Changes in hospital staffing patterns

After declining in the early 1980's, hospital employment is increasing, especially those jobs that require the use of complex technology

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The hospital industry underwent a transitional period during the 1980's. Escalating health care costs led to changes in government-financed health care coverage, new forms of private health care financing, and growth in the number and diversity of alternate health care providers. Faced with an increasingly competitive economic environment, hospital managers focused on profitability and cost containment. Their strategies included decreasing the length of costly inpatient stays; eliminating or contracting out previously-offered services; diversifying into emerging health care markets; integrating into multihospital chains; and aggressively marketing their programs and services. During the 1980's, there also were significant technological developments in the hospital industry. Although frequently eliminating the need for lengthy hospital stays, new technology also contributed to rising health care costs.

Recent changes in the hospital industry have influenced the structure of occupational employment within the industry. With labor costs accounting for the largest item in hospital budgets—about one-half of their operating expenses in many cases—reducing employment and altering staffing patterns were often used as cost containment measures.[1] This article examines hospital staffing patterns and their changes, reflecting both the structural transition and technological advances that have characterized the hospital industry in recent years.

Data are derived from the Occupational Employment Statistics surveys of hospitals conducted in 1983, 1986, and 1989. The Occupational Employment Statistics program is a Federal-State cooperative survey of nonfarm establishments designed to develop current occupational employment data of wage and salary workers by industry. The survey follows a 3-year cycle: during the first year, it covers manufacturing industries and hospitals; during the second year, mining, construction, finance, and service industries; and during the third year, trade, transportation, communications, public utilities, education, and government services industries. The survey is based on a probability sample, stratified by industry, geographic area, and employment size of firm.[2]

Industry structure

The hospital industry comprises establishments primarily engaged in providing diagnostic and extensive medical treatment services, including surgical and other hospital services, as well as continuous nursing care. These establishments have organized medical staffs, inpatient beds, and equipment and facilities to provide complete health care. They include general medical and surgical hospitals, psychiatric hospitals, and specialty hospitals such as children's and orthopedic hospitals.[3] The Occupational Employment Statistics survey's employment estimates cover private and State and local government hospitals.

The structure of the hospital industry began to change rapidly in the early 1980's as a result of new payment systems, deregulation, and new competitors. The Federal Government, concerned about skyrocketing health care costs, sought to limit health care expenditures by enacting the Social Security Amendments of 1983. This legislation mandated medicare's prospective payment system, linking payment for particular hospital services to a

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Table 1. **Hospital employment by major occupational group, selected years, 1983–89**

Major occupational group	1983		1986		1989		Change, 1983–89	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution	Percent	Proportion
Total	4,152,360	100.0	4,055,000	100.0	[1]4,334,590	100.0	4.39	....
Managerial and administrative workers	153,910	3.71	165,920	4.09	184,710	4.26	20.01	0.55
Professional, paraprofessional, and technical workers	2,081,910	50.14	2,101,570	51.83	2,301,730	53.10	10.56	2.96
Service workers	1,090,200	26.25	940,530	23.19	949,280	21.90	–12.93	–4.35
Clerical workers	659,320	15.88	686,350	16.93	737,390	17.01	11.84	1.13
Salesworkers	14,880	.36	15,210	.38	15,210	.35	2.22	–.01
Production and related workers	145,150	3.50	138,330	3.41	139,150	3.21	–4.13	–.29
Agricultural and related workers	6,990	.17	7,090	.17	7,120	.16	1.86	–.01

[1] This industry employment total represents the April 1989 total from the BLS ES–202 program for private hospitals and State and local government hospitals. The April 1989 industry employment total for the hospital industry from the BLS Current Employment Statistics survey is greater than this because it also includes interns and trainees (except student nurses) in hospitals.

fixed-fee schedule for diagnosis-related groups. Under the previous cost-based system, hospitals essentially were reimbursed for their actual expenditures. The new system provides an incentive for hospitals receiving medicare reimbursements to reduce their costs. If costs are below the predetermined payment, the hospital keeps the savings, but if costs exceed the payment, it must absorb the difference.[4]

