

# Trouble In The Nurse Labor Market? Recent Trends And Future Outlook

*As managed care has spread across the country, registered nurses have felt the pinch in earnings and employment. Are changes on the horizon?*

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**N**URSING PERSONNEL play a central role in producing and coordinating patient care in both acute and non-acute care settings, and recent vigorous efforts to lower and control costs have greatly affected nurses' employment, earnings, and clinical practice. Registered nurses (RNs), in particular, have been involved if reluctant participants in hospitals' efforts to restructure patient care delivery in the 1990s. Many RNs assert that they are working harder than ever, that work satisfaction and morale are suffering, and that the quality of patient care has deteriorated over the past few years.<sup>1</sup> They also complain that employment opportunities are disappearing rapidly in acute care hospitals, where historically two-thirds of all RNs have been employed.<sup>2</sup>

The perceived decline in hospital employment has been balanced to some extent by the shift of patient care delivery into nonacute care settings. Many in the nursing profession believe that health care delivery has been overly concentrated in acute care settings and thus have welcomed this shift.<sup>3</sup> Moreover, the greater use of nonhospital settings has generated an expectation of new employment opportunities for nurses. Nursing education programs throughout the country are scrambling

to revise their curricula to prepare nurses for new jobs and expanding opportunities in nonhospital settings.<sup>4</sup> However, some question the capacity of nonacute providers to employ all of the RNs leaving hospitals as a result of downsizing, consolidation, and efforts to gain greater efficiency.<sup>5</sup>

These and many other problems besetting the nurse workforce were brought before the Institute of Medicine's (IOM's) Committee on the Adequacy of Nurse Staffing in Hospitals and Nursing Homes in 1996 and the President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry in 1998.<sup>6</sup> Throughout their deliberations, the committees faced a crucial lack of empirical data regarding the effects of hospital restructuring and other health system changes on nurse staffing. Thus, both committees called for public and private efforts to collect and analyze data on the nurse workforce.

In our earlier work, which analyzed data available through 1994, we found that the spread of managed care had slowed employment growth for RNs in some states and shifted employment toward nonhospital settings, particularly home health.<sup>7</sup> Despite these emerging trends, the national impact on nurse

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employment and earnings was slight. Since 1994 there has been a surge in the growth of managed care, and it is likely that the national impact on the nurse workforce has grown.<sup>8</sup>

In this paper we examine employment and earnings trends for nursing personnel using data through 1997. Our analysis focuses on two questions. First, to what extent has the recent growth in managed care affected the employment of nurses nationwide? Have the emerging trends seen in our earlier work appeared more broadly, and have new trends emerged? Second, what do these trends imply for the future nurse workforce? In particular, are employment and earnings likely to be adversely affected over the next few years as health maintenance organizations (HMOs) and other forms of managed care spread?

## DATA AND METHODS

■ **DATA SOURCES.** Data were obtained from the U.S. Bureau of the Census Current Population Survey (CPS) Outgoing Rotation Group Annual Merged Files. The CPS, a household-based survey administered monthly by the Census Bureau, is widely used by researchers and by the U.S. Department of Labor to estimate current trends in unemployment, employment, and earnings. The CPS covers a nationally representative sample of more than 100,000 persons, and every month one-quarter of the sample (the outgoing rotation group) is asked detailed questions about current employment status, hours worked, earnings, occupation, and industry of employment. These data offer several advantages over other data commonly used to analyze the nurse workforce (for example, the American Hospital Association Personnel Surveys and the federal government's National Sample Surveys of the Population of Registered Nurses). Specifically, the CPS is the only source of annual data for all nursing personnel (RNs, licensed practical nurses, or LPNs, and aides) employed in both hospital and other settings. In addition, using CPS data enables comparisons of employment and earnings trends between nursing and other occupations.

