992]

Price type	Total	Inpatients	Outpatients
Total	100.0	100.0	100.0
List	45.4	43.4	64.6
List less adjustments	19.4	18.6	27.3
Case rate	20.7	22.1	7.1
Per diem	14.1	15.4	0
Capitation4	.4	1.0

NOTE: Total may not sum to 100.0 due to rounding.

countered. Table 2 illustrates the mix of price types initially collected in the PPI for hospitals. Note that 45 percent of the collected data were list prices. This category includes patients that pay the list price with or without insurance assistance.

Another common type of price is a list price less adjustments. This price type includes a myriad of contract terms, all based on the list price minus some negotiated discount. Preferred Provider Organizations and Health Maintenance Organizations often negotiate these types of contracts. The most common found in the PPI are the discount off total charges and the discount for prompt payment. A discount off total charges will typically range between 4 percent and 10 percent of the total charges on the bill. A prompt payment discount is typically a smaller percentage off total charges and is given to an insurance company when payment is received within a specified amount of time (generally 30 days). Price movement in this price type can be caused either by changes in the line item prices charged by the hospital (they would appear on the patient's bill) or by changes in the amount of the discount.

The third type of price is a case rate which is specified by a contract. Payment for services is based on the type of procedure provided or malady remedied for the patient. This rate will normally cover all services required to treat the patient from the time of admission to discharge. These rates are usually negotiated between the hospital and the third party payer and are based on the premise that, on average, patients with the same diagnosis will receive similar services.

Per diem rates are also a fairly common type of price. A per diem rate is a daily rate paid to the hospital regardless of what services are included in a patient's stay. The daily rate is simply multiplied by the patient's length of stay to yield a total reimbursement. A per diem rate can also be based on the type of room or bed patients occupy during their stay.

The least common type of price encountered in the PPI is the capitation rate. With this type of price, a fixed, per capita amount is paid to a hospital, regardless of the actual services provided or resources consumed by each patient.

Table 3. Selected Producer Price Indexes for general medical and surgical hospitals, December 1992-95

Index period	Total industry sc 8062	Inpatients			Outpatients		
		Medicare	Medicaid	All other	Medicare	Medicaid	All other
1992							
December	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1993							
January	101.1	100.0	100.9	101.6	102.9	100.3	101.3
February	101.3	100.0	100.9	102.0	103.4	100.4	101.4
March	101.4	100.0	101.0	102.1	103.1	101.5	101.3
April	101.5	100.0	101.0	102.3	103.3	101.5	101.6
May	101.7	100.0	101.3	102.5	103.3	101.5	101.9
June	101.7	100.0	101.3	102.6	103.4	101.5	102.0
July	102.7	100.0	102.1	104.2	104.2	102.3	103.1
August	102.9	100.0	102.8	104.6	104.5	102.5	102.8
September	103.0	100.0	104.0	104.6	104.6	102.3	102.6
October	103.9	102.3	104.0	105.2	103.7	103.1	103.2
November	103.9	102.3	104.0	105.3	104.3	101.4	103.5
December	104.0	102.3	104.8	105.3	104.2	101.3	103.5
1994							
January	104.7	102.3	105.4	106.2	105.4	101.9	105.0
February	104.8	102.3	105.2	106.4	105.5	102.4	105.2
March	104.8	102.3	105.2	106.3	105.5		
April	105.0	102.3	105.9	106.5	105.9	101.2	105.6
May	105.2	102.3	105.8	106.5	106.0	101.2	106.4
June	105.4	102.3	106.2	107.0	106.2	101.2	106.5
July	106.5	102.3	108.1	108.4	107.7	105.2	107.8
August	106.5	102.3	108.2	108.4	107.7	105.1	107.7
September	106.5	102.3	108.1	108.5	107.2	105.1	107.8
October	107.4	103.6	109.0	109.2	108.7	105.1	108.3
November	107.5	103.6	108.9	109.5	108.9	105.1	108.3
December	107.5	103.6	108.9	109.5	108.9	105.1	108.5
1995							
January	109.0	103.6	109.2	111.1	109.9	105.5	112.6
February	108.9	103.6	109.5	110.9	110.1	105.81	12.6
March	109.1	103.6	109.7	111.0	110.6	105.81	13.0
April	109.1	103.6	109.9	111.0	111.0	105.8	113.2
May	109.2	103.6	109.5	111.2	111.1	105.9	113.2
June	109.2	103.6	109.4	111.2	111.2	105.9	113.3
July	109.7	103.6	108.7	111.9	111.8	105.8	114.6
August	110.0	103.6	109.2	112.1	111.8	105.8	115.3
September	110.1	103.6	111.4	112.1	112.0	105.8	114.9
October	111.2	107.8	111.2	112.3	111.9	106.1	115.2
November	111.4	107.8	110.2	112.5	112.5	108.3	115.9
December	111.5	107.8	110.4	112.7	112.4	108.1	115.8

NOTE: The columns labeled "All other" represent the prices charged to private payers, those patients paying their hospital bill with the assistance of private insurance or from their own resources.

