

Managed Care and the Nurse Workforce

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Objectives.—To identify recent national trends in the employment and earnings of nursing personnel and determine whether managed care is associated with changes in the employment and wage growth of nursing personnel.

Design.—Retrospective analysis of trends in data on employment and earnings of nursing personnel based on monthly US Bureau of the Census Current Population Surveys between 1983 and 1994, and comparison of trends between states with high and low rates of enrollment in health maintenance organizations (HMOs).

Population.—Registered nurses (RNs), licensed practical nurses (LPNs), and nurse aides/assistants, orderlies, and attendants (referred to collectively as aides) between the ages of 21 and 64 years.

Outcome Measures.—Full- and part-time employment, unemployment, percentage of nursing personnel employed in key sectors of the nurse labor market, and inflation-adjusted hourly wages.

Results.—From 1983 through 1994, there was strong overall growth in both RN employment (37%) and inflation-adjusted wages (22%). Beginning in the early 1990s, however, RNs experienced stagnant wages and a small but steady shift toward employment in lower-paying nonhospital settings, particularly in home health care. In states with high HMO enrollment, RN and LPN employment has grown more slowly since 1990, and the shift of RN employment out of the hospital was strongest. For aides and LPNs, the shift out of hospital employment occurred years before that of RNs and at a much greater rate. Since 1990 the employment of aides has grown rapidly in nursing homes and in home health care settings, whereas employment of LPNs has shifted primarily into physician offices and nursing homes. Overall, the movement toward nonhospital employment has had a modest negative impact on wages for all nursing personnel.

Conclusions.—Managed care is associated with slower employment growth for RNs in hospitals and a shift toward employment in nonhospital settings, but its effect on earnings has been overshadowed by other forces impacting nurse wages.

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NURSING IS the largest health care occupation in the United States. According to data from the US Bureau of the Census Current Population Survey, in 1994 health care organizations employed 1.8 million registered nurses (RNs), 370 000 licensed practical nurses (LPNs), and 1.5 million nurse aides/assistants, orderlies, and attendants (referred to collectively in this article as aides). As organizations respond to the evolving economic forces that are transforming the delivery and financing of health care, changes are reverberating throughout

the nurse labor market, particularly in hospitals where two thirds of all employed RNs work.¹ The spread of managed care, reductions in the number of hospital beds, and hospital staff restructuring initiatives involving the delivery of nursing care are well documented. Less well documented are widely held perceptions that RNs are being replaced by unlicensed personnel in many hospitals, nursing workloads are increasing, and staffing levels are diminishing and threatening the quality of patient care.^{2,3} These and other concerns have fueled public marches and demonstrations by nurses, as well as the introduction of legislation in 2 states that would impose mandatory minimum hospital nurse staffing levels and prescribed ratios of RNs to LPNs and unlicensed personnel.^{4,5} Today, many in the nursing workforce, not unlike their physician colleagues, find themselves increasingly focused on is-

issues related to job security and acquiring new knowledge and skills that will enable them to adapt to the needs of a rapidly changing and increasingly market-driven health care system.⁶⁻⁹

Recent studies by the Institute of Medicine and the Pew Commission on the Health Professions have made wide-ranging recommendations including substantial cutbacks in nurse education programs, increased use of RNs in nursing homes, and improved monitoring of quality of care in response to nurse staffing reductions.¹⁰⁻¹³ In addition, The Robert Wood Johnson Foundation is currently supporting a national initiative to establish regional consortia consisting of employers, nurses, educators, and other interested parties to study the nursing workforce.¹⁴ The consortia are expected to develop and implement strategies aimed at enabling the nursing profession to make needed changes in its educational and workforce capacities so that nurses are better prepared for the future. These activities are complemented by several recent monographs and special publications devoted to issues surrounding nursing and workforce policies.¹⁵⁻¹⁷

Despite growing attention to problems besetting the nursing workforce, little empirically based information exists on recent developments in the employment and earnings of nursing personnel. Important questions remain largely unanswered: As hospitals downsize, are nurses finding employment in nonhospital settings? To what extent are health care employers replacing RNs with LPNs and aides? How has managed care affected employment and earnings throughout the nurse labor market? To what extent has the shift in employment to nonhospital settings affected earnings? To address these questions, we sought to determine and analyze national trends in employment and earnings for RNs, LPNs, and aides using monthly data for the years 1983 through 1994. We also compared employment and earnings trends for nursing personnel in the states that have a high proportion of their citizens enrolled in managed care plans with states where managed care is not as prevalent.

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Table 1.—Estimated Number of Registered Nurses Working in Each Major Sector of the Labor Market

Employment Sector	1991-1993 Current Population Survey, No. (%)	1992 National Sample Survey of Population of Registered Nurses, No. (%)
Hospitals	1 255 995 (70.7)	1 235 277 (67.3)
Nursing homes, personal care, and residential care facilities	132 486 (7.4)	128 983 (7.0)
Offices and clinics of physicians	93 040 (5.2)	94 549 (5.2)
Other health services*	144 830 (8.2)	149 143 (8.1)
Visiting Nurse Association and other home health care agencies	NA	92 438 (5.0)†
Clinics and laboratories	NA	42 082 (2.3)†
Health maintenance organizations	NA	14 623 (0.8)†
All other employment settings	149 262 (8.4)	227 188 (12.4)
Total	1 775 613	1 835 140

*Categorized by the Current Population Survey of the US Bureau of the Census as "health services not elsewhere classified." NA indicates not available.

