Solving the Nursing Shortage through Higher Wages

Institute for Women's Policy Research

About This Report

Solving the Nursing Shortage through Higher Wages is part of a larger, on-going IWPR project that examines worker well-being in a number of industries and occupations. Funding for this analysis was provided by the Service Employees International Union.

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EXECUTIVE SUMMARY

Every year, our hospitals need more registered nurses. Between 2004 and 2014, more than 1.2 million nursing positions will become open, either to meet the growing demand for medical care or to replace nurses who retire or leave the field. Hospital administrators are voicing concerns about a nurse shortage—some are even declaring a crisis in nurse staffing. Nurses themselves are increasingly worried about the impact of understaffing on the quality of patient care.

This report looks in detail at trends in nurse employment and wages. It focuses on bedside nurses, who work in hospitals, since hospitals employ three-fifths of all registered nurses and are the primary health care setting experiencing a nurse shortage. In particular, the report examines how nurses' pay and working conditions affect hospitals' ability to meet their staffing needs. It reviews recent analyses of the nurse workforce, evaluating the policy options offered for solving the nurse shortage. And it offers new data analysis exploring the impact of collective bargaining on nurses' pay. The report concludes with recommended practices to ensure both an adequate supply of nurses and high-quality patient care through competitive, transparent wage-setting, collective bargaining, and nurse/patient ratio standards.

KEY FINDINGS

Concerns about a nurse shortage did not lead to higher wages.

- Over the late 1990s and into 2000, nurses' pay did not increase at all, although some hospitals had already begun worrying about a nurse shortage in 1997.
- When wages finally began to rise, nurses responded promptly—hospitals added 186,500 nurses between 2001 and 2003.
- Instead of competing for nurses by increasing pay, hospitals often turn to a combination of overworking (through mandatory overtime), contingent workers, understaffing, and one-time hiring bonuses to meet staffing needs.

Inadequate staffing undermines patient care.

- The quality of patient care suffers when cost-cutting staffing practices reduce nurse/patient ratios.

Most analyses of the nurse workforce overlook the critical link between pay and nurse supply.

- Of 49 recent analyses of the nurse workforce, only 11 proposed increasing wages in order to attract more nurses.
- However, a report from the U.S. Government Accountability Office cited "inadequate staffing, heavy workloads, the increased use of overtime, a lack of sufficient support staff, and the adequacy of wages" as key factors in the emerging nurse shortage.
- The link between wages and the number of workers seeking jobs—which most economists view as the key driver in labor markets—is too often overlooked when it comes to nurses.

Unions raise nurses' pay and improve staffing ratios.

- Nurses who are union members enjoy a 13 percent wage boost.
- Nurses' wages are higher in cities with a stronger union presence—for both union members and nurses who are not in unions.
- Nurse/patient ratios are 18 percent higher in the most unionized cities as compared to cities with the lowest levels of nurse unionization.

In 2001, the U.S. Government Accountability Office concluded that poor job satisfaction—including low pay—was the key to an emerging nurse shortage. The study described the developing supply issue as one of a shortage of nurses "available or willing" to accept employment under currently offered pay and working conditions. Since hospital administrators control nurse compensation and the hospital working environment, their workforce problems largely reflect their own choices about pay and staffing levels.

Effective solutions to nurse staffing concerns

- **Increasing pay for nurses is the most direct way to draw both currently qualified and aspiring nurses to hospital employment.** Hospitals that choose to offer higher wages are able to attract more nurses, leading to more adequate staffing and improved patient care.

- **Providing nurses a collective voice through unionization raises nurse pay and improves patient care.**

- **Hospitals' wage-setting practices must be fair, without unlawful collusion among hospitals. Anti-trust laws and guidelines should be enforced and, where appropriate, strengthened.** Better and more transparent data collection on wages and staffing (including nurse turnover and the use of temporary and contract nurses) would inform more effective policy responses. Whistle-blower protections are needed so nurses can raise concerns about wage-setting without fear of retaliation.

- **Mandated staffing ratios protect quality patient care.**

- **Higher pay for nurse faculty will allow expansion of nurse education, ensuring an adequate supply of nurses both now and in the future.**

- **More research and public education are needed to help hospitals, policy-makers, and the public understand how nurse pay affects nurses and patients.**

The clear picture that emerges from this study is that hospitals can choose fair, competitive wage-setting practices to maintain adequate staffing levels. Nurse labor supply increases when wages rise, so hospitals can meet their staffing needs without resorting to excessive use of overtime, floating nurses, expensive agency or registry nurses, or understaffing. Despite current pressures to reduce expenses, hospitals have an opportunity to reap the rewards of improving pay and working conditions, enhancing patient outcomes, and ensuring that medical needs are handled by competent, compassionate nursing staff.

INTRODUCTION

America's health care system depends on nurses more than any other workers.[1] One of every four health care workers is a nurse.[2] In hospitals, the average patient is attended by a nurse for 6.3 hours of every day.[3] Patients with more acute care needs get even more nursing attention—7.8 hours a day.[4] The level of nurse care affects patients' recovery, with more time from nurses reducing adverse outcomes.[5] Ensuring appropriate levels of nurse staffing is critical for providing quality patient care.

More and more nurses are needed every year. As our population ages, a bigger share has health care needs. In addition, consumers are demanding more high-tech and discretionary medical services. The U.S. Bureau of Labor Statistics predicts that between 2004 and 2014, the number of employed nurses will grow by 29 percent, from 2.4 million to 3.1 million.[6] Nurses as a group are also growing older, with many approaching retirement, and others will leave nursing work for other jobs. Thus, during the 10-year period that started in 2004, more than 1.2 million nurses will be needed to fill new positions and replace current workers.[7] Both the growth rate of nurse positions and the percent increase needed to meet hiring demand for nurses are much higher than the average for all occupations.

Hospitals, federal and state government agencies, nurse unions, consumer groups, and nurses themselves are concerned about how our voracious appetite for specialized care from nurses can be met. Many hospital administrators contend that they are now facing a nurse shortage situation—even a crisis—with too few nurses available to fill the current demand. Nurses have repeatedly expressed concerns about the impact of understaffing on patient care.

The current period of inadequate nurse supply is typically dated to about 1998,[8] with the primary evidence of a shortage being the vacancy rate for funded nurse positions. In 2001, this rate was reported to be 13 percent for hospital nurses.[9] Along with unfilled positions, shortages typically also involve higher than normal rates of turnover and shorter job spells.

In fact, the nursing profession has a history of recurring shortages—going back as far as the early 1900s.[10] Some experts argue that the problem is not too few nurses, but poor working conditions, including inadequate wages, which fail to draw available qualified staff or that dissuade individuals from training as nurses.