Price index analysis

The general medical and surgical hospital industry has raised its prices 11.5 percent over the December 1992 through December 1995 period. (See chart 1.) Inpatient treatments rose 10.9 percent, outpatient treatments rose 14.8 percent, and other receipts rose a minimal 1.9 percent.

Public supported programs, such as Medicare and Medicaid, have experienced lower inflation. Medicare inpatient prices rose 7.8 percent from December 1992 to December 1995, compared with 10.4 percent for Medicaid inpatients and 12.7 percent for all other inpatients.⁵ (See table 3 which presents indexes of inpatient and outpatient Medicare and med-

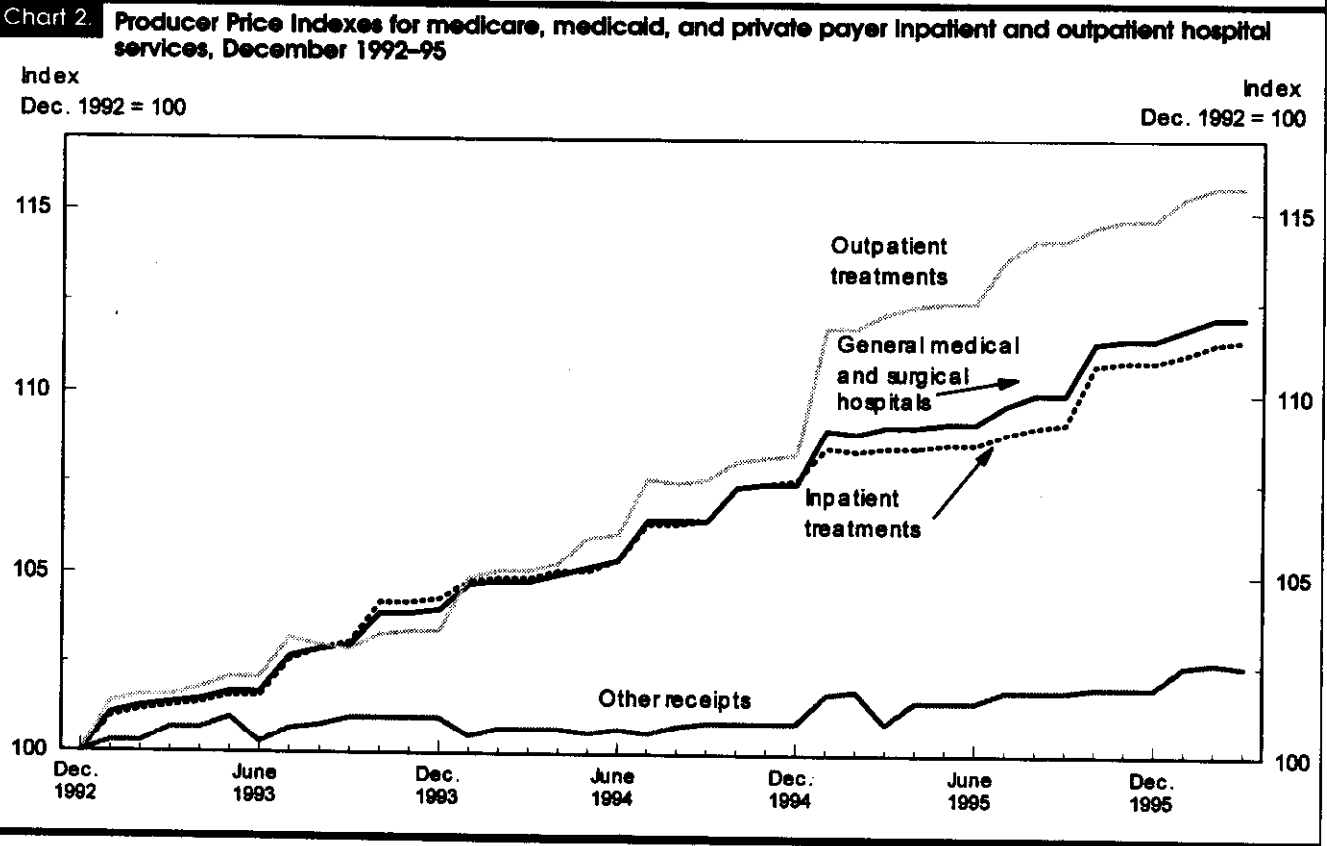
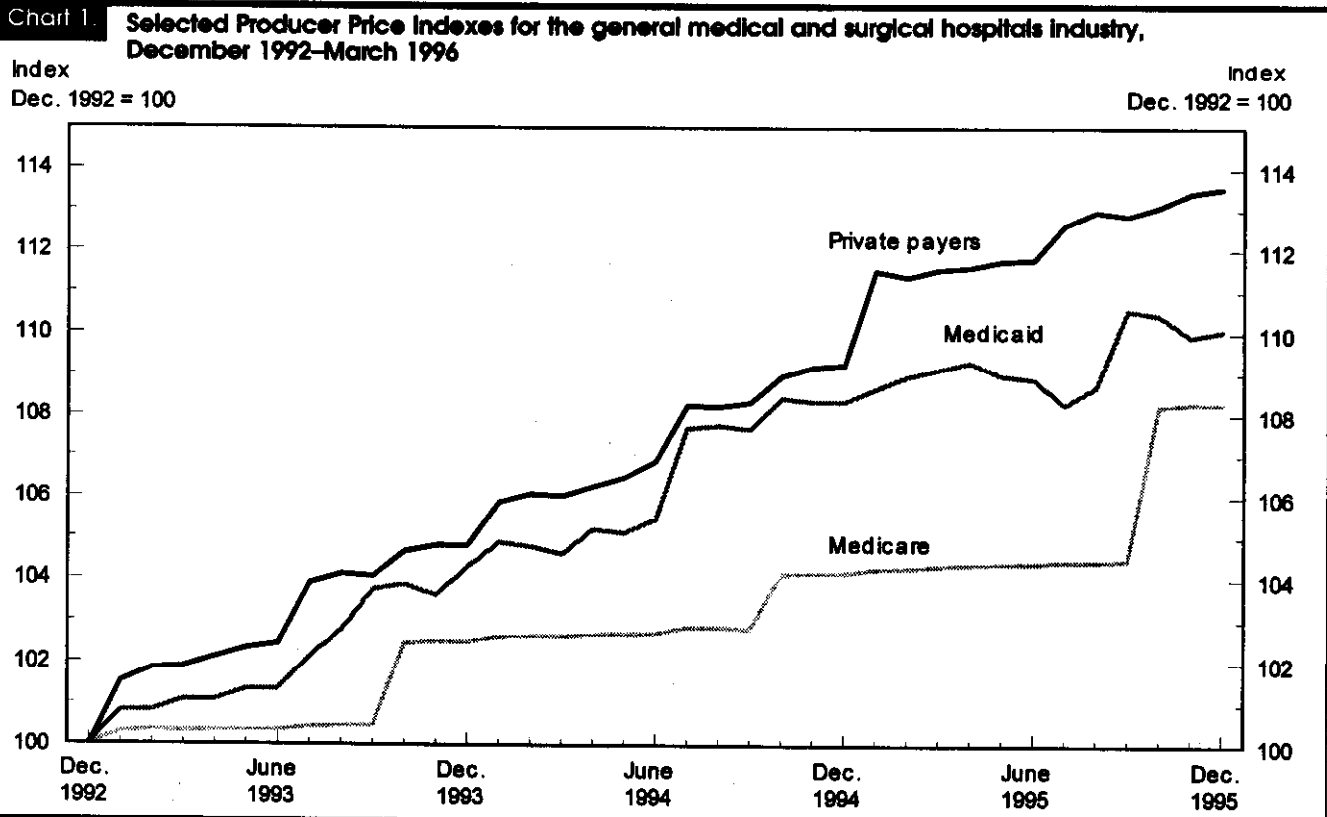


Table 4 Special PPI for private payer inpatients only by type of price classification, December 1992-95