†This line of data is a subcategory of "other health services" and therefore not included in the 1 835 140 total.

METHODS

Data Sources

Data on employment and earnings of nursing personnel were obtained from the Current Population Survey (CPS) Outgoing Rotation Group Annual Merge Files during the period 1983 through 1994, the latest year for which complete data were available. The CPS is a household-based survey administered monthly by the US Bureau of the Census, covering a nationally representative sample of over 100 000 individuals. Each month 25% of the sample (the "outgoing rotation group") is asked about current employment status, industry employed, hours worked, earnings, and occupation. The outgoing rotation groups are a series of repeated cross sections, with a new sample of individuals being interviewed each month, with 1 exception: each housing unit appears in the outgoing rotation group exactly twice (1 year apart), so that there is the possibility that some individuals may appear twice in the sample.

Monthly CPS data were obtained for individuals between the ages of 21 and 64 years employed as RNs (n=38 773), LPNs (n=10 325), and aides (n=37 067). Unfortunately, the CPS occupation categories do not specifically identify nurse practitioners and do not distinguish between clinical and administrative positions. Hourly wages, calculated as usual weekly earnings divided by usual weekly hours, were adjusted for inflation using the consumer price index for all goods in urban areas and are reported in constant 1983 dollars. However, because the CPS does not provide detailed information on other wage-related and nonwage components of earnings (eg, shift differentials, overtime hours, and fringe benefits), hourly wages used in this study do not fully measure total compensation. Part-time employment, defined as working less than 30 hours

per week, is generally associated with lower benefit levels and therefore was used as an imperfect proxy for tracking trends in nonwage compensation. Data on full-time and part-time employment, unemployment, earnings, and industry were aggregated at the annual level for RNs, LPNs, and aides. Employment was also measured on a full-time equivalent (FTE) basis (ie, the number of full-time employees plus one half the number of part-time employees). Unemployment was defined as the number of people without a job but looking for work.

To ensure confidence that estimates based on CPS data reflect the population of RNs in the United States, CPS employment estimates were compared with the most recent publicly available data reported in the National Sample Survey of the Population of Registered Nurses, March 1992.¹ This survey, conducted every 4 years since the late 1970s, is widely recognized as the principal source of comprehensive data on biographical, educational, and employment information for RNs in the United States. CPS employment estimates for RNs are quite similar to the National Sample Survey estimates (Table 1).

One limitation of the CPS industry definitions is that home health care agencies, freestanding clinics and laboratories, and HMOs are combined in the category "Health Services, Not Elsewhere Classified" (shown in Table 1 as "Other Health Services"). However, the 1992 National Sample Survey of Registered Nurses suggests that employment in this category consists largely of home health care agencies. Similarly, data from employer surveys compiled by the Bureau of Labor Statistics suggests that home health care accounted for roughly two thirds of all employment in this category.¹⁸

A second limitation of the CPS data is that the survey instrument underwent a major revision in January 1994.¹⁹ Cau-

Table 2.—States With the Highest Proportion of Enrollment in HMOs in 1994

State	Population Enrolled in HMOs in 1994, %
Arizona	22.6
California	34.6
Colorado	26.5
Connecticut	19.9
District of Columbia	93.4*
Florida	16.5
Hawaii	21.2
Maryland	21.0
Massachusetts	34.5
Michigan	17.7
Minnesota	16.3
New Mexico	16.3
New York	21.2
Oregon	30.2
Pennsylvania	18.8
Washington	16.5
Wisconsin	20.2
Mean for all high managed care states	24.2
Mean for all other states	8.8

*HMO enrollment for the District of Columbia is overstated because it is based on place of employment while population is based on place of residence.

tion must be used when comparing 1994 estimates with estimates from earlier years. For our purposes, the most important change in 1994 was an increase in the number of individuals who reported being employed, mostly as a result of interviewers' probing more thoroughly for jobs in which the individual worked only a few hours in the week of the survey. To make the 1994 data more consistent with earlier data, we restrict all of our analyses of nursing personnel to those 21 to 64 years old who usually work at least 8 hours per week.

Finally, in certain analyses using CPS data, states were categorized into high vs low managed care states. Table 2 shows the 17 states (including the District of Columbia) that had the highest proportion of citizens enrolled in HMOs in 1994, which we refer to as the group of high managed care states (InterStudy, Bloomington, Minn, written communication, February 1995). These high managed care states contain approximately 50% of the US population. Penetration of HMOs in the high managed care states was roughly 3 times that of other states in 1994.

Statistical Analysis

Analysis of the CPS data was based primarily on estimates of average outcomes constructed annually or biannually. All analyses were weighted by sampling weights provided by the CPS, making estimates representative of the US noninstitutionalized population.