This report looks in detail at trends in nurse employment and wages, focusing on hospital nurses. Hospitals employ three-fifths of all working nurses[11] and are the main health care setting perceiving a nurse shortage.[12] Skill demands and working conditions are different in hospitals than in settings such as physicians' offices and nursing homes,[13] so labor supply and demand issues are unique for hospitals. In addition, restructuring of hospital services and health care financing in the last 25 years has led to drastic deterioration in working conditions for many hospital nurses. As pressures to hold down expenditures expand throughout the health care system, the employment situation for hospital RNs may be a bellwether for the occupation as a whole.

New analysis by the Institute for Women's Policy Research of data from the U.S. Department of Labor's Current Population Survey confirms that hospital nurses' wages failed to rise while the hospitals' nursing shortage developed and grew. The data analysis also reveals wide disparities between the states and among cities in hospital nurse wages. One potential explanation for wage variation explored in this report is the impact of unionization. This report examines what nurses gain by joining unions and explores the relationship between levels of unionization and overall hospital nurse wages.

This report also analyzes public policy discussions regarding the need for and the supply of hospital nurses, and the kinds of solutions promoted by different stakeholders for ensuring that we will have enough qualified nurses to meet anticipated health care needs. National and state initiatives to increase subsidies for nurse education, for example, will only be effective if staffing problems are actually caused by a shortage of nursing students; if low pay or unattractive working conditions keep trained nurses out of hospital employment,

Hospital nurses' wages failed to rise while the hospitals' nursing shortage developed and grew.

The U.S. Department of Labor projects between 2004 and 2014, 1.2 million nurses will be required in order to fill both new and vacated nurse slots.

approaches that directly target wages and working conditions are needed. Our goal is to shed light on effective, feasible strategies for ensuring an adequate short- and long-term supply of these critical health care professionals.

The clear picture that emerges from this study is that hospitals that choose to follow a "high-road" approach to nurse employment enjoy significant benefits. Nurse labor supply increases when wages are increased, so hospitals can meet their staffing needs without resorting to excessive use of overtime, floating nurses, expensive agency or registry nurses,[14] or understaffing. This allows higher-quality patient care and better patient outcomes. Despite pressure to reduce expenses, hospitals have an opportunity to reap the rewards of improving pay and working conditions, improving patient outcomes, and ensuring that medical needs are handled by competent, compassionate nursing staff.

I. A NEW ERA OF NURSE STAFFING

Employment of registered nurses is growing, both in absolute terms and as a share of the entire U.S. workforce. Since 1980, the number of employed nurses has nearly doubled, from 1.3 million to 2.5 million.[15] (During this period, the workforce as a whole expanded by only 43 percent.[16]) Nurses also represent an increasing portion of all workers: 1.3 percent in 1980, 1.6 percent in 2004, and a projected 1.9 percent in 2014.[17] And the number of employed nurses per capita rose from 368 per 100,000 population in 1970 to 807 in 2000—a 120 percent increase.[18]

Despite this continued strong commitment to nursing, many health care experts are voicing concern about the adequacy of our supply of nurses, both now and for the future. Some hospital representatives and industry analysts argue that it has become too difficult to fill funded nurse positions. They contend that rising demand for nurses' specialized services is outstripping the pool of workers joining the profession, especially in light of the retirement of currently employed nurses and movement of nurses out of hospitals into other health care settings, other industries, or nonemployment. In fact, while the U.S. Department of Labor projects that the number of employed nurses will increase by more than 700,000 between 2004 and 2014, it also anticipates that 1.2 million nurses will be required in order to fill both new and vacated nurse slots over the course of that decade.[19] The very low unemployment rate for experienced nurses—1 percent[20]—indicates that there is a very slim margin between the number of individuals qualified for nurse work who want that work and employers' demand for nurses.

Changes in health care delivery increase demand and hospital patient acuity

Hospitals have significantly changed their approach to health care delivery in recent decades. The congressionally mandated prospective payment system adopted for Medicare in 1983, under which providers are paid predetermined amounts based on a cost schedule, introduced a new emphasis on cost containment. When costs exceeded reimbursements, hospitals turned to insurance companies for more money, leading to new efforts by insurers to manage spending by controlling care. Spending constraints in the Balanced Budget Act of 1997 only increased financial pressures. New technological innovations allowed procedures formerly restricted to hospital settings to be performed more cheaply in out-patient facilities, leaving only higher-acuity patients, requiring a higher level of nurse care, in hospitals.[21] One analyst asserts that "managed care turns hospitals into large intensive care units"[22] by forcing healthier patients into out-of-hospital care. The hospital industry also experienced a period of aggressive mergers to reduce costs.

At the same time, the overall demand for health care is increasing. Our population is aging, with a growing share moving into age groups with higher-than-average needs for medical services. Consumers are better educated about medical practices and more assertive in asking for care—especially kinds of care that involve intensive support from nurses, such as diagnostic procedures, surgery, and transplants.[23]

Changing staffing practices erode patient care

When hospitals are unable to hire their desired number of nurses for the level of compensation they choose to offer, they can reduce the volume of services they

provide, by, for instance, closing beds; allowing longer waits for emergency room service, surgery, or other care; or not investing in new technologies or capital projects.[24] They also typically turn to four types of staffing approaches to keep medical care delivery on track.

- **Understaffing:** scheduling too few nurses for the predicted workload (i.e., increasing the number of patients each nurse must care for).
- **Overworking:** extending nurse work schedules, through long-hours schedules, mandatory on-call scheduling, or mandatory overtime. Overtime is more common in facilities with generally lower nurse staffing levels.[25] A survey of New York City teaching hospitals found that overtime was used more than any other supplemental staffing approach to increase nurse work-hours.[26]
- **Contingent workers:** hiring temporary ("per diem") or contract ("agency") nurses. Over half of acute care hospitals use temporary nurses.[27]
- **Bonuses:** offering one-time payments to new hires.[28]

Where new staffing practices reduce the number of hours that nurses spend with patients, quality of care suffers. Overworking pushes nurses out of hospital jobs to physicians' offices and other health care settings with better working conditions. Contingent workers often lack the specific job knowledge that is needed to provide optimal care in a high-stress work environment. And, while hiring bonuses may attract some nurses, they do not address the on-going concerns about wages and working conditions of the nurse workforce.