Index period	Per diem	Case rate	List less adjustments	List	Capitation
1992					
December	100.0	100.0	100.0	100.0	100.0
1993					
January	101.1	101.2	102.0	101.0	100.1
February	102.0	101.3	102.4	101.2	100.1
March	102.1	101.3	102.7	101.5	100.1
April	102.4	101.6	102.9	101.7	100.1
May	102.8	101.6	103.3	102.0	101.1
June	102.8	101.7	103.5	102.0	101.1
July	103.5	104.3	104.4	103.5	101.1
August	104.4	104.4	105.1	103.8	101.1
September	104.5	104.3	105.3	104.1	101.1
October	104.8	104.6	105.9	104.9	101.1
November	105.2	104.6	106.0	105.1	101.1
December	105.3	104.6	106.0	105.0	101.1
1994					
January	105.6	104.1	107.6	105.7	101.1
February	105.7	103.6	107.7	105.9	101.1
March	105.6	103.8	107.7	106.0	101.1
April	106.2	103.8	107.7	106.0	101.1
May	106.9	103.9	107.7	106.1	101.1
June	107.0	103.9	107.7	106.1	101.1
July	108.0	105.5	109.2	107.2	101.1
August	108.0	105.3	109.2	107.2	101.1
September	108.0	105.4	109.3	107.5	101.1
October	108.5	105.3	110.8	108.6	101.1
November	108.5	105.3	111.5	108.8	101.1
December	109.0	105.3	111.6	108.9	101.1
1995					
January	110.0	106.5	113.5	110.1	101.1
February	109.8	106.7	113.6	110.2	101.1
March	109.8	106.8	113.8	110.3	101.1
April	109.4	106.8	114.5	110.3	101.1
May	109.4	106.8	114.6	110.3	101.1
June	109.4	107.3	114.9	110.3	101.1
July	109.4	107.9	115.7	111.5	101.1
August	109.4	108.0	115.9	111.5	101.1
September	109.4	108.0	116.1	111.6	101.1
October	109.5	108.1	116.4	112.0	101.1
November	110.3	108.0	116.7	112.3	101.1
December	110.3	108.0	116.8	112.3	101.1

icaid prices.) For outpatients, medicare prices rose 12.4 percent from December 1992 to December 1995, while medicaid prices rose 8.1 percent, and all other outpatient prices climbed 15.8 percent.

Chart 2 shows a weighted average of inpatient and outpatient data for each type of payer. Private payer data showed the greatest rate of inflation, rising 13.5 percent during the 3 years of this study. Medicare prices rose 8.3 percent and medicaid increased 10.1 percent.

Within the all other payers group, prices for inpatient services, which carried the largest impact on the overall category, rose for circulatory system disorders (15.5 percent), respiratory disorders (17.5 percent), digestive system disorders (12.4 percent), and musculoskeletal disorders (11.1 percent). The smallest increases over the 3-year period were indexes for injuries, poisonings and toxic effect of drugs (5.7 percent); men-

tal disorders (3.9 percent); and female reproductive system disorders (4.9 percent). Outpatient services to all other payers climbed 15.8 percent.

A brief look at the price determining nature of different price types was conducted. Chart 3 shows that from December 1992 to December 1995, type of price appeared to be an important price trend-determining characteristic among inpatients. Of the four price types, list less adjustments rose 16.8 percent over the 3-year period. By contrast, case rate prices rose only 8.0 percent. List prices rose 12.3 percent and per diem prices increased 10.3 percent. (See table 4 which lists the actual type of price indexes.)

Summary of two measures of inflation

It is interesting to note that over the 1993-95 period, the CPI for hospitals, another BLS inflation measure, rose 18.7 percent, versus an 11.5-percent increase in the PPI. This dramatic difference between the two measures may seem puzzling. However, there are four key distinctions in program scope and methodology employed to construct the two price indexes.