Analysis of variance (ANOVA) was used to test whether outcomes were the same in states with high and low managed care enrollment. The unrestricted ANOVA models included main effects for year and high or low man-

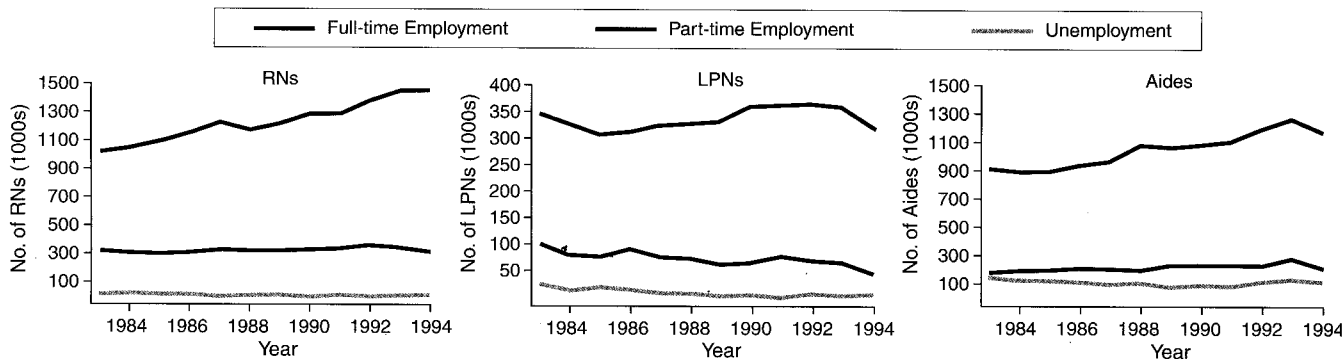


Figure 1.—Full-time employment, part-time employment, and unemployment for RNs, LPNs, and aides for 1983 through 1994. Standard errors for the annual employment and unemployment estimates are about 2% for RNs and aides and 3% to 4% for LPNs.

aged care, as well as the interaction effects between the 2 variables. We report *P* values from *F* tests of the hypothesis that average inflation-adjusted wages (relative to 1983) were the same for high and low managed care states in each year (year effects only). Similar *F* tests were performed on the hypothesis that the proportion of nursing personnel employed in a particular sector of the labor market was the same in each year for high and low managed care states. For testing whether employment growth was the same for high and low managed care states, we report the *P* value from an *F* test of the hypothesis that the proportion of nursing personnel employed in high managed care states remained constant over all years. To test the significance of national employment and earnings trends, we report *P* values from tests of the hypothesis that the outcome (eg, proportion employed in a particular sector) was the same in all years.

Wage growth between the first 2 years of the sample (1983-1984) and the last 2 years (1993-1994) was decomposed into the amount due to within-sector wage growth and the amount due to a sectoral shift in employment (eg, when RN employment shifts from hospitals to home health care or some other sector of the nurse labor market). Within-sector wage growth was constructed using the average wage growth in each sector of the nurse labor market weighted by the proportion of employment in each sector during 1983-1984. The difference between actual wage growth and within-sector wage growth is the amount due to a sectoral shift. This sectoral shift is defined as the sum of the change in each sector's proportion of employment (between 1983-1984 and 1993-1994) multiplied by the average wage in the sector during 1993-1994. A more general method of decomposing wage growth yields quite similar conclusions.²⁰

Conventional SEs and statistical tests

assume independence across observations. The independence assumption may be violated because multiple individuals within a household are sampled and because it is possible that the same individual can appear in the sample twice. For our data, treating each household as a cluster and correcting for arbitrary intraclass correlation as suggested by Huber²¹ has a negligible impact on the estimated SEs and *P* values. Therefore, for simplicity, we report only conventional SEs and statistical tests.

RESULTS

Employment and Earnings Trends

Figure 1 shows national trends in the number of RNs, LPNs, and aides employed on a full- and part-time basis, as well as the number unemployed, calculated from CPS data during 1983 through 1994. Figure 2 presents corresponding trends in FTE employment and earnings growth (percent) of RNs, LPNs, and aides since 1983. All trends reported in Figures 1 and 2 are significant ($P < .001$).

As Figure 1 shows, the number of RNs and aides employed on a full-time basis increased, whereas the number of LPNs employed full-time stagnated between 1983 and 1994. Part-time employment grew much less rapidly than full-time employment for RNs, and part-time employment actually declined for LPNs. As a result, there was a steady decrease in the proportion of RNs and LPNs working part-time hours during the study period, while there was no significant change for aides. In fact, employment growth for RNs occurred exclusively among full-time workers, with over 400 000 full-time RNs added to the workforce between 1983 and 1994. The number of nursing personnel who were unemployed was quite low since 1983. Indeed, by the 1990s, the unemployment rate for both RNs and LPNs was generally below 2% while for aides the un-

employment rate was higher, which more closely resembled national unemployment trends.