We used CPS data on nursing employment and earnings for the period 1983–1997. The data set included all persons ages twenty-one to sixty-four who reported their occupation as RN (N = 47,996), LPN (N = 12,115), or aide, orderly, or attendant (N = 45,126). Hourly wages were calculated as usual weekly earnings divided by usual weekly hours. Wages were adjusted for inflation using the Consumer Price Index for all goods in urban areas (CPI-U) and are reported in constant 1997 dollars. Employment was measured as full-time equivalents (FTEs) (that is, the number of full-time employees plus one-half the number of part-time employees), where full-time employment is defined as working thirty or more hours per week. For each category of nursing personnel, data on earnings, employment, and employment setting were aggregated at the annual level. As a validity check, estimates of RN employment based on CPS data were compared with corresponding estimates from the 1984, 1988, 1992, and 1996 National Sample Surveys of the Population of Registered Nurses and found to be quite similar.<sup>9</sup>

In some analyses we categorized states into high versus low enrollment in HMOs according to the proportion of citizens enrolled in HMOs in 1994. We did this to be consistent with our earlier analysis of nurse employment and earnings trends and to enable us to determine whether trends that were emerging in 1994 continued in later years. The high-HMO-enrollment states (sixteen states and the District of Columbia) contain approximately one-half of the U.S. population and had an average HMO enrollment three times higher than the thirty-four low-enrollment states in 1994 (24 percent versus 8 percent).<sup>10</sup> HMO enrollment has grown in all states since 1994, but it has been more rapid in the low-enrollment states.

■ **DATA LIMITATIONS.** Although the CPS data have many advantages, they have a few limitations that bear upon our analysis. First, the survey instrument used to gather data for the CPS was revised in January 1994. As a result, interviewers probe more thoroughly for jobs in which the person worked

only a few hours in the week of the survey. This change probably resulted in an increase in the number of nursing personnel, particularly part-time workers, who reported being employed, and it may have slightly affected estimates of earnings and occupation.<sup>11</sup> Thus, some caution must be used when comparing our 1994–1997 estimates with those of earlier years.

A second limitation of the CPS data is that home health care, freestanding clinics, and HMO settings are combined in the industry definition “Health Services, Not Elsewhere Classified” (NEC). Comparing employment data from the 1992 and 1996 National Sample Surveys of the Population of Registered Nurses with the CPS indicates that employment in the NEC category consists largely of home health care providers. Similarly, other U.S. Bureau of Labor Statistics (BLS) data obtained from employer surveys indicate that home health accounts for nearly two-thirds of all employment in the NEC sector.<sup>12</sup> We are confident, therefore, that analyses of CPS data for the NEC category largely reflect employment and earnings trends for nurses employed by home health care providers.

Our analysis of CPS data relies on annual estimates. To make estimates representative of the U.S. noninstitutionalized population, we used sampling weights provided by the CPS. Because of the large samples being used, all trends reported in this paper are precisely estimated. For RNs and aides, the standard errors are about 2 percent for employment estimates and 1 percent for wage estimates. For LPNs, standard errors are about twice as large. As a result, for all outcome variables reported, one can reject the null hypotheses that there were no changes over time and no differences between high- and low-HMO-enrollment states at the .01 level.<sup>13</sup>

## RESULTS

■ **EMPLOYMENT AND EARNINGS.** Employment of RNs and aides grew impressively between 1983 and 1994 (Exhibit 1). Growth averaged 3–4 percent per year, nearly double the rate of employment growth among all occupa-

tions over the same period. In contrast, LPN employment declined slightly over this period. Since 1994, employment growth for RNs has slowed to just under 2 percent, while employment growth for LPNs and aides has increased slightly.