II. ARE THERE TOO FEW NURSES?

Recent public discussions about the need for more nurses reflect an assumption that there are not enough trained, qualified nurses to provide all the health care that they alone can offer. In fact, it is impossible to "prove" that there is a shortage of nurses. There is no objective measure of how many nurses are needed, nor is the level of "need" determined the same way by all employers or for all health care situations. The number of vacant funded nurse positions is often cited as an indicator of the relationship between nurse supply and demand. However, an employer's budget for nurse staffing reflects its overall financial context, preferences about the use of various personnel to augment nurses, and expected use of specific hospital services. Thus, an announced vacancy rate for one facility does not necessarily mean the same thing about the availability of nurses as the same statistic would for another institution.

In addition, the number of currently employed nurses does not count the entire supply of trained nurses: A growing number of nurses are employed in jobs outside of nursing. Thirty-five percent more nurses worked in non-nursing jobs in 2000 than in 1992.[29] One in 20 licensed nurses (5 percent) has chosen a job outside nursing.[30] And vacancy rates do not reveal other aspects of nurse labor supply, such as turnover, that affect hospitals' ability to maintain adequate staffing levels. Turnover in acute care hospitals averages 21 percent nationally.[31]

Hospitals' choices about nurses' wages and working conditions are key to making it easier, or harder, to attract and retain qualified staff. If working in an ambulatory care setting seems less stressful and more satisfying than hospital nursing, hospitals could increase wages to compensate for differences in working conditions and draw more nurses into their workforces. The same is true for qualified nurses who have elected to work outside their field: Better employment offers from hospitals would attract some of them back, easing hospitals' hiring crunch.

Two independent studies from nonpartisan congressional research organizations in 2001 suggested there were sufficient nurses to meet the existing demand, although perhaps not at wages offered at that time. The U.S. Government Accountability Office (then called the U.S. General Accounting Office) found evidence of the "emerging shortages of nurses available *or willing* to fill some vacant positions,"[32] but concluded that data were not available to document a general situation of an absolute lack of qualified nurses. The report noted that an emerging nurse shortage was caused by job satisfaction problems such as "inadequate staffing, heavy workloads, the increased use of overtime, a lack of sufficient support staff, and the adequacy of wages" and by too few workers training as nurses. An analysis of current and projected demand for, and supply of, nurses by the Congressional Research Service found that, in 1998, there were nearly 150,000 more nurses than needed, although mismatches of geography and specialization left some employers with fewer nurses than they desired.[33] The report projected that a true shortage would likely begin to develop in 2008 or 2009, although changes in employer practices, including wage increases and improvements to working conditions, and technological innovations or staffing modifications would affect those projections. Thus, hospitals themselves play a pivotal role in creating, or avoiding, a shortage situation in filling their nursing needs.

The U.S. Government Accountability Office noted that an emerging nurse shortage was caused by job satisfaction problems such as "inadequate staffing, heavy workloads, the increased use of overtime, a lack of sufficient support staff, and the adequacy of wages."

Lack of capacity limits enrollment in nurse training programs

One reason to suspect a shortage may develop is that enrollment in and graduation from nurse training programs has slowed, and fewer people are sitting for nurse licensing exams. Enrollment fell from 270,200 in 1993 to an estimated 200,000 in 2005.[34] The number of nurse graduates dropped by 11 percent from the 1993-1994 academic year to 1997-1998.[35] Only 75,000 individuals took a nurse licensing exam in 2000, down from 98,000 in 1996.[36]

A major factor in ensuring an adequate supply of new nurses is the limited capacity of current educational programs. In 2001, 5,000 qualified applicants were rejected from baccalaureate programs because there were too few slots for them.[37] Nurse training programs face the same recruitment problem for faculty as hospitals do for staff nurses: unattractively low salaries.[38]

Hospitals compete with other health care employers to attract and retain nurses

Hospitals have to compete more and more with employment opportunities for nurses in other settings, such as physicians' offices and nursing homes. The expansion of jobs for nurses outside hospitals is reflected in the decline in the share of nurses working in hospitals—from 68 percent in 1984 to 59 percent in 2000.[39] Some of these jobs have much more attractive working conditions than many hospital positions. Physicians' offices, for instance, may offer a lower risk of injury and more satisfying professional relationships than many staff nurses experience in hospitals.[40] The fact that hospitals have not taken sufficient measures to improve working conditions or offer wages that compensate for them explains why the nursing shortage is worse in hospitals than elsewhere.[41]

Hospitals gain from the perception of a nurse shortage

Hospital administrators' self-reported difficulties in maintaining staffing levels are frequently echoed as evidence of shortages. Their favored solutions tend to cluster around expenditures and activities that could be underwritten or undertaken by other parties. Typically, hospitals recommend government subsidies to expand nurse training programs—scholarships for students and money for programs. This is a self-interested proposal: It transfers the responsibility for ensuring that employers have an adequate hiring pool to other parties (i.e., taxpayers).[42] If wages and working conditions in the nursing profession are not attractive to prospective students, however, this approach will fail.

III. NEW ANALYSIS SHOWS HOSPITAL NURSES' WAGES REMAINED STAGNANT AS HOSPITALS' HIRING PROBLEMS GREW

Hospital nurses' wages remained flat for several years after hospitals began complaining of a nurse shortage, according to new analysis of data from the U.S. Bureau of Labor Statistics' Current Population Survey by the Institute for Women's Policy Research (Figure 1).[43] Reports that hospitals were having difficulty attracting nurses began to emerge in 1997 and 1998, but nurses' wages were essentially unchanged from 1996 to 2000—in fact, median hourly wages for hospital RNs were *lower* in 2000 than in 1996. It was not until 2001—after several years of hospitals' inability to draw an adequate number of nurses—that wages started to rise.

This analysis indicates that more nurses took jobs in hospitals as soon as wages began to increase. Employment levels were relatively flat from 1996 to 2001, but rose in 2002, following the wage increase in 2001. The employment growth trend for hospital nurses continued in 2003. As wages began to fall in 2004, however, the number of nurses working in hospitals also dropped.

Nurse wages vary among local labor markets

Hospital nurses' wages vary substantially among local labor markets. Median hourly wages for hospital nurses range from $38.85 in Oakland, Calif., to $19.44, in Norfolk, Va. (see Table 1). Six of the 10 cities with the

highest wages for hospital nurses are in California: Oakland, San Francisco, San Jose, and Sacramento, ranked first through fourth, respectively; Riverside, ranked eighth; and Los Angeles, ranked 10th. The other cities in the top 10 are New Haven, Conn. (fifth), Nassau, N.Y. (sixth), Seattle (seventh), and Portland, Ore. (ninth). The 10 cities with the lowest nurse wages are (in order from 58th to 67th highest) San Antonio, Texas, Louisville, Ky., Orlando, Fla., Dayton, Ohio, Syracuse, N.Y., Nashville, Tenn., Albany, N.Y., Rochester, N.Y., Memphis, Tenn., and Norfolk, Va.[44]

At the state level, hospital nurses fare best in Hawaii ($28.35 an hour), Washington, California, Massachusetts, Connecticut, Alaska, Oregon, Minnesota, Nevada, and Rhode Island (Appendix B). The 10 states with the lowest median hourly wages for hospital nurses are Alabama, Kentucky, Virginia, Wyoming, Mississippi, Tennessee, Iowa, North Dakota, West Virginia, and Arkansas ($18.26 an hour).