Figure 2 shows that employment measured on an FTE basis increased by roughly 30% for RNs and aides between 1983 and 1994, while declining noticeably for LPNs. The rate of FTE growth for RNs and aides is nearly double that of all other occupations which, based on the same CPS data, grew only 16% between 1983 and 1994. With regard to earnings, RNs experienced gains in inflation-adjusted hourly wages averaging nearly 3% per year through 1991, but thereafter wages have been essentially flat. Despite the overall decline in LPN employment, LPN wages have grown steadily since the mid 1980s, albeit at a slower rate than wage growth for RNs. Wage growth for RNs and LPNs is particularly notable when compared with inflation-adjusted wage gains seen in other occupations, which grew only 2% between 1983 and 1994. Conversely, aides experienced very little growth in wages (similar, in fact, to most other occupations) even though their rate of employment growth has risen substantially since 1983.

Sectoral Shifts in Employment

Figure 3 shows the percentage of RNs, LPNs, and aides who were working in the 4 largest sectors of the nurse labor market (hospitals, nursing homes, offices and clinics of physicians, and other health services).

Relative to LPNs and aides, the share of RN employment in each sector was relatively stable between 1983 and 1994, with slightly over two thirds of RNs continuing to be employed in hospitals. After 1992, however, the proportion of RNs employed in hospitals declined slightly and increased in the other health services sector. The proportion of RNs employed in physician offices and nursing homes did not change significantly during this period. In contrast, the per-

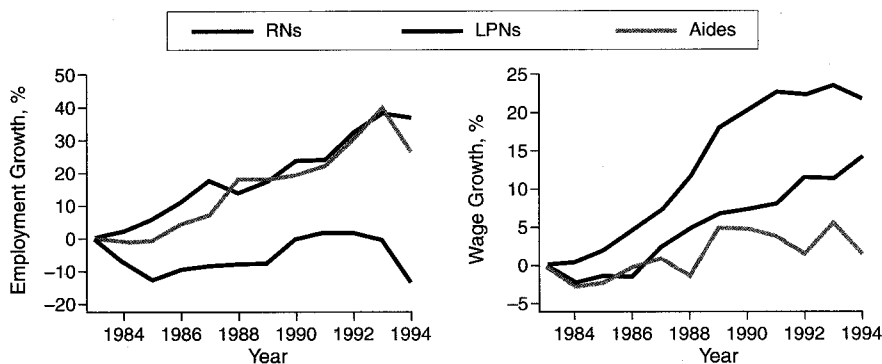


Figure 2.—Employment and inflation-adjusted wage growth since 1983 of RNs, LPNs, and aides for 1983 through 1994. Standard errors for estimates of inflation-adjusted wage growth are less than 1% for RNs and just over 1% for LPNs and aides. Standard errors for estimates of employment growth are about 2% for RNs and aides and between 3% and 4% for LPNs.

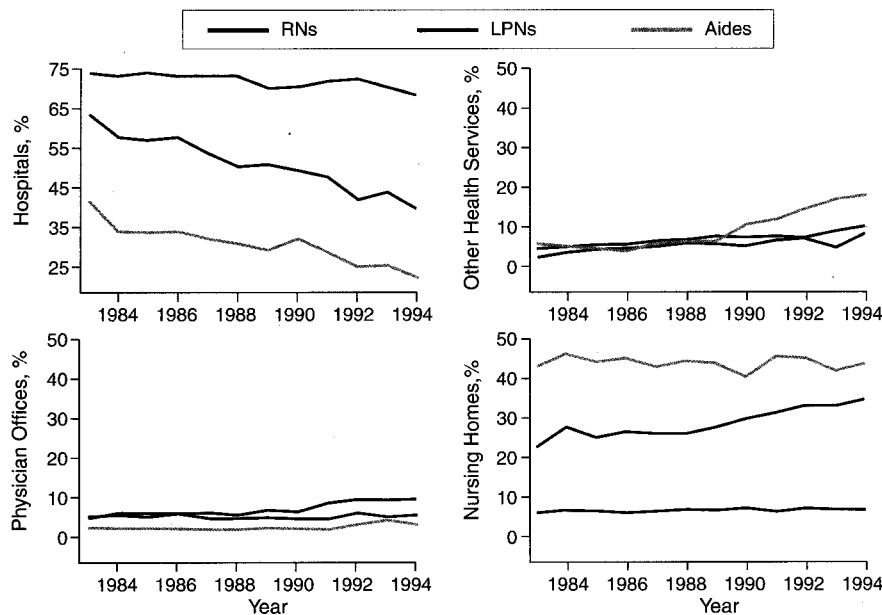


Figure 3.—The percentage of RNs, LPNs, and aides employed in the 4 largest sectors of the nurse labor market, 1983 through 1994. The sector "other health services" includes home health care agencies, clinics and laboratories, and health maintenance organizations. Standard errors for all estimates are below 1% for RNs and aides and below 2% for LPNs.

percentage of LPNs and aides employed in hospitals has declined sharply since 1983; by 1994, only 40% of LPNs and 22% of aides were employed in hospitals. Beginning in 1990, the percentage of aides employed in the other health services sector began increasing steadily, outpacing that of all other nurses. About the same time, employment of LPNs began moving into physician offices and nursing homes.