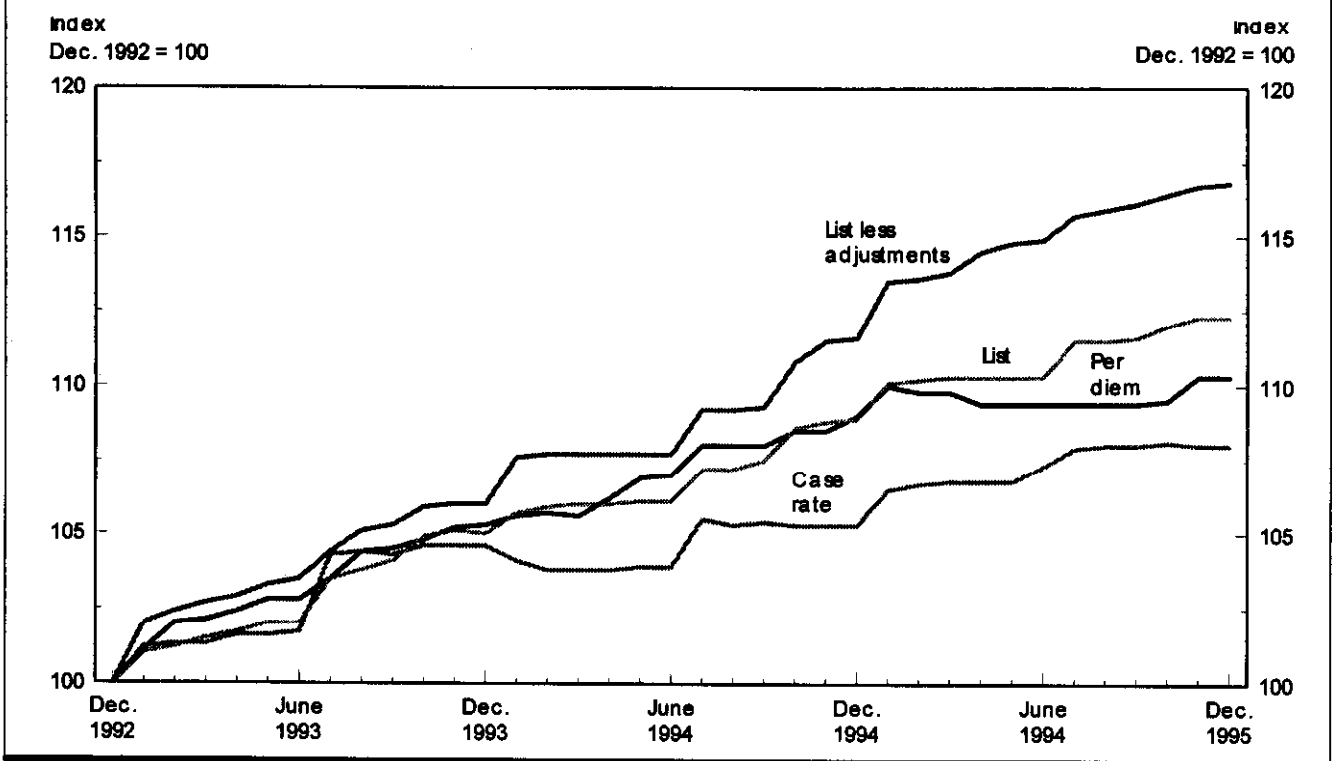
First, in terms of scope, the PPI sampling universe includes both rural and urban hospitals, while the CPI restricts sampling to urban establishments.

Further, the PPI measures changes in all revenues received by the hospital industry, including revenues from public programs such as medicaid and revenues from secondary products such as cafeteria services. The CPI includes only payments made by consumers for hospital services.

The rate of inflation for secondary and miscellaneous hospital services (included in the PPI) is drastically lower than that of health care services revenue. In addition, public payers for health care had a lower rate of inflation than private payers over this 3-year period. Both of these scope differences pulled the PPI inflation rate lower than that of the CPI.

There are two methodological differences. First, the PPI measures price changes for the entire treatment path received during a single hospital stay, while the CPI currently measures price changes for discrete hospital services singly, not the complete treatment path.⁶ Secondly, the PPI collects price data that

Chart 3. Producer Price Indexes for hospital services to private payer inpatients, by type of price classifications, December 1992–95



identifies discounts, surcharges, and price-setting mechanisms other than line-item billing. In nearly all cases, the CPI currently collects list prices from each hospital's master list of published prices (often called a "chargemaster").

IN CONCLUSION, the PPI for the hospital services industry indicates that over the 1992–95 period, inflation was characterized by a:

- higher rate of increase for outpatient than for inpatient services
- lower rate of increase for public payers, such as medicare or medicaid, than for private insurance payers
- lower rate of increase for nonhealth care-related economic activities (other receipts) than for hospital services
- higher rate of increase for list and list less adjustments price types than for case rate and per diem price types for inpatient services. □

Footnotes

¹ Katherine R. Levit, et al, "National Health Expenditures, 1993," *Health Care Financing Review* (Baltimore, MD, U.S. Department of Health and Human Services, Health Care Financing Administration, 1993).

² See *Standard Industrial Classification Manual 1987* (Washington, DC, U.S. Office of Management and Budget, 1987).