What is behind the recent slowdown in RN employment growth? The overall slowdown since 1994 is largely the result of a lack of employment growth in hospitals, a sector that until recently employed more than two-thirds of RNs and experienced annual growth rates of 2–3 percent in RN employment. In contrast, hospital employment of LPNs and aides, which declined sharply throughout the 1980s and early 1990s, declined less (and even increased for aides) after 1994. This suggests that hospitals may have increasingly substituted less-skilled nursing personnel for RNs. Despite these changes, RN staffing levels per hospital bed have continued to increase since 1994 (as the number of beds has declined).<sup>14</sup>

Given the declines in hospital employment of LPNs and aides, and the recent stagnation of hospital employment of RNs, where have jobs been created? Although home health (the NEC sector) is a much smaller industry than the hospital industry, it has been the fastest-growing employment setting for all nursing personnel throughout the 1980s and 1990s. In fact, the NEC sector has been the primary source of new employment for LPNs and aides since 1983 and for RNs since 1994.

The deceleration in the rate of employment growth for RNs (both total and hospital employment) during the past several years coincides with a noticeable decrease in earnings (Exhibit 1). RNs experienced strong yearly growth in inflation-adjusted hourly wages through 1990 (averaging 2.7 percent per year), but wage growth leveled off between 1990 and 1994 and then fell 1.5 percent annually over the next three years. Wage growth for LPNs was less impressive through the 1980s, and since 1994 LPNs have experienced a similar decline in earnings. Real wages for aides have grown very little during the past fifteen years, despite impressive growth in total employment. In fact, wage growth for aides has been

**EXHIBIT 1**

**Growth Of Employment And Earnings For Nursing Personnel, 1983–1997**

	Selected years				Average annual percent change			Percent change,
	1983	1990	1994	1997	1983-1990	1990-1994	1994-1997	1983-1997
<b>Employment (thousands of FTEs)</b>								
All sectors								
RNs	1,201	1,483	1,735	1,836	3.1%	4.0%	1.9%	52.9%
LPNs	399	398	361	363	-0.1	-2.4	0.2	-9.0
Aides	1,015	1,228	1,372	1,521	2.8	2.8	3.5	49.9
Hospital sector								
RNs	879	1,040	1,182	1,184	2.4	3.2	0.1	34.8
LPNs	250	195	141	126	-3.5	-7.8	-3.7	-49.7
Aides	419	386	294	336	-1.1	-6.6	4.5	-19.7
NEC sector								
RNs	69	112	179	232	7.1	12.3	9.1	234
LPNs	9	22	32	55	13.0	10.6	19.7	501
Aides	47	137	262	364	16.4	17.6	11.6	671
<b>Wages (in 1997 dollars)</b>								
All sectors								
RNs	\$16.00	\$19.25	\$19.45	\$18.61	2.7%	0.3%	-1.5%	16.3%
LPNs	11.33	12.19	12.97	12.29	1.0	1.6	-1.8	8.4
Aides	8.30	8.74	8.38	8.36	0.7	-1.0	-0.1	0.7

**SOURCE:** U.S. Bureau of the Census, Current Population Survey (CPS), Outgoing Rotation Group Annual Merged Files, 1983–1997.

**NOTES:** FTE is full-time equivalent. RN is registered nurse. LPN is licensed practical nurse. NEC is “not elsewhere classified” and includes home health care, freestanding clinics, and health maintenance organizations. “Aides” include nurse aides, orderlies, and assistants.

quite similar to that of all nonnursing occupations, in which real wages changed little between 1983 and 1997.

■ **ROLE OF MANAGED CARE.** To investigate the effect of managed care on employment and earnings trends, we compared growth rates for employment and earnings of RNs in states with high HMO enrollment with those of states with low HMO enrollment. RNs are of particular interest because they constitute the largest professional component of the nurse workforce. Data for LPNs and aides show fewer systematic differences between high- and low-enrollment states and are not reported here.