The declining percentage of nursing personnel employed in hospitals does not necessarily imply that the total number employed in hospitals was shrinking. Rather, the declining percentages reflect the fact that employment was not growing as rapidly in hospitals rela-

tive to other sectors of the nurse labor market.

Along similar lines, the falling percentage of nursing personnel employed in hospitals does not imply that hospital staffing levels per bed have declined. Table 3 shows changes in the number of hospital beds and nursing personnel employed in hospitals.²² Every year since 1983, the number of hospital beds declined. In contrast, the total number of nursing personnel employed in hospitals rose in most years. Thus, the ratio of total nursing personnel per hospital bed increased nearly every year during the study period. However, this increase was accounted for exclusively by rising RN employment as the ratio of RNs per

bed increased 53% between 1983 and 1994, compared with declines of 36% and 21% in the ratio of LPNs and aides per bed, respectively. Hospitals' preference for employing RNs suggests that they were purposefully increasing the skill mix of their nursing staff despite the rising wages of RNs, probably in response to rising acuity of patient illness.

States With High HMO Enrollment

Figure 4 shows employment and earnings trends for RNs, LPNs, and aides in the high HMO enrollment states compared with all other states. Although HMO enrollment grew in all states during this period, since about 1990 the growth in enrollment occurred almost exclusively in the 17 high enrollment states. Telephone interviews of knowledgeable health care executives (done to supplement the CPS analysis) suggested that the nurse labor market in Minnesota and Oregon was impacted by managed care sooner than in other states. Therefore, Figure 4 includes trends for these 2 states grouped together to see if this difference is discernible. Estimates were constructed in the same manner as in Figure 2. However, because of smaller sample sizes, we report average earnings and employment for 2-year intervals and do not report employment estimates for Minnesota and Oregon.

Registered nurse employment continued to grow in high managed care states, albeit at a slower rate than in low managed care states ($P < .001$), particularly since 1989-1990. LPN employment declined in high HMO states although the difference from low HMO states is not statistically significant ($P = .10$). In contrast, employment of aides grew at similar rates in high and low HMO states. Thus, there appears to be some evidence of a shift away from RNs and LPNs in the high HMO states relative to other states.

The lower panel in Figure 4 shows trends in wage growth. Wage growth tended to be larger in states with high HMO enrollment relative to states with low HMO enrollment ($P < .001$ for RNs and LPNs, $P = .005$ for aides). Among RNs, the rapid rate of annual wage growth that occurred throughout most of the 1980s began subsiding in all states in the 1990s. However, high managed care states experienced more rapid wage growth early on, followed by slower wage growth, and even wage declines, in later years. The slowdown in RN wage growth in later years relative to low managed care states is even more apparent in Minnesota and Oregon ($P = .04$). At the same time that RN wage growth was slowing in Minnesota and Oregon,

Table 3.—Total Number of US Hospital Beds,* Full-time Equivalent Nursing Personnel,† and Ratio of Nursing Personnel per Hospital Bed, 1983-1994

Year	Total Hospital Beds (in Thousands)	Total Hospital-Employed Nursing Personnel	Ratio of Nursing Personnel per Hospital Bed			
			All Nursing Personnel	RNs	LPNs	Aides
1983	1350	1 585 082	1.174	0.654	0.190	0.331
1984	1339	1 460 242	1.091	0.667	0.159	0.264
1985	1318	1 491 376	1.132	0.711	0.153	0.268
1986	1290	1 557 116	1.207	0.753	0.164	0.290
1987	1267	1 587 651	1.253	0.812	0.154	0.287
1988	1248	1 564 801	1.254	0.797	0.148	0.309
1989	1226	1 541 215	1.257	0.803	0.155	0.299
1990	1213	1 648 422	1.359	0.860	0.165	0.334
1991	1202	1 651 865	1.374	0.892	0.162	0.320
1992	1178	1 672 716	1.420	0.979	0.148	0.293
1993	1163	1 715 424	1.475	1.005	0.151	0.318
1994	1128	1 559 556	1.383	0.999	0.121	0.263
% Change, 1983-1994	-16.4	-1.6	17.8	52.7	-36.3	-20.5

*Data from *AHA Profile of United States Hospitals 1995/6*.²²

†Nursing personnel estimated from the Current Population Surveys of the US Bureau of the Census, 1983-1994.

the wage growth of aides accelerated relative to the low HMO states ($P = .008$).

Figure 5 compares the percentage of RN employment in each sector of the nurse labor market in high and low HMO states and in Minnesota and Oregon. Similar figures for LPNs and aides reveal fewer systematic or significant differences between high and low HMO states and, therefore, are not shown here.

The proportion of RNs working in hospitals (Figure 5) has declined even in low managed care states since 1991-1992. However, relative to the low managed care states, the shift away from hospital employment began earlier in the high managed care states ($P < .001$) and was evident in Minnesota and Oregon ($P = .10$) where only 60% of RNs were still employed in hospitals by 1993-1994. Similarly, relative to the low managed care states, the proportion of RNs employed in the other health services sector grew more rapidly beginning in the late 1980s in high managed care states ($P < .001$). There has been little change in the proportion of RNs employed in physician offices. Finally, in Minnesota and Oregon there has been a striking increase in the percentage of RNs employed in nursing homes compared with what would otherwise be a rather flat employment picture for this sector in all other states ($P < .001$).