Motivated by cost-cutting measures by both public and private insurers, hospitals began to treat more people on an outpatient basis. The American Hospital Association's data show that from 1983 to 1988, the number of admissions to community hospitals declined 13 percent and the average length of stay dropped 5 percent. Meanwhile, the number of outpatient visits rose about 28 percent, a shift facilitated by progressive technology.[5] Many surgical procedures have been replaced by noninvasive methods. For example, rather than exploratory surgery, magnetic resonance imaging is widely used in the diagnostic process, and kidney stones can be removed by lithotropsy, a technique in which the stones are pulverized by shockwaves.

Hospitals began to treat more people on an outpatient basis.

Costly technological advances, along with the shorter length of stays for inpatients, have resulted in fewer hospitals (because of closings, mergers, or acquisitions by other facilities), and fewer beds ready for use. Even so, hospitals are expanding their services. While more people are utilizing outpatient services, the more severe illnesses and cases still require inpatient care. Many hospitals now offer specialized care for patients with AIDS (acquired immune deficiency syndrome) and are adjusting their services to meet the needs of the growing elderly population.[6]

Employment changes

Employment in hospitals declined by 2.3 percent (to about 4.0 million workers) over the 1983–86 period, although total nonagricultural employment increased over the period. Staff cuts, hiring freezes, and the increased use of contract services were part of a belt-tightening effort in response to declining inpatient admissions.[7] But, the industry's employment increased in the late 1980's as hospitals developed services in expanding alternate care markets, such as outpatient surgery and home health care. By 1989, hospitals employed about 4.3 million workers, an increase of 6.9 percent from 1986.

Over the 1983–89 period, there were significant changes in staffing patterns of hospitals at the major group level as well as at the detailed occupational level. (See table 1 for data by major occupational groups.) Professional and technical workers made up 53.1 percent of the industry's employment in 1989, up from 51.8 percent in 1986 and 50.1 percent in 1983. In 1989, service occupations accounted for 21.9 percent of the industry's workers, a significant decrease from the 23.2 percent of 1986 and 26.3 percent of 1983. The remaining industry employment in 1989 was distributed as follows: clerical and administrative support workers, 17.0 percent; managerial and administrative occupations, 4.3 percent; production and related workers, 3.2 percent; and salesworkers and agricultural workers, less than 1 percent. Employment esti-

mates at the detailed occupational level for 1989 are shown in table 2.[8]

Occupational profile

The following discusses the current occupational profile of the hospital industry and, in view of the industry's ongoing transition, shifts in staffing patterns over the 1983–89 period.

Managerial and administrative. Although occupations in this major group account for a relatively small proportion of total industry employment, hospital managers have experienced rapid employment growth. The 1983 Occupational Employment Statistics survey estimate of employment for managers and administrators was 153,910. By 1989, employment in these occupations had increased to 184,710, a 20-percent increase during a period when total industry employment increased by about 4 percent. (See table 1.) With more focus now on cost efficiency, the demand has intensified for hospital managers who plan and oversee systems for monitoring and controlling the use of the hospital's medical and financial resources (presumably because the benefits of employing these managers outweigh their costs). From 1983 to 1989, employment of medical and health service managers increased from 46,100 to 64,570, or 40 percent; the number of financial managers increased from 9,130 to 10,300, and purchasing managers, 4,920 to 5,240. Over the same period, the number of marketing, advertising, and public relations managers increased by more than 70 percent, from 3,780 in 1983 to 6,480 in 1989. In response to an increasingly competitive environment, the need for strategic planning and marketing skills has grown as hospitals market those services for which they are particularly well-equipped to provide.[9]

Professional, paraprofessional, and technical. In 1989, more than half of all hospital employees were in the professional and technical occupational group. Between 1983 and 1989, employment in this group increased by about 10 percent, from about 2.0 million to 2.3 million. While these workers accounted for around 50 percent of total industry employment in 1983, they accounted for about 53 percent by 1989.