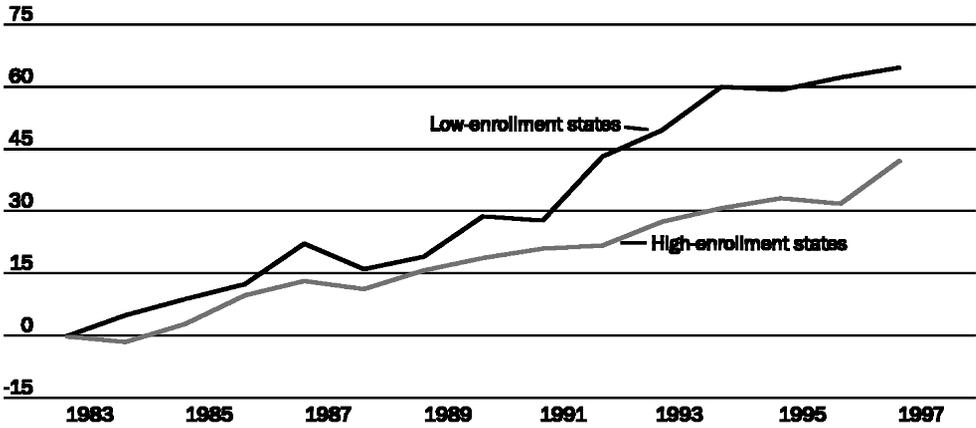
Our 1996 analysis of trends through 1994 found a marked slowdown in RN employment growth and a shift out of hospitals occurring primarily in states with high HMO enrollment.<sup>15</sup> If managed care in fact caused

these changes, then we would expect that these trends would have continued in states with high HMO enrollment and also would begin to appear in states that had low enrollment as of 1994. In other words, trends that were observed first in high-enrollment states should be indicative of what happens later in other states as managed care spreads.

This is precisely the pattern we found. The slowdown in employment growth, which occurred around 1990 in states with high HMO enrollment, occurred in the low-HMO-enrollment states beginning around 1994 (Exhibit 2). This pattern is even more striking in the hospital sector, where employment first flattened out in the high-enrollment states and then flattened out a few years later in the low-enrollment states (Exhibit 3). Similarly, wages began falling in states with high HMO enrollment after 1991, while wages continued

**EXHIBIT 2**  
**Employment Growth Of RNs Since 1983 in States With High And Low HMO Enrollment, 1983-1997**

Percent Increase in FTEs since 1983



SOURCE: U.S. Bureau of the Census, Current Population Survey (CPS), Outgoing Rotation Group Annual Merged Files, 1983-1997.

NOTE: RN is registered nurse. HMO is health maintenance organization. FTE is full-time equivalent.

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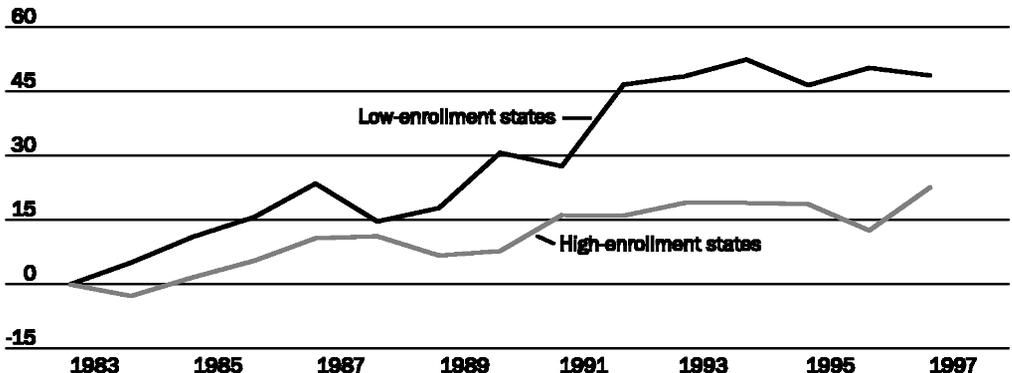
to rise in states with low HMO enrollment through 1993 (Exhibit 4). However, wages have declined in all states since 1993.

Because trends in the high-enrollment states indicate what the rest of the nation can expect as managed care spreads, recent developments in these states are worth noting.