Sectoral Shifts and Nurse Earnings

Conceptually, changes such as the development and spread of managed care may reduce nurse wages in 2 ways. First, managed care may reduce the overall demand for some nurses (as suggested by the data shown in Figure 4) and therefore exert downward pressure on nurse wages in all sectors of the labor market.

Second, managed care may lower wages by shifting employment of nurses out of the relatively high-paying hospital sector into sectors that have traditionally offered lower wages (as suggested by the data shown in Figure 5). Indeed, Table 4 shows that RNs and aides who worked in nonhospital settings in 1994 typically earned 10% to 20% less than those working in hospitals, while for LPNs the earnings differences were more modest. (The data in Table 4 are actual dollars, not inflation-adjusted dollars.)

Table 5 reports the results of decomposing actual wage growth (in percentage terms) between 1983-1984 and 1993-1994 into (1) what wage growth would have been with no sectoral shift in employment (ie, within sector wage growth) and (2) the contribution to wage growth of the sectoral shift in employment between 1983-1984 and 1993-1994. These calculations were done separately for all RNs, LPNs, and aides.

As can be seen, the sectoral shift in nurse employment over this period had a negative impact on earnings growth. Sectoral shifts in employment reduced wage growth for RNs by 0.07% in states with low HMO enrollment, but by 0.77% in states with high HMO enrollment. In Minnesota and Oregon, sectoral shifts in RN employment reduced wage growth by a full 2.82%. Compared with RNs, sectoral shifts in employment had a larger negative effect on the wage growth of LPNs and especially aides, but the effect is less clearly related to managed care. Taken as a whole, the estimated sectoral shifts in Table 4 suggest that the shift in nurse employment out of hospitals has been responsible for a modest reduction in wage growth and, further, that this reduction has been largest for aides and for RNs in states with more managed care.

In contrast to the evidence on sectoral shifts, there is no evidence that managed care was associated with a slowdown in within-sector wage growth. If anything, it appears that, in the absence of sectoral shifts in employment, wage growth was highest in those states that were most affected by managed care, particularly for LPNs and aides.

COMMENT

Overall, labor market conditions facing nursing personnel have remained quite favorable. Registered nurses fared particularly well through 1994, with strong employment and wage growth, low unemployment rates, a steady decline in part-time employment, and increasing employment opportunities in nonhospital settings. Despite declining levels of employment in hospitals, LPNs and aides continued to fare well in the labor market with increasing employment opportunities in the nonhospital sector. In addition, LPNs (like RNs) experienced wage growth, a decline in part-time employment, and unemployment rates that fell to all-time lows in the 1990s.

Starting in the early 1990s, however, trends in employment and earnings of nursing personnel began to change in significant ways, particularly among RNs. For the first time in decades, the percentage of RNs employed in hospitals began to decline as the growth in hospital employment moderated and the growth in nonhospital employment continued. At the same time, earnings of RNs stagnated, and there has been no growth in the inflation-adjusted wages of RNs since 1991.

Our results suggest that these emerging trends for RNs appear to be most pronounced in states with high enrollment in HMOs. In particular, 3 key differences are apparent in high HMO states as compared with those with low HMO enrollment. First, states with high HMO enrollment have experienced slower employment growth among RNs and LPNs (but not aides) since about 1990. In addition, the decline in the proportion of RNs working in hospitals was larger and occurred earlier in states with high HMO enrollment, as did the related increase in the proportion of RNs working in home health care and nursing homes. This complements the findings of a recent study²³ that reported a slower rate of growth in nurse employment in California hospitals that are located in competitive and high managed care markets as compared with rural hospitals that are less affected by competition and managed care. Finally, there is some indication that states with high HMO enrollment experienced slightly slower wage growth among RNs in the early 1990s, largely as a result of the