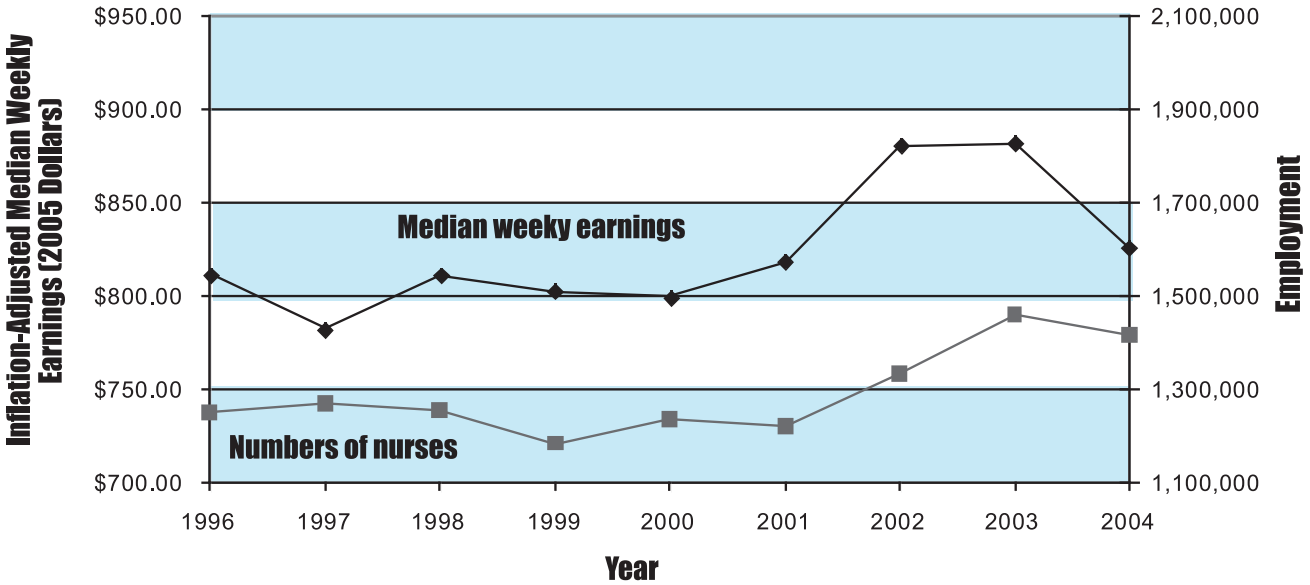
IV. WHAT DETERMINES NURSE PAY?

Economists expect supply and demand to determine wages

In the textbook case of competitive labor markets, employers and workers respond in exactly opposite ways to higher wages: More people want to work when wages go up, but employers (both individually and as a group) want to hire fewer workers, as each additional employee becomes more expensive. If employment markets operated perfectly, according to economic theory, the level of employment and prevailing wage at a given moment would be determined by supply and demand, the way prices and sales are set for goods such as groceries. The number of workers on the job and the wage paid to them at a given moment would reflect a compromise between employers' and workers' needs: The number of qualified people willing to work (labor supply) for a given wage would equal the number of workers that employers want to hire at that wage (labor demand) (Figure 2). Employers would like to hire more workers at a lower wage, but not enough workers are willing to accept employment for lower pay. And employers can't afford to hire more workers than the market equilibrium, because additional workers will not generate enough revenue to be profitable.

Theoretically, over a sufficiently long period of time, labor demand and labor supply will even out in a way that allows employers to hire the maximum possible number of workers, at the highest possible wage rate, that will provide both the largest profits for employers and the highest total earnings for workers. When employers want more workers than are available at the prevailing wage rate (for instance, because consumers want more of the goods or services the employers can currently offer), employers will have to increase wages, because they are already employing as many workers as will accept the current wage. Workers will respond by gaining the expertise and credentials required for the unfilled

Figure 1. Hospital Nurses' Inflation-Adjusted Median Weekly Earnings and Employment, 1996-2004



Source: Institute for Women's Policy Research analysis of 1996 through 2004 Current Population Survey Outgoing Rotation Group files.

Table 1. Best and worst MSAs for hospital nurses: Median hourly wages

Best MSA	Median hourly wage
Oakland, CA	$ 38.85
San Francisco, CA	33.70
San Jose, CA	31.77
Sacramento, CA	31.69
New Haven-Meriden, CT	31.67
Nassau-Suffolk, NY	30.72
Seattle-Bellevue-Everett, WA	28.99
Riverside-San Bernardino, CA	27.61
Portland-Vancouver, OR-WA	27.30
Los Angeles-Long Beach, CA	27.27

Worst MSA	Median hourly wage
San Antonio, TX	$ 21.48
Louisville, KY	21.27
Orlando, FL	21.02
Dayton-Springfield, OH	20.93
Syracuse, NY	20.82
Nashville, TN	20.46
Albany-Schenectady-Troy, NY	20.40
Rochester, NY	19.72
Memphis, TN	19.56
Norfolk-Virginia Beach-Newport News, VA-NC	19.44

Source: Institute for Women's Policy Research analysis of September 1995 through April 2005 Current Population Survey Outgoing Rotation Group files.

positions or, if already qualified, moving from current jobs or unemployment to the better-compensated jobs.