There is some indication of a resurgence in employment growth in 1997, but it is impossible to know whether this is an aberration or an emerging trend (Exhibit 2). More importantly, since 1992 there has been a clear slowdown in employment growth in the home health (NEC) sector in the high-HMO states

**EXHIBIT 3**  
**Employment Growth Of RNs Since 1983 In The Hospital Sector In States With High And Low HMO Enrollment, 1983-1997**

Percent Increase in FTEs since 1983



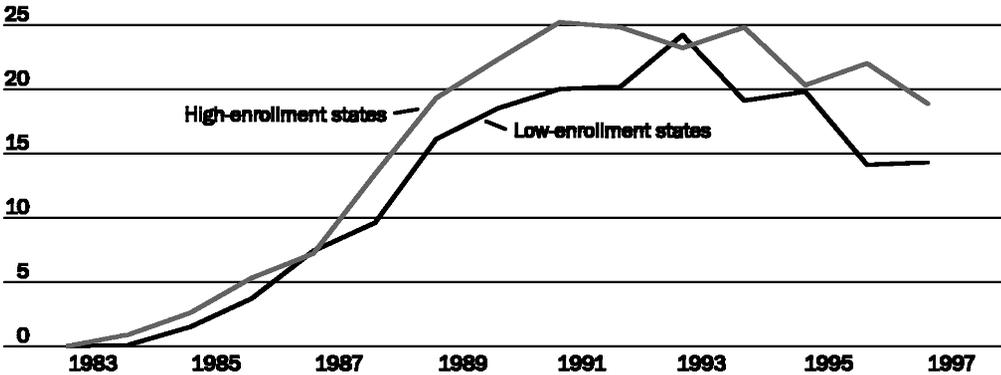
SOURCE: U.S. Bureau of the Census, Current Population Survey (CPS), Outgoing Rotation Group Annual Merged Files, 1983-1997.

NOTE: RN is registered nurse. HMO is health maintenance organization. FTE is full-time equivalent.

**EXHIBIT 4**

**Wage Growth Of RNs Since 1983 In States With High And Low HMO Enrollment, 1983-1997**

Percent Increase in real wages since 1983



**SOURCE:** U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983-1997.  
**NOTE:** RN is registered nurse. HMO is health maintenance organization.

relative to the low-HMO states (Exhibit 5). It appears that managed care is beginning to adversely affect employment opportunities in this key sector.

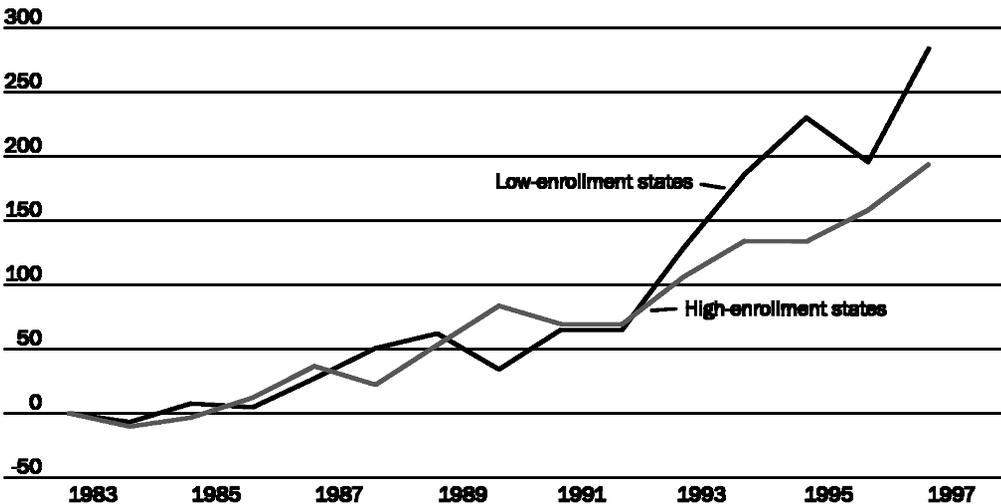
**DISCUSSION AND IMPLICATIONS**

We undertook this analysis to address two overriding questions. First, to what extent has the recent growth in managed care affected the employment and earnings of nurses na-