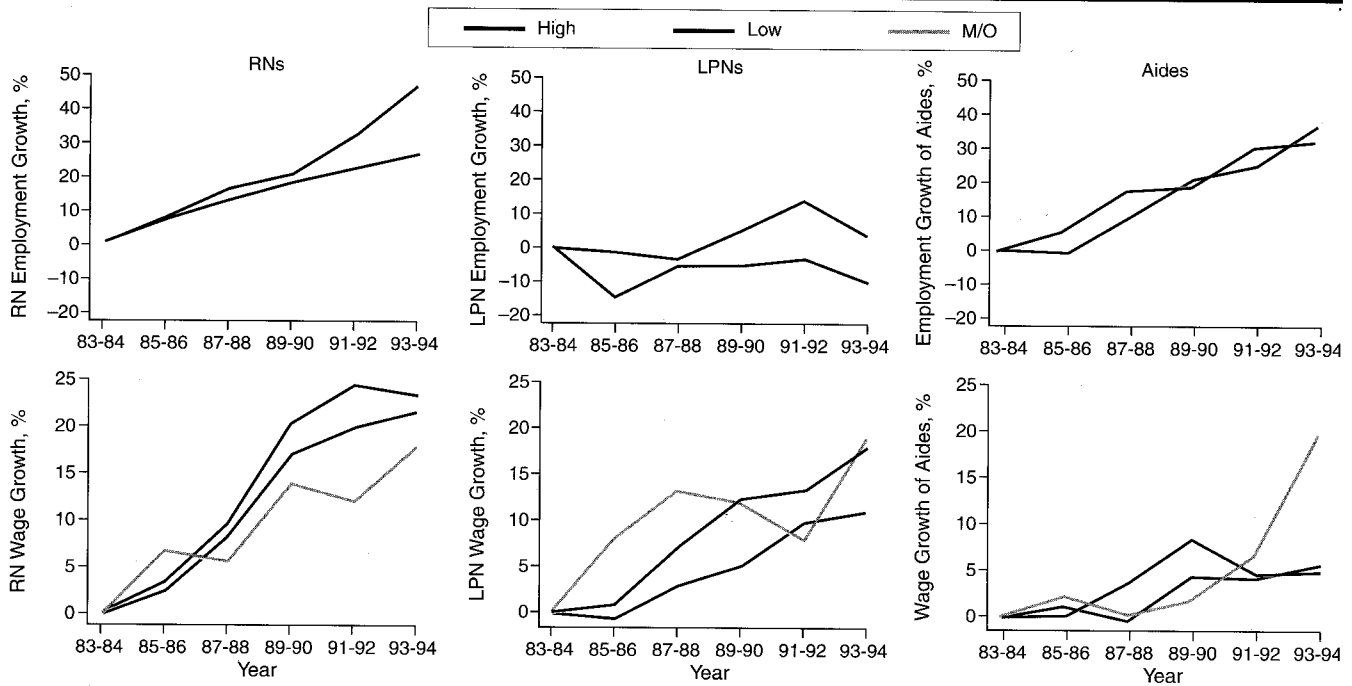


Figure 4.—Employment growth (top panel) and earnings growth (bottom panel) of RNs, LPNs, and aides, from 1983 through 1994, in high and low managed care states plus Minnesota and Oregon (M/O). Using 2-year averages, SEs for the employment and earnings estimates are comparable to those of Figure 2, with the exception of Minnesota and Oregon, for which SEs on earnings are in the 2% to 3% range for RNs and aides and 4% to 5% for LPNs.

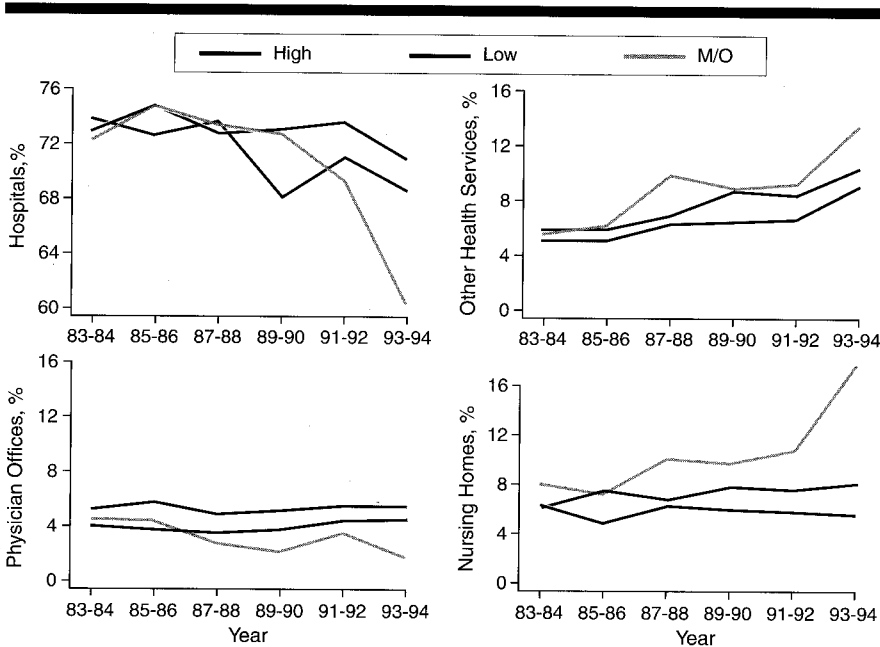


Figure 5.—The percentage of RNs employed in 4 largest sectors of the nurse labor market, in high and low managed care states plus Minnesota and Oregon (M/O). Standard errors are comparable to those of Figure 3, with the exception of Minnesota and Oregon, for which SEs range between 1% and 4%.

rising share of RN employment in the lower-paying nonhospital sector.

The slowdown in RN wages is not solely the result of the growth of managed care and can be attributed to a broader set of forces that were converging on hospitals during the early 1990s.²⁴ National unemployment levels rose during 1991 and 1992

because of the economic recession, which may have affected the employment and job security of many RN spouses (72% of RNs are married¹), thereby creating incentives for RNs to hold onto their jobs despite stagnating wages and changing working conditions. In addition, hospitals were confronting intensifying private- and

public-sector cost-containment pressures, plus increased uncertainty related to the prospect of national health care reform in 1993 and 1994. And many hospitals began restructuring and reengineering initiatives, which resulted in increasing job insecurity among nurses.^{23,24} These events affected hospitals throughout the country and, taken together, could easily have compensated for any negative effect on wages associated with increases in HMO penetration.