The professional and technical occupations are dominated by nursing jobs—registered nurses and licensed practical nurses. In 1983, these jobs together accounted for approximately 60 percent of professional and technical hospital workers and accounted for about 30 percent of total hospital employment. Although these proportions have remained fairly constant during the 1983–89 period, the ratio of registered nurses to licensed practical nurses has changed: the number of registered nurses employed by hospitals increased by 13 percent (from 922,490 in 1983 to 1,042,990 in 1989), while the number of licensed practical nurses employed decreased by nearly 22 percent (from 334,690 to 261,890).

The dramatic growth in the number of hospital-employed registered nurses has stemmed from the widespread use of sophisticated medical technology and the emphasis on acute care and specialized services. Specialization in clinical medicine has prompted the need for these nurses to specialize in such areas as intensive care, coronary care, and geriatric medicine. As a corollary to the greater reliance on registered nurses, the demand for lower paid practical nurses in hospitals has diminished. The movement away from long inpatient stays and toward outpatient treatment has lessened the demand for licensed practical nurses who mainly provide bedside patient care under the supervision of physicians and registered nurses.[10]

Hospital managers experienced rapid employment growth.

As the number of elderly people increases and medical advances enable people with previously fatal conditions to survive, the demand for rehabilitative services has intensified. Between 1983 and 1989, the number of hospital-employed therapists increased by about 20 percent, from 95,840 to 115,650 workers. Physical therapists, occupational therapists, and recreational therapists posted the largest employment increases among the therapy occupations.

Management support workers also experienced considerable employment growth from 1983 to 1989. These workers increased by almost 27 percent, from 42,490 to 53,800 workers. This occupational group includes accountants, auditors, budget analysts, purchasing agents, and personnel, training, and labor relations specialists.

Other professional and technical occupational groups that posted significant employment gains from 1983 to 1989 were social workers, from 36,830 to 55,930; computer science specialists and related workers, from 12,540 to 18,340; social scientists, including psychologists, from 8,340 to 12,720; and public relations specialists and publicity writers, from 3,080 to 4,700.

Service. During the 1983–89 period, service occupations lost 140,920 workers, a decrease of almost 13 percent. Whereas, in 1983, service occupations accounted for 26.3 percent of total hospital industry employment, by 1989, these jobs made up 21.9 percent of all hospital workers. Much of this employment decline is attributable to the drop in hospital inpatient enrollments. With

Table 2. **Occupational employment in hospitals and percent of establishments reporting the occupation, April 1989**