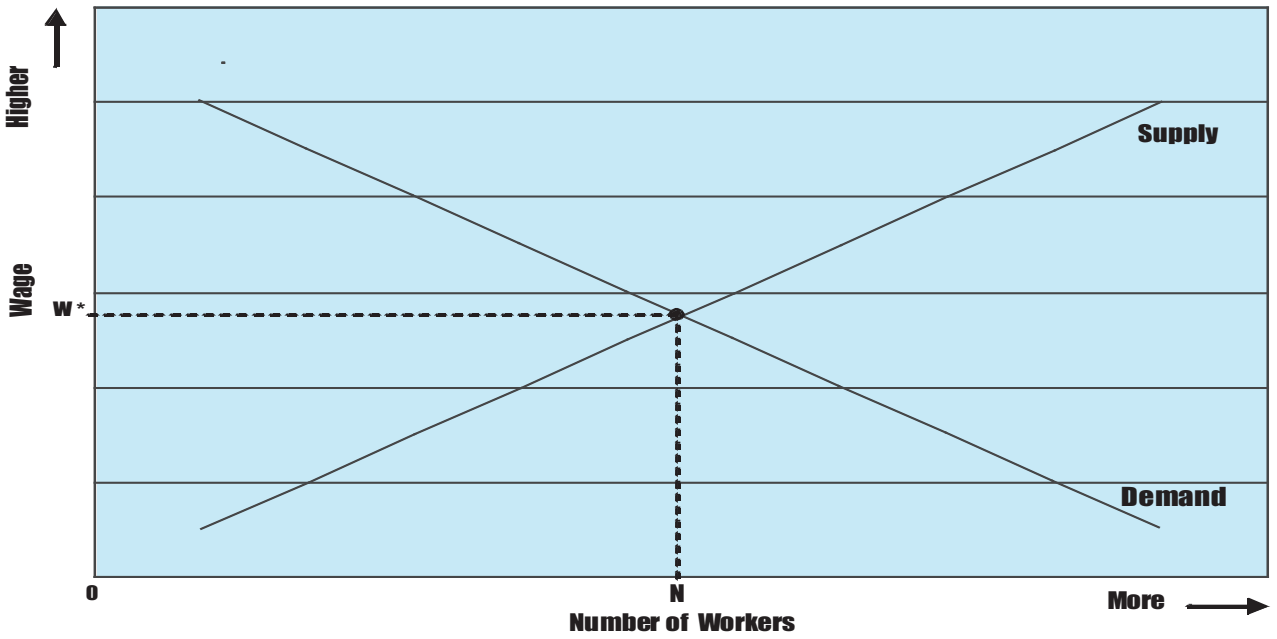
How supply and demand affect wages in other occupations: The example of pharmacy

The field of pharmacy more closely approximates economic theories of wage-setting, while sharing some important similarities with nursing. As a health care occupation, pharmacy is subject to some of the same demand growth and economic pressures as nursing. The occupation also has a history of periods of demand outstripping the need for workers, dating at least to the 1950s.[45] Employers perceived the start of a new shortage of pharmacists at the same time that hospitals began worrying about a nurse shortage—around 1998[46]—as use of prescription drugs grew. Demand for workers in both occupations is fueled in part by the aging of the U.S. population, which increases use of health care.

Unlike nursing, however, wages responded very quickly to the growing need for pharmacy professionals. From 1998 to 2000, pharmacists' incomes increased by 20 percent[47]—while nurses' earnings remained flat. While the pharmacy shortage has lessened, salaries rose another 8.5 percent between 2002 and 2004.[48] Training programs in pharmacy expanded as the need for more graduates became apparent.[49] Industry analyses of pharmacists' earnings commonly attribute wage hikes to the short supply,[50] as if it were natural that wages would rise as labor supply tightened.

One key difference between pharmacists and nurses is that fewer than a quarter of pharmacists work for hospitals.[51] The majority of occupational growth has

Figure 2: Theory of Labor Supply and Demand



occurred in the retail sector, especially in retail chains.[52] Pharmacists' wages are higher in retail pharmacy than in hospitals.[53] The pharmacy profession is not female-dominated, as nursing is—44 percent of pharmacists are women, while 92 percent of registered nurses are.[54] Thus, pharmacists' wages are not subject to the penalty that often accompanies jobs such as nursing that are seen as "women's work." [55]

Education and experience should increase wages

In general, workers who bring more skills and experience to the job market should be able to earn more than those with less to offer to employers. In nursing, however, additional years of experience are poorly rewarded. Wage growth is so concentrated in the early years of a nurse's career that earnings after 20 years in the profession are only 1 percent to 3 percent higher than those of nurses with only five years of experience.[56] Nurses with starting salaries of $35,000 reach an earnings plateau at $47,000 and have no more room for earnings growth, especially if they stay in direct patient care.[57] This kind of wage compression discourages long-term job tenure and makes nurses more susceptible to offers to move out of hospitals into other health care settings.

Extra education should also improve workers' wages. Among workers overall, for instance, those with a college education earn 72 percent more than those with only a high school degree.[58] In nursing, however, there is an unusual degree of similarity of earnings, regardless of whether nurse training was received through a diploma program, an associate degree program, or a four-year bachelor degree program.[59] In fact, nurses trained in diploma programs earn more than those with a bachelor's degree (nurses in these two groups earn $43,422 and $42,972 a year, respectively)—likely because they have more years of nursing experience .[60]

The fact that the links between education, experience, and wages are so weak in nursing suggests that supply and demand do not function well in the RN labor market.

High risks of nursing should garner higher pay

Health care jobs are some of the riskiest in the nation. Hospitals and nursing homes have the highest and second-highest rates, respectively, of nonfatal workplace injury and illness of all industries.[61] Among nurses, those in nursing homes and hospitals experience the highest and second-highest risks, respectively, of injury.[62] Nurses are vulnerable to latex allergies, back injuries, physical assault, blood-borne pathogens, and pollution from waste incineration, disinfectants, and surgical waste.[63] Workers such as nurses who are exposed to greater risks on the job should be compensated for the risk associated with their occupation.

Employment markets are not always efficient

Many factors can disrupt the idealized supply-and-demand scheme of wage-setting. Employers can make a mistake and offer too low a wage, so they are not able to hire enough workers to operate at full capacity. Or workers may have gotten the wrong kind of training, so they are not qualified to accept jobs that employers want to fill. If a local labor market offers very few employment opportunities, workers may have to accept much lower pay than they would in a more competitive market, or be willing to relocate. And other factors, such as discrimination, may affect employers' hiring, pay, and promotion decisions, causing inefficiencies.

If there is a shortage, why don't hospital RN wages increase?

As noted above, wages for hospital nurses are not affected by labor demand in the expected manner. Their wages remained unchanged for years after hospitals began noticing shortages. There are several possible explanations for this rupture of the relationship between supply and demand.

<u>Collusion among hospital administrators</u>
Although holding down nurses' wages can create or worsen labor supply problems, hospital administrators may perceive lower wages to be in their best interests.

Nurses with starting salaries of $35,000 reach an earnings plateau at $47,000 and have no more room for earnings growth, especially if they stay in direct patient care. This wage compression discourages long-term job tenure and makes nurses move out of hospitals into other health care settings.