The slowdown in annual wage growth for RNs since 1991 raises certain implications for the future RN labor market, especially if the pattern of stagnant RN wage growth persists. First, the future supply of RNs could be reduced as individuals considering a nursing career view the wage slowdown as decreasing the economic attractiveness of nursing and, therefore, decide not to pursue nursing education. This could ease some of the pressure in the labor market, especially if the forecast of the Pew Commission on Health Professions proves correct: that up to half of all hospitals will close by the end of the decade resulting in a possible loss of as many as 200 000 to 300 000 nursing jobs.¹³ Similarly, the extent to which RN wages remain stagnant may moderate some of the pressure on hospitals and other health care organizations to substitute less expensive nursing personnel for RNs.

Although caution must be used if making generalizations based on our results, they do suggest that states and cities

Table 4.—Estimated Average Actual Hourly Earnings of RNs, LPNs, and Aides by Sector of Employment, 1994*

Sector of Employment	Earnings, \$ (SE)		
	RNs	LPNs	Aides
Hospitals	18.53 (0.15)	12.06 (0.30)	9.37 (0.20)
Nursing homes	15.51 (0.48)	11.63 (0.33)	6.90 (0.14)
Other health services	17.42 (0.39)	12.18 (0.66)	7.84 (0.23)
Office of physicians	17.06 (0.55)	12.03 (0.63)	9.92 (0.55)
All other employment settings	16.81 (0.41)	12.83 (0.68)	7.63 (0.27)

*Estimates are based on data from the 1994 Current Population Survey of the US Bureau of the Census. Other health services include home health care agencies, clinics and laboratories, and health maintenance organizations.

Table 5.—Decomposition of Wage Growth Between 1983-1984 and 1993-1994 for RNs, LPNs, and Aides and by HMO Enrollment in State*

Real Wage Growth, % (SE)	All States	States With Low HMO Enrollment		Minnesota and Oregon
		RNs	LPNs	
Total†	22.33 (0.72)	21.81 (0.96)	23.46 (1.07)	19.41 (3.87)
Within sector	22.67 (0.71)	21.89 (0.95)	24.23 (1.06)	22.22 (3.73)
Sectoral shift	-0.33 (0.07)	-0.07 (0.09)	-0.77 (0.12)	-2.82 (0.96)
LPNs				
Total†	14.22 (1.29)	11.39 (1.58)	18.33 (2.08)	19.30 (5.96)
Within sector	14.80 (1.33)	12.17 (1.62)	18.31 (2.16)	27.27 (6.65)
Sectoral shift	-0.58 (0.36)	-0.78 (0.44)	0.03 (0.61)	-7.97 (3.22)
Aides				
Total†	5.28 (1.07)	5.49 (1.50)	4.89 (1.52)	19.42 (5.06)
Within sector	7.16 (1.07)	6.97 (1.48)	7.30 (1.52)	19.59 (5.18)
Sectoral shift	-1.88 (0.291)	-1.48 (0.37)	-2.41 (0.45)	-0.17 (1.53)

*Estimates are based on Current Population Survey of the US Bureau of the Census data.

†Total growth=within sector growth+sectoral growth. "Within sector" wage growth estimates hold employment in each sector of the nurse labor market constant at 1983-1984 levels. "Sectoral shift" is the additional wage growth due to the change in employment across sectors between 1983-1984 and 1993-1994. Any discrepancies in the totals are due to rounding.

(eg, Tennessee, Philadelphia, Boston, New York City)^{25,26} experiencing strong growth of managed care can expect a noticeable slowdown in the employment growth for RNs and LPNs, with most new employment opportunities occurring in nonhospital settings. Despite such employment changes, these areas should not anticipate increases in unemployment among nursing personnel or significant reductions in their wages.

Because managed care seems to be associated with a slowdown in nurse employment growth in hospitals and a shift toward nonhospital settings, there is a need to examine how well the current focus of nursing education programs and their output match up with these emerging labor market trends. Today, nearly two thirds of new RN graduates are prepared in 2-year associate degree programs, which prepare nurses primarily for hospital-based patient care.²⁷ Since baccalaureate nursing education programs prepare RNs for community and primary care settings, as well as acute care, it would be prudent for public policy to focus on shifting the capacity of nurse education toward baccalaureate programs.

In sum, we see no evidence that nursing personnel who have left hospital settings are experiencing unusual trouble or

delays finding employment in other settings; rather, just the opposite seems to be occurring. Thus, there does not appear to be a need for intervention aimed at creating employment opportunities for nursing personnel. Instead, our results suggest that policymakers should concentrate on actions designed to facilitate changes in nursing education that will enable students to acquire the knowledge base and practice skills needed to provide competent nursing care in nonhospital settings. In addition to enlarging the capacity of baccalaureate programs for new nurses, educators may need to prepare to retrain the existing workforce as employment opportunities in nonhospital settings expand in the years ahead.

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