Occupation	Employment[1]	Percent of total employment	Percent of establishments reporting the occupation
Total	4,334,590	100.00	–
Managerial and administrative occupations	184,710	4.26	–
Financial managers	10,300	.24	73
Personnel, training, and labor relations managers	8,080	.19	61
Purchasing managers	5,240	.12	57
Marketing, advertising, and public relations managers	6,480	.15	49
Administrative services managers	5,600	.13	28
Engineering, mathematical, and natural sciences managers	5,520	.13	32
Medicine and health services managers	64,570	1.49	86
Food service and lodging managers	7,520	.17	60
General managers and top executives	28,640	.66	85
All other managers and administrators	42,760	.99	–
Professional, paraprofessional, and technical occupations	2,301,730	53.10	–
Management support workers	53,800	1.24	–
Accountants, auditors, and other financial specialists	17,750	.41	–
Accountants and auditors	10,520	.24	47
Budget analysts	2,340	.05	20
Other financial specialists	4,890	.11	–
Purchasing agents	5,850	.13	43
Personnel, training, and labor relations specialists	8,910	.21	40
Compliance officers, except construction	4,820	.11	12
All other management support workers	16,470	.38	–
Engineers	6,800	.16	–
Computer engineers	1,040	.02	5
Mechanical engineers	2,030	.05	10
Other engineers	3,730	.09	–
Engineering and related technicians and technologists	3,850	.09	–
Electrical and electronic engineering technicians and technologists	1,300	.03	5
Other engineering and related technicians and technologists	2,550	.06	–
Physical scientists	1,160	.03	3
Life scientists	8,900	.21	–
Biological scientists	3,850	.09	8
Medical scientists	4,140	.10	7
All other life scientists	910	.02	–
Physical and life science technicians and technologists	4,190	.10	–
Biological, agricultural, and food technicians and technologists	1,280	.03	1
Chemical technicians and technologists, except health	1,010	.02	2
Other physical and life science technicians and technologists	1,900	.04	–
Computer scientists and related workers	18,340	.42	–
Systems analysts	7,890	.18	19
Computer programmers	4,680	.11	19
Computer programmer aides	4,070	.09	13
Other computer scientists and related workers	1,700	.04	–
Social scientists, including urban and regional planners	12,720	.29	–
Psychologists	10,630	.25	21
Other social scientists	2,090	.05	–
Social workers, medical and psychiatric	47,040	1.09	63
Social workers, except medical and psychiatric	8,890	.21	22
Human service workers	7,370	.17	16
Clergy	4,530	.10	24
Nursing instructors	11,250	.26	28
Instructors, vocational	5,080	.12	12
Other teachers and instructors	11,140	.26	–
Librarians, professional	2,410	.06	22
Technical assistants, library	1,720	.04	10
Health practitioners, technologists, technicians, and related workers	2,069,580	47.75	–
Health diagnosing and treating practitioners	110,080	2.54	–
Physicians and surgeons	102,260	2.36	36
Dentists	1,700	.04	7
Podiatrists	460	.01	2
Other health diagnosing and treating practitioners	5,660	.13	–
Therapists	115,650	2.67	–
Respiratory therapists	50,810	1.17	61
Occupational therapists	13,530	.31	35
Physical therapists	24,450	.56	55
Corrective and manual arts therapists	1,070	.02	4
Speech pathologists and audiologists	6,880	.16	23
Recreational therapists	10,930	.25	33
Other therapists	7,980	.18	–
Registered nurses	1,042,990	24.06	95
Licensed practical nurses	261,890	6.04	89
Emergency medical technicians	19,230	.44	24
Physicians assistants	7,260	.17	14
Pharmacists	38,270	.88	71
Dietitians and nutritionists	15,110	.35	61
Dietetic technicians	10,100	.23	37
Medical and clinical laboratory technologists	91,950	2.12	69
Medical and clinical laboratory technicians	48,780	1.13	63
Dental hygienists	970	.02	5
Medical records technicians and technologists	27,710	.64	72
Nuclear medicine technologists	8,900	.21	40
Radiologic technologists	44,050	1.02	56
Radiologic technicians	36,400	.84	56
Electroencephalograph technologists	5,370	.12	29
Electrocardiograph technicians	12,210	.28	35
Cardiology technologists	11,250	.26	27
Surgical technicians	33,920	.78	55
Psychiatric technicians	45,130	1.04	17
Other health professionals, paraprofessionals, and technicians	82,360	1.90	–
Public relations specialists and publicity writers	4,700	.11	31
Photographers	1,360	.03	8

See footnotes at end of table.

Table 2. Continued — **Occupational employment in hospitals and percent of establishments reporting the occupation, April 1989**