³ Diagnosis related groups are groupings of medical diagnosis and surgical procedures related by medical purpose or resource requirement.

⁴ The Health Care Financing Administration created a metric that accurately reflects relative hospital resource consumption by diagnosis related

group. These relative intensity values are key elements in determining reimbursements for medicare hospital services.

⁵ "All other" indicates prices charged to private payers, those patients paying their hospital bill with the assistance of private insurance or from their own resources.

⁶ Beginning in January 1997, the CPI pricing methodology for hospitals will be similar to the PPI. See pp. 32–42 of this issue for more information on the CPI for hospital services.

Appendix: Sampling strategy and results

Diagnosis related groups were randomly selected for collection, using selection probabilities proportional to total expenditures from all payer sources in each group. As mentioned in the article, diagnosis related group expenditures were estimated using Hospital Cost and Utilization Project data¹ and resource intensity data published in the *Federal Register*.²

Each hospital sampled for the PPI was asked to provide a single representative patient bill for each of the randomly assigned diagnosis related groups. This method of preselecting group categories avoided a lengthy product selection process, thus reducing the burden of cooperation and preventing judgmentally selected treatments that may, taken together with other sample results, unfairly represent hospital services relative to revenues.

Medicare inpatient data were not directly collected from the hospitals, but were obtained from the *Federal Register* and indirectly estimated by the Bureau of Labor Statistics.

The traditional sampling frame used in the PPI is the Unemployment Insurance file. This source offers establishment name, address, and employment size (the default value used for probability proportionate to size sampling). However, an alternative frame was available from the American Hospital Association, which closely monitors the hospital industry. This source offered several potential size measures including employment, revenue, expenses, number of beds, and number of admissions. It also detailed each hospital establishment's medical facilities, ownership, type of service rendered, and key contacts.³

The number of annual patient admissions for each hospital was chosen as the size measure for probability proportionate to size sampling. If admissions figures were not available from the American Hospital Association annual survey, an admissions figure was imputed using the number of annual admissions per bed and the total number of beds.

Sample stratification is a process of drawing independent samples from subindustry level groups. These groups are created to ensure representative industry coverage. Specifically, if sample stratification is appropriate, the individual hospitals in each homogeneous group of service providers should demonstrate similar price trends. Thus, properly accounting for the mix of these sample units provides

Table A-1. Distribution of hospital establishments by sample strata

Hospital strata	Bedsize	Percent of:		Number of sample units assigned
		Establishments in frame	Total industry admissions	
Total hospital sample	358
Large urban	Greater than 250	20.3	55.3	198
Small urban	No more than 250	32.0	25.1	90
Large rural	Greater than 60	18.9	14.5	52
Small rural	No more than 60	28.8	5.0	18

Table A-2. Comparisons of sampling frame accuracy and cooperation results for the general medical and surgical hospitals industry and for the overall Producer Price Index program, December 1992

(In percent)		
Sample unit status	General medical and surgical hospitals	Producer Price Index program (average)
Out of business	1	10
Out of scope/misclassified	3	11
Refusal	21	15
Productive	76	63

a more precise measure of industry price trends. One study explored a stratification approach that classified hospitals by number of beds and location—urban, versus rural.⁴ The study found that the frequency ranking of diagnosis related groups was very different among the four categories. This was further supported by the apparent facility differences when comparing large urban hospitals with the smaller rural community hospitals. The PPI employed these same size classes to define sample strata boundaries. Table A-1 displays the sampling results by location and bedsize for SIC 8062.

Footnotes to the appendix

¹ For an overview of the content of this data base see, R. Coffey, and D. Farley, *HCUP-2 Project Overview*, Publication No. (PHS) 88-3428 (Baltimore, MD, U.S. Department of Health and Human Services, July 1988), Hospital Studies Program Research Note 10.

² *Federal Register* (Washington, DC, Office of Federal Register, National Archives and Records Administration, May 1990).

³ The 1989 American Hospital Association Guide to the Health Care

Field (Chicago, IL, American Hospital Association, 1989) was chosen as the sampling frame for sic 8062.

⁴ N. Lemrow, D. Adams, R. Coffey, and D. Farley. *The 50 Most Frequent Diagnosis-Related Groups (DRGs), Diagnoses, and Procedures: Statistics by Hospital Size and Location*, Publication No. (PHS) 90-3465 (Baltimore, MD, U.S. Department of Health and Human Services, September 1990), pp. 106-7.