**EXHIBIT 5**

**Employment Growth Of RNs Since 1983 In The Home Health (NEC) Sector In States With High And Low HMO Enrollment, 1983-1997**

Percent Increase in FTEs since 1983



**SOURCE:** U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983-1997.  
**NOTE:** RN is registered nurse. NEC is "not elsewhere classified" and primarily includes home health care. HMO is health maintenance organization. FTE is full-time equivalent.

tionwide? Second, what does this imply for the future? In particular, can we expect employment and earnings of nurses to be adversely affected over the next few years as HMOs and other forms of managed care spread?

■ **HAS MANAGED CARE AFFECTED NURSE EMPLOYMENT AND EARNINGS?** Labor-market conditions for nursing personnel, and RNs in particular, have worsened over the past few years. Our findings suggest that this trend is attributable to growth in managed care, which has adversely affected the employment and earnings of nurses nationwide. In particular, it appears that managed care has reduced demand for RNs, first in hospitals and more recently in home health, and as a result has led to a decline in RN earnings. The slowdown in hospital employment and wage growth, first observed in states with high HMO enrollment in the early 1990s, has now emerged in all states. The slowdown in the rate of home health employment growth has emerged only in the past few years in states with high HMO enrollment.

■ **TROUBLE AHEAD? IMPLICATIONS FOR THE FUTURE.** Recent trends in states with high HMO penetration provide a good guide to likely employment and earnings trends for RNs in the near future. Based on the recent experience of these states, RNs can expect little employment growth in hospitals, a deceleration of employment growth in home health, and a continued gradual decline in wages over the next few years. These effects should be particularly pronounced in areas of the country that have only recently experienced the spread of managed care.

In the longer term, trends in employment and earnings of nurses will depend largely on how the maturing managed care market affects employment opportunities in the hospital and home health sectors. In both sectors the longer-term employment prospects for nurses are less clear.

■ **OUTLOOK FOR HOSPITAL EMPLOYMENT.** Because hospitals are the largest sector of the nurse labor market, particularly for RNs, a change in employment growth in this

sector will have a disproportionate effect on overall employment and earnings trends. The trends since 1994 in high-HMO states show little growth in hospital employment of RNs, but there is also no evidence of the drastic employment reductions that some have forecasted for the hospital sector.<sup>16</sup> On the other hand, very recent evidence suggests that hospital employment of RNs may be growing once more in the high-HMO states. Between 1996 and 1997 RN employment grew 8.2 percent in the states with high HMO enrollment, with much of this growth coming from hospital employment. At the same time, in 1998 there have been a number of reports of RN shortages throughout the country, suggesting that hospitals may be beginning to increase the size and elevate the skill of their nursing staffs.<sup>17</sup>

What might account for this recent upturn in RN employment? One possibility is that the slowdown in RN employment growth was temporary as hospitals passed through a transitional period in which they implemented downsizing initiatives aimed at improving efficiency. Thus, we may now be observing a resumption of employment growth as the high-HMO states move out of this transitional period. Some support for this view is provided by interviews of health executives in Minnesota and Oregon—which experienced early growth in managed care—who reported a rebound in RN employment in the early 1990s following a tumultuous period of rapid hospital downsizing and restructuring.<sup>18</sup>

Alternatively, the recent upturn in RN employment might represent a short-term correction for past cuts. Hospitals may have scaled back the number of RNs and reduced the skill mix of nursing personnel to a point at which it was no longer possible to appropriately treat a growing number of older and acutely ill patients. This view was strongly expressed by many nurses' organizations that offered testimony in 1995 to the IOM Committee on the Adequacy of Nurse Staffing in Hospital and Nursing Homes. Hospitals in high-enrollment states also may have become increasingly concerned about their nurse

staffing as a result of rising public mistrust and growing media attention to perceptions of declining quality of care, as well as by the groundswell of consumer protection legislation introduced throughout the states.<sup>19</sup>

Does the increase in hospital employment of RNs in 1997 represent an emerging trend, a short-term correction for past cuts, or perhaps even a statistical aberration? Until data on RN employment for 1998 and later years become available, it is impossible to know which is the case or to what extent these new developments may offset the substantial slowing in the rate of employment growth for RNs that we otherwise expect.