Occupation	Employment[1]	Percent of total employment	Percent of establishments reporting the occupation
All other professional, paraprofessional, and technical workers	16,900	.39	–
Sales and related occupations	15,210	.35	–
Cashiers	13,570	.31	43
All other sales and related workers	1,640	.04	–
Clerical and administrative support occupations	737,390	17.01	–
First-line supervisors, clerical and administrative	40,860	.94	69
Adjustment clerks	8,240	.19	20
Medical secretaries	44,640	1.03	58
All other secretaries	82,320	1.90	–
Stenographers	6,100	.14	11
Receptionists and information clerks	32,590	.75	50
Typists, word processing	9,630	.22	19
Typists	47,970	1.11	62
Personnel clerks, except payroll and timekeeping	7,390	.17	44
File clerks	17,030	.39	34
Order clerks, materials, merchandise, and service	3,490	.08	14
Procurement clerks	4,620	.11	34
Statistical clerks	19,120	.44	39
Interviewing clerks,except personnel and welfare	48,540	1.12	48
Bookkeeping, accounting, and auditing clerks	25,440	.59	67
Payroll and timekeeping clerks	7,890	.18	56
Billing, cost, and rate clerks	40,780	.94	69
General office clerks	139,370	3.22	75
Office machine operators and data processing	31,690	.73	–
Billing, posting, and calculating machine operators	4,060	.09	12
Computer operators, except peripheral equipment	10,130	.23	33
Data entry keyers, except composing	15,210	.35	47
Other office machine operators	2,290	.05	–
Switchboard operators	32,000	.74	71
Material recording, scheduling dispatching, and distributing workers	48,180	1.11	–
Dispatchers, police, fire, and ambulance	1,980	.05	5
Stock clerks, stockroom, warehouse, or storage yard	33,150	.76	59
Traffic, shipping, and receiving clerks	6,060	.14	26
Other material recording, scheduling, and distributing workers	6,990	.16	–
All other clerical and administrative support workers	39,500	.91	–
Service occupations	949,280	21.90	–
First-line supervisors and manager/supervisors, service	44,240	1.02	–
Housekeepers	27,530	.64	71
Other service supervisors and manager/ supervisors	16,710	.39	–
Guards and watch guards	31,110	.72	37
Food, beverage preparation and service workers	195,560	4.51	–
Waiters and waitresses	1,550	.04	3
Food servers, outside	45,860	1.06	32
Dining room and cafeteria attendants, and bartender helpers	13,600	.31	19
Counter attendants, lunchroom, coffee shop, or cafeteria	6,840	.16	15
Bakers, bread and pastry	2,160	.05	16
Cooks, institution or cafeteria	33,060	.76	82
Cooks, short order	2,270	.05	9
Food preparaion workers	65,230	1.50	60
Other food service workers	24,990	.58	–
Health service and related workers	480,520	11.09	–
Dental assistants	1,760	.04	7
Medical assistants	9,450	.22	12
Nursing aides, orderlies, and attendants	281,370	6.49	79
Home health aides	12,220	.28	18
Psychiatric aides	69,880	1.61	13
Physical and corrective therapy assistants and aides	15,740	.36	45
Occupational therapy assistants and aides	5,160	.12	18
Ambulance drivers and attendants	2,360	.05	5
Pharmacy assistants	31,300	.72	58
Other health service workers	51,280	1.18	–
Cleaning and building service workers	182,870	4.22	–
Maids and housekeeping cleaners	127,300	2.94	73
Janitors and cleaners	50,520	1.17	49
Other cleaning and building service workers, except private households	5,050	.12	–
Personal and home care aides	2,870	.07	3
Child care workers	5,420	.13	5
All other service workers	6,690	.15	–
Agriculture, forestry, fishing, and related occupations	7,120	.16	–
Gardeners and groundskeepers	6,460	.15	34
Other agriculture, forestry, fishing, and related workers	660	.02	–
Production, construction, operating, maintenance, and material handing occupations	139,150	3.21	–
First-line supervisors— production, construction and maintenance	9,210	.21	–
First-line supervisors— mechanics, installers, and repairers	5,680	.13	34
All other first-line supervisors and manager/supervisors— production, construction and maintenance workers	3,530	.08	–
Mechanics, installers, and repairers	47,070	1.09	–
Machinery maintenance mechanics	5,260	.12	15
Maintenance repairers, general utility	26,210	.60	68
Heating, air-conditioning, and refrigeration mechanics and installers	4,700	.11	23

See footnotes at end of table.