When hospitals join together to set nurse wages in their communities, normal supply and demand processes will not work, and wages will not respond appropriately to shortages.

In a market with more than one hospital, however, an individual hospital whose wages are lower than its competitors will not be able to attract enough nurses. In this situation, hospital administrators may choose to unlawfully work together to set wages for the entire local labor market. When hospitals join together to set nurse wages in their communities, normal supply and demand processes will not work, and wages will not respond appropriately to shortages.

Employers engaging in this kind of collusive behavior regarding wage-setting act much as a monopoly would in terms of setting prices for its product: With only minimal, or no, competition, wages or prices are set unilaterally, rather than through supply-and-demand negotiation.[64] The potential for cooperative behavior among hospitals in a local area has increased with the proliferation of hospital mergers, because there are fewer individual employers.

A lawsuit filed by the U.S. Department of Justice (DOJ) in 1994 alleged that hospitals in Utah engaged in exactly this sort of collusive behavior.[65] The suit contended that hospital administrators collaborated in fixing nurse salaries and preventing any hospital from offering salaries above the agreed-upon level, even though that action would have been likely to alleviate the noncolluding hospital's nurse shortage. Consent decrees issued in the suit forbid exchanges of information and agreements among hospitals about nurse compensation.[66] Previously, the DOJ had investigated similar concerns about wage-setting by hospitals in Connecticut. In 1996, the DOJ and the Federal Trade Commission (FTC) issued guidelines to clarify what kinds of wage information could be shared among employers, and what exchanges might be considered collusive. The DOJ and FTC retain authority to enforce anti-collusion standards.

Nurse loyalty impedes job mobility

The supply-and-demand model of wage-setting assumes that workers will leave lower-paying jobs and accept better ones, either locally or elsewhere. If nurses are for some reason reluctant to make this kind of transition, employers will feel less pressure to provide competitive salaries and working conditions. In fact, nurses are inclined to stay within a single local labor market for their entire work career,[67] so one source of job exit—moving to a different city—is dampened in this profession.

The gender factor

As a job primarily performed by women, nursing is affected by gender-based bias in pay.[68] According to the theory of comparable worth, the mere fact that women are the main holders of certain jobs leads to their pay being unusually low. For example, in a lawsuit filed by nurses in Denver in 1978, the plaintiffs provided statistical evidence that salaries paid by the City of Denver were higher in jobs held primarily by men, and lower in jobs requiring similar qualifications that were filled mainly by women, such as nursing.[69] Analysis of national-level census data also found that nurse wages are held down by the fact that the occupation is female-dominated.[70]

V. IGNORING THE OBVIOUS: THE IMPORTANCE OF NURSE WAGES

Despite the concerns expressed by hospital administrators since 1997 about the lack of nurses, nurses' wages were flat from 1989 to 2000.[71] It was during this period of nurse wage stagnation that worries about the supply of nurses began to be articulated. But only in the last few years have nurse wages begun to rise.[72] As a rule, hospitals did not use pay incentives (other than one-time payments such as signing bonuses) to draw nurses from other health care employers to hospitals, or from nonemployment into the workforce. For instance, in Washington, where employers complained of a lack of qualified nurse applicants, only 17 percent of 83 acute care hospitals surveyed in 2001 had boosted salaries in the previous year to try to attract higher-skill candidates.[73]

Nurse workforce analyses ignore the effect of pay on nurse labor supply

Numerous state commissions and task forces, industry groups, and federal agencies have issued reports on the perceived shortage of nurses, looking either at national trends and conditions regarding the supply of nurses or at individual states' labor markets for nurses. In these publications, perceived shortages are usually explained by problems with inadequate training capacity, competing job opportunities for women outside health care,

and the lack of a positive public image of nursing as a career. For example, a spring 2004 report from the U.S. Department of Health and Human Services contends that "there is a consensus that any nursing shortage in Massachusetts, like elsewhere, is associated with an insufficient capacity of nurse training programs".[74] However, the report does not examine or report on nurses' wages—*even though one of two Massachusetts nurse workforce studies referenced by the Department of Health and Human Services specifically states that inadequate wages prevent adequate staffing*.[75]

When suggesting solutions to the difficulty hospitals seem to experience in employing sufficient numbers of nurses, these analyses typically recommend new public subsidies for training,[76] or marketing campaigns to make nursing seem more attractive. Wages and working conditions receive scant attention, if any, in the majority of these reports. Even when compensation is discussed as a key factor discouraging potential workers from choosing nursing as a career, lists of policy recommendations often neglect to call for higher wages, more generous benefits, or improved working conditions.

A review of 49 nursing workforce analyses, by legislatively created bodies, hospital and nurse associations, industry and university researchers, and nonprofit organizations, finds that only 11 studies, or 22 percent, advocate raising wages in order to attract and retain nurses (see Appendix D). Unfortunately, these incomplete sources of information, analysis, and policy recommendations appear to dominate public policy discussions about how a nurse shortage can be solved.

Research confirms that higher wages increase nurse labor supply

Despite the widespread neglect of wage issues in nurse workforce analyses, research published in peer-reviewed journals and other professional publications confirms the critical role played by wages in increasing nurse labor supply. Nurse supply is expanded, in response to wage incentives, primarily through attracting students to training programs,[77] but also by keeping workers on the job[78] or encouraging more work hours.[79] One study estimates that annual wage increases of 3.2 percent to 3.8 percent would lead to a 6.2 percent growth in graduation rates from nurse training programs, providing an adequate supply of employed nurses by 2020.[80] Analysis of recent wages and nurse employment finds that wage increases in 2002 and 2003 were accompanied by significant increases in nurse employment—especially among the oldest and youngest cohorts—as well as growth in enrollment in training programs.[81] Most of the job growth was in hospitals.

Our review of hospital nurses' wages and employment confirms the relationship between wage hikes and employment levels (Figure 1, above). Nurses' median weekly real (inflation-adjusted) earnings were actually *lower* in 2000 than in 1996—that is, they *fell* over the period when hospitals began to experience a shortage. The number of nurses working in hospitals was also flat over this period. Wages rose slightly between 2000 and 2001, climbed more substantially to 2002, and remained at the 2002 level in 2003. Hospital nurse employment increased, lagging behind wage gains by one year—that is, while hospitals delayed increasing nurses' wages, labor shortages continued; when wages improved, nurses moved to fill hospital vacancies.

This is reassuring evidence that hospitals *can* effectively address problems they have in attracting qualified nurse personnel by offering better wage inducements. Both currently trained nurses and new training program enrollment appear to be responsive to wage signals.