■ **OUTLOOK FOR HOME HEALTH EMPLOYMENT.** Perhaps the most important new trend to emerge since 1994 has been the slowdown in RN employment growth in the home health (NEC) sector in states with high HMO enrollment. This change suggests that employment growth in this key sector might soon begin to decelerate nationwide. In addition, Medicare's implementation of a prospective payment system for the home health care industry during the next four years will place new economic pressure on providers and reinforce the slowing effect of managed care. Given that home health has been the fastest-growing sector for nurse employment in the 1990s, a slowing of employment growth in this sector could substantially blunt future employment opportunities for RNs (and other nursing personnel).

**T**HE FORCES TRANSFORMING the health care delivery system during the 1990s have significantly affected the nurse labor market. The slowdown in employment growth and falling earnings observed over the past several years are likely to continue in the near term, but nursing still looks like a good career option, with employment growth and earnings continuing to be high relative to other occupations. The longer-term outlook for the nurse labor market is less clear. The next few years will be critical as we begin to observe the effects of a maturing managed care industry on the nurs-

ing profession.

Nurses occupy the front ranks in the delivery of personal health care services, playing vital roles as coordinators of care and as patient advocates. According to a recent national survey, more than 80 percent of Americans believe that nurses are doing a "good job" of serving health care consumers. Roughly 65 percent hold the same view about physicians, pharmaceutical companies, and hospitals, and only 34 percent, about HMOs and managed care companies.<sup>20</sup> How successfully nurses, employers, educators, and policymakers handle the coming challenges in the nurse labor market will be critical not only to maintaining the public's trust in the nursing profession but to preserving the public's confidence in the health care system as a whole.

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#### NOTES

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10. The states with high enrollment in HMOs in 1994 are Arizona, California, Colorado, Connecticut, District of Columbia, Florida, Hawaii, Maryland, Massachusetts, Michigan, Minnesota, New Mexico, New York, Oregon, Pennsylvania, Washington, and Wisconsin. Enrollment data provided by InterStudy Publications, Bloomington, Minnesota, unpublished documents, 1995.
11. A.E. Polivka, "The Redesigned Current Population Survey," *Journal of Economic Perspectives* (Summer 1996): 169–180.
12. Bureau of Labor Statistics, *Employment and Wages, Annual Averages, 1994* (Washington: U.S. Department of Labor, November 1995), Table 2.
13. Conventional standard errors and statistical tests assume independence across observations. The independence assumption may be violated, however, because multiple individuals within a household are sampled and because it is possible that the same individual could appear in the sample twice. For our data, treating each household as a cluster and correcting for arbitrary intracluster correlation (along the lines of Huber) had a negligible impact on the estimated standard errors and *p*-values. Therefore, for simplicity we report only conventional standard errors and statistical tests. See P.J. Huber, "The Behavior of Maximum Likelihood Estimates under Non-Standard Conditions," *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*, no. 1 (1967), 221–233. Also, see *Stata Reference Manual*, Release 3.1, 6th ed., vol. 2, no. 2 (College Station, Tex.: Stata Corporation, 1993), 405–414.
14. Based on bed data from 1998 *Hospital Statistics* (Chicago: American Hospital Association, 1998) and our estimates of RN employment from Exhibit 1, the ratio of RNs per hospital bed was 0.651 in 1983, 0.857 in 1990, 1.048 in 1994, and 1.115 in 1996 (the most recent bed data available).
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