Table 2. Continued — **Occupational employment in hospitals and percent of establishments reporting the occupation, April 1989**

Occupation	Employment[1]	Percent of total employment	Percent of establishments reporting the occupation
Electromedical and biomedical equipment repairers	5,820	.13	23
Menders—garments and linens	1,690	.04	12
Other mechanics, installers, and repairers	3,390	.08	–
Construction trades workers, except material moving	21,870	.50	–
Carpenters	6,100	.14	28
Electricians	5,990	.14	29
Painters and paperhangers, construction and maintenance	5,850	.13	30
Plumbers, pipefitters, and steamfitters	3,930	.09	20
Other construction and extractive workers,except helpers	3,160	.07	–
Precision production workers	940	.02	3
Selected textile and related setters, operators, and other related workers	21,660	.50	–
Laundry and drycleaning machine operators and tenders, except pressing	19,100	.44	33
Pressing machine operators and tenders, textile, garment, and related materials	2,560	.06	6
Other machine setters, operators, and tenders, except metal and plastic	5,650	.13	–
Boiler operators and tenders, low pressure	3,910	.09	13
Other machine operators and tenders, except metal and plastic	1,740	.04	–
Hand workers, including assemblers and fabricators	780	.02	3
Plant and system workers	8,080	.19	–
Stationary engineers	6,640	.15	14
Other plant and system operators	1,440	.03	–
Motor vehicle operators	6,640	.15	–
Truckdrivers, light, including delivery and route workers	3,600	.08	14
Other motor vehicle operators	3,040	.07	–
Parking lot attendants	2,100	.05	5
Other material moving equipment operators	1,360	.03	–
Helpers—laborers and material movers, hand	10,260	.24	11

[1] Estimates of fewer than 50 workers, or with less than 0.01 percent of industry employment, or with a relative error greater than 50 are generally not shown separately because such estimates are considered unreliable. Estimates that are not shown have been counted in the appropriate "All other" eategories.

NOTE: Detail may not add to totals due to rounding. Estimated employment is rounded to the nearest 10. Dash indicates data not available.

fewer patients and shorter stays, certain services, such as cleaning, laundry, and food and beverage preparation, are less in demand. Additionally, in some cases, hospital management may have believed it more cost effective to contract out these services. Employment of food and beverage preparation workers decreased from 227,580 in 1983 to 195,560 in 1989, a 14-percent drop. Cleaning and building service occupations experienced an 11.9-percent decline, from 207,650 workers to 182,870.

Nursing aides, orderlies, and attendants experienced the largest employment decline of any hospital occupation; employment decreased by 102,380 workers between 1983 and 1989, a drop of almost 27 percent. Again, declining inpatient admissions reduced the demand for direct patient care staff which includes these workers who provide auxiliary patient care services.

While employment in service occupations declined substantially between surveys, a few service occupations had employment gains. For example, over the 1983–89 period, the number of home health care aides employed by hospitals more than quadrupled, from 2,770 to 12,220 workers, as some hospitals diversified into the expanding home health care market, and psychiatric aides increased by 17 percent, from 59,580 to 69,880 workers.

Clerical. Between 1983 and 1989, clerical occupations had one of the highest proportional employment gains in the hospital industry, with an increase of 11.8 percent, from 659,320 workers to 737,390. In 1989, clerical workers accounted for 17 percent of all hospital workers, up from 15.9 percent in 1983, possibly due to the heavier workload created by the increasing complexity and utilization of medical insurance. Among clerical workers, statistical clerks experienced the most significant employment growth, from 7,520 in 1983 to 19,120 in 1989, an increase of 154 percent. Word processing was another occupation that showed tremendous proportional growth, increasing 115 percent. During the same period, typists declined by nearly 13 percent. The number of general office clerks increased from 73,570 in 1983 to 139,370 in 1989.