A recent and extensive comparative analysis of nurse labor supply in 19 countries faults employers in the United States for underutilizing wage increases when shortages are perceived.[82] Higher pay would signal that demand was beginning to outstrip supply and would draw new trainees into the nursing profession. As one expert notes, "low supply of nurses may reflect a low demand—not an unmet demand"[83]—because workers pay to get training in fields that have attractive job openings.

Low pay and poor working conditions push nurses out of hospitals

The proportion of all nurses who are employed by hospitals has been decreasing for the last 20 years.[84] This is partly because structural changes in health care delivery have moved many services from hospitals to out-patient settings. It is also due in part to nurses' dissatisfaction with working conditions in hospitals. Of all health care employment settings, nurse job satisfaction is lowest in nursing homes, and second-lowest in hospitals, with one-third (33 percent) of hospital nurses reporting that they are dissatisfied with their job. Nurse educators have the highest job satisfaction, with only 17 percent dissatisfied.[85] Older nurses are less satisfied with their jobs than younger ones.

Many nurses are able to find both higher salaries and preferable work schedules in jobs outside nursing. Of employed nurses who are not working in nursing, more than a third (35 percent) are in positions with higher pay.[86] Nearly half (46 percent) find the hours better in their current work, and a similar share (45 percent) are in jobs that are more professionally satisfying.[87]

Hospital employment is generally seen as more stressful than other health care settings, and work schedules available elsewhere are seen as more attractive.[88] Poor working conditions, inadequate benefit plans, and the lack of career ladders in hospital nursing also make other employment opportunities more attractive.[89]

VI. STAFFING LEVELS MATTER: THE IMPACT ON QUALITY OF CARE

Time spent with nurses is intrinsically linked with the quality of care hospital patients receive, as measured by adverse patient outcomes. Staffing issues in general are cited as the cause of 24 percent of unexpected negative patient outcomes ("sentinel events")—up from 16 percent in 1998.[90] More nursing care per patient shortens hospital stays, reduces rates of urinary tract infections and upper gastrointestinal bleeding in medical patients, and lowers rates of death from complications in surgical patients,[91] while decreasing the occurrence of pneumonia in surgical patients.[92]

Higher nurse staffing ratios improve patient outcomes

Increases in the number of full-time-equivalent nurses per inpatient day decrease avoidable adverse events, including urinary tract infections, pneumonia, and thrombosis after major surgery,[93] complications following abdominal aortic surgery,[94] and other nonfatal adverse events in hospital settings.[95] For intensive care patients, decreased nurse-to-patient ratios can increase the number of days spent in an intensive care unit and lengthen overall hospital stays.[96]

Nurse staffing ratios are also linked to patient mortality.[97] In fact, each additional patient per registered nurse in a hospital increases the likelihood of surgical patient death within 30 days of admission by 7 percent,[98] and each additional nurse per patient day decreases the odds of AIDS patient death within 30 days by more than 50 percent.[99]

Staff mix matters too

Higher levels of nursing care relative to other hospital personnel also augment quality of care, as measured by medication errors,[100] wound infections,[101] patient falls,[102] lengths of stay, shock, and cardiac arrest.[103] For instance, a 10 percent increase in nurse work hours as a proportion of all hospital nursing staff hours decreases the odds of pneumonia by 9.5 percent.[104] The proportion of registered nurses in a hospital has also been shown to influence the chances of patient death.[105]

Workload and work schedules can impede quality care delivery

Other aspects of nurses' working conditions can also hamper their ability to ensure patient safety. Increases in the amount of work expected of nurses may create more interruptions while providing patient care, a phenomenon considered by health care professionals to contribute to medical errors.[106] Nurse burnout, attributed to high workloads and stressful work environments, reduces patient satisfaction with care.[107]

Extended shifts and mandatory overtime can harm quality of patient care. The Institute of Medicine found, for instance, that longer work hours and fatigue reduce nurses' job functioning.[108] The likelihood of error increases with longer work hours and with any performance of overtime, regardless of the length of the original shift.[109] Error likelihood is three times greater when shifts exceed 12.5 hours.[110] These results are particularly salient given that full-time hospital staff registered nurses work an average of 55 minutes longer than scheduled *each day*, and 40 percent of registered nursing shifts worked in hospitals exceed 12 hours.[111]

Contingent workers can reduce quality of care

Increasing use of contingent workers in nursing health care[112] and widespread reliance on temporary nursing staff[113] also threaten the quality of hospital care. Because temporary workers are far less familiar with their hospital's procedures and staffing than

More nursing care per patient shortens hospital stays, reduces infections, and lowers rates of deaths from complications.

regular employees, the presence of temporary nurses is associated with higher indicators of poor quality of care such as medical errors and infections.[114]

Higher nurse staffing levels are cost-effective for hospitals

These findings on the importance of appropriate nurse staffing have significant financial implications. The costs to hospitals of adding nurses may be at least partially balanced by savings from fewer adverse patient outcomes[115] such as nosocomial pneumonia[116] or other hospital-acquired infections.[117] For instance, pneumonia is associated with more than five additional days spent in the hospital, an increase in the chance of death of approximately 5 percent, and around $25,000 in additional costs;[118] higher nurse staffing levels are associated with lower rates of postsurgical pneumonia.[119]

Because patients receive more care when nurse staffing levels are higher, patient outcomes are better. Kovner and Gergen note that this effect "is good for patients, good for a hospital's reputation, and—depending on the cost-effectiveness—may be fiscally good for hospitals as well."[120] Thus, while hospitals' operating costs increase when the nurse workforce expands, some research suggests that hiring more nurses may not affect hospitals' profitability.[121]

VII. THE VALUE OF A COLLECTIVE VOICE

The fraction of the nurse workforce that is covered by union contracts remained steady over the 1990s, at 19 percent.[122] (During this period the unionization rate for workers as a whole fell from 18 percent to 15 percent.[123]) Nurses working in hospitals are especially likely to participate in unions, as 38 percent of hospitals have union contracts.[124] Since nurse employment grew substantially from 1990 to 2000, the *number* of nurses benefiting from union representation increased over the decade.

Joining a union means higher wages for hospital nurses

Unions strengthen nurses' voice in negotiating wage and compensation issues with their employers. According to new analysis of Current Population Survey data by the Institute for Women's Policy Research, unionization increases hospital nurses' wages by 13 percent. This adds $2.84 an hour to the average hourly wage of non-union nurses, giving those who are union members an average wage of $25.51.[125]

Wages are higher where more nurses join unions

Unions do more than increase wages for their members: Wages are higher for all nurses in cities with greater levels of unionization. The union density effect is striking at the level of local labor markets. In 11 cities, more than half of hospital nurses are unionized: Buffalo, N.Y., San Jose, Calif., Stockton, Calif., New York City, Oakland, Calif., San Francisco, Sacramento, Calif., Seattle, Minneapolis, and Youngstown, Ohio (Table 2). The average wage in these cities is $29.20. The average hospital nurse wage in the least unionized cities—Salt Lake City, San Antonio, Texas, Tampa, Fla., Dallas, Phoenix, Austin, Texas, Birmingham, Ala., Denver, Houston, Allentown, Pa., Memphis, Tenn., Indianapolis, Nashville, Tenn., and Louisville, Ky.—is $22.85—a difference of $6.34 an hour. Comparing the most and least unionized cities, unions add 28 percent to the wages of *all* hospital nurses, not just the ones who join a union.

Among states, union density varies from a high of 70 percent in Hawaii to a low of 3 percent in North Carolina (Appendix C). The top 10 states, in order, are Hawaii, Washington, Minnesota, New York, Oregon, Alaska, Rhode Island, California, Montana, and Massachusetts. The 10 states with the lowest levels of hospital RN unionization are (ranking 41st through 51st) South Dakota, Tennessee, Utah, Virginia, Kansas, Colorado, South Carolina, Indiana, Arizona, and North Carolina.

The relationship between unionization and pay can be measured statistically. On a scale ranging in absolute value from 0 (no relationship) to 1.0 (perfect correlation), across cities, union density and nurse wages vary together at the 0.61 level. This shows a strong correlation between the presence of unions and overall wages for nurses.

Unions improve quality of care

Nurse unionization also improves quality of patient care. Research has found that mortality rates from acute myocardial infarction are lower in unionized hospitals.[126] The authors of this report suggest that the presence of unions may improve morale, job stability, and collegial relationships, leading to better patient care.

Other research suggests that unions may improve quality of care by increasing nurse staffing levels. In the cities with the highest rates of nurse unionization, there are nearly 20 percent more nurses per patient (adjusting for patient acuity), as compared to staffing levels in the least-unionized cities (Table 2).[127]

Table 2. Most and least unionized MSAs for hospital nurses: Union density, median hourly wages, and nurse/patient ratios

Most unionized

MSA	Union density	Median hourly wage	Nurse/ Patient Ratio
Buffalo-Niagara Falls, NY	78%	$23.71	0.81
San Jose, CA	73%	31.77	1.16
Stockton-Lodi, CA	67%	30.68	1.18
Greater New York, NY *	65%	24.70	0.77
Oakland, CA	64%	38.85	1.33
San Francisco, CA	64%	33.70	0.93
Sacramento, CA	62%	31.69	0.96
Seattle-Bellevue-Everett, WA	62%	28.99	0.92
Minneapolis-St. Paul, MN-WI	61%	26.86	1.09
Portland-Vancouver, OR-WA	52%	27.30	1.11
Youngstown-Warren, OH	52%	22.93	0.82
Average	64%	$29.20	1.01

Least unionized

MSA	Union density	Median hourly wage	Nurse/ Patient Ratio
Salt Lake City-Ogden, UT	4%	$22.82	0.97
San Antonio, TX	4%	21.48	0.27
Tampa-St. Petersburg-Clearwater, FL	4%	24.15	0.68
Dallas, TX	4%	22.87	1.06
Phoenix-Mesa, AZ	4%	24.70	0.86
Austin-San Marcos, TX	4%	23.11	0.94
Birmingham, AL	3%	22.87	0.88
Denver, CO	3%	24.52	1.19
Houston, TX	3%	25.48	0.81
Allentown-Bethlehem-Easton, PA	3%	23.52	1.02
Memphis, TN	2%	19.56	0.86
Indianapolis, IN	2%	23.03	0.89
Nashville, TN	1%	20.46	0.90
Louisville, KY	1%	21.27	0.61
Average	3%	$22.85	0.85
Difference in wages, most highly and least unionized		$6.35	
Union premium		28%	

*** This includes an area greater than the five boroughs of New York City. Within the five boroughs, the median hourly wage was $37.77 in 2005.**

Note: The nurse/patient ratio is the number of full-time-equivalent outpatient and inpatient nurses in general hospitals as a percentage of the average daily patient census, adjusted for the average level of patient acuity.

Source: Institute for Women's Policy Research analysis of September 1995 through April 2005 Current Population Survey Outgoing Rotation Group files; unpublished Service Employees International Union analysis of data from the 2003 American Hospital Association's Annual Survey of Hospitals and the Center for Medicare and Medicaid Medicare Cost Reports and Historical Impact Files. The 2005 New York City median wage reflects employer reports submitted in collective bargaining by 26 hospitals in the five boroughs of New York City.

VIII. ACTION FOR CHANGE: POLICY RECOMMENDATIONS

Higher wages and fair negotiation of compensation are the keys to solving the hospital nurse shortage. These goals are within our reach. While health care spending costs are a concern to hospitals and consumers alike, a 10 percent increase in hospital nurses' wages would cause total health care spending to rise only 1 percent.[128] As this report documents, increasing union representation is one sure path to improving compensation. Better and more public data collection will help diagnose workforce issues and lead to more effective solutions. Corporate responsibility for fair wage-setting will allow wages to better reflect supply and demand. Where wages are not fairly determined, the government can step in to enforce its existing guidelines.

Other legislative solutions include regulation of minimum nurse-to-patient ratios and subsidies for nurse faculty wages to increase nurse education resources. Research on comparable worth in nursing can highlight ways to overcome gender discrimination. Analysis of the impact of nurse staffing and wages on public health care costs and patient outcomes would also support new mobilization around the impact of nurses' employment conditions on quality of care.

Nurse unionization

Nurses with a strong collective voice can restore competition in the labor market and work effectively to protect quality of care. Legal protections for fair and democratic union organizing elections are essential for providing that voice to nurses.

Nurse wage-setting should be free of hospital collusion

Hospitals should agree not to engage in collusive behavior that artificially reduces nurses' wages and to strictly adhere to U.S. Department of Justice and Federal Trade Commission guidelines on information sharing. Hospitals should specifically pledge not to work in concert with other hospitals to set nurse wages.

Other research suggests that unions may improve quality of care by increasing nurse staffing levels. In the cities with the highest rates of nurse unionization, there are nearly 20 percent more nurses per patient (adjusting for patient acuity), as compared to staffing levels in the least-unionized cities.

Disclosure on data and wage-setting

Data collected legally by hospitals about nurse vacancies, turnover, and wages should be made public. This practice would discourage wage discrimination against nurses and allow