While the total number of clerical workers in

the hospital industry has grown steadily since 1983, some clerical occupations have experienced employment declines. For example, the number of hospital-employed switchboard operators dropped from 33,700 in 1983 to 32,000 in 1989; file clerks declined from 19,970 to 17,030 workers ; stenographers, from 8,270 to 6,100; and procurement clerks, from 5,260 to 4,620.

Miscellaneous. The remaining major occupational groups—sales and related occupations; agriculture, forestry, fishing, and related occupations; and production, construction, operating, maintenance, and material handling occupations—accounted for 3.7 percent of total employment in the hospital industry in 1989. Two of these groups experienced minimal changes in employment over the 1983–89 survey period: sales and related occupations accounted for 14,880 hospital workers in 1983 and 15,210 in 1989, while workers in agriculture-related occupations accounted for 6,990 workers in 1983 and 7,120 in 1989.

The number of production and related workers in the hospital industry declined from 145,150 in 1983 to 138,330 in 1986 and then increased slightly to 139,150 in 1989. This fluctuation was similar to that of the mechanics, installers, and repairers occupational group, which had 48,110 workers in 1983, dropped to 45,660 in 1986, and then rose to 47,070 in 1989. Other production occupations also experienced changes in their employment levels. The number of plant and system workers increased from 7,840 in 1983 to 8,520 in 1986 before falling to 8,080 in 1989. Construction trade workers posted a continuous employment decline, from 25,910 in 1983 to 21,870 in 1989; the number of machine setters, setup operators, and tenders fell from 34,480 to 27,310.

Some occupations in the hospital industry were not specifically included on the Occupational Employment Statistics survey form and therefore are included in "catchall" categories within the major occupational groups. Survey respondents are asked to list these occupations on a supplemental survey sheet. Some of the additional occupations reported in the 1989 survey were: phlebotomist, respiratory therapy technician, utilization review coordinator, quality assurance coordinator, volunteer coordinator, and sterilization technician.

OCCUPATIONAL STAFFING PATTERNS of hospitals often reflect structural transitions because of the labor-intensive nature of the hospital industry. During the 1980's, the emphasis on cost control and developments in new technology caused significant shifts in the occupational mix. Generally, these factors caused employment declines in many of the occupations that involved direct inpatient care, while occupations which involved the use of the complex technology or were directed at managing costs experienced increases.

Footnotes

[1] Eileen Appelbaum and Cherlyn Skromme Granrose, "Hospital employment under revised medicare payment schedules," *Monthly Labor Review*, August 1986, p. 38.

[2] For additional information, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), pp. 28–30.

[3] *Standard Industrial Classification Manual* (U.S. Office of Management and Budget, 1987), pp. 387–88.

[4] Paul Ginsburg, "Public Insurance Programs: Medicare and Medicaid," in H. E. Frech III, ed., *Health Care in America* (San Francisco, Pacific Research Institute for Public Policy, 1988), pp. 196–98.

[5] *Hospital Statistics* (Chicago, American Hospital Association, 1989), p. 7.

[6] *Hospital Statistics*, pp. xxvi–xxvii.

[7] Anne Kahl and Donald E. Clark, "Employment in health services: long-term trends and projections," *Monthly Labor Review*, August 1986, p. 28.

[8] For 1983 employment estimates at the detailed occupation level, see *Occupational Employment in Mining, Construction, Finance, and Services*, Bulletin 2264 (Bureau of Labor Statistics, 1986). Employment estimates for 1986 can be found in *Occupational Employment in Mining, Construction, Finance, and Services*, Bulletin 2330 (Bureau of Labor Statistics, 1989). When data are analyzed at the detailed occupational level, 1983 data are not fully comparable with the later data because of numerous changes in the survey form.

[9] *Occupational Outlook Handbook, 1988–89 edition*, Bulletin 2300 (Bureau of Labor Statistics, 1988), p. 29.

[10] *Occupational Outlook Handbook*, pp. 152, 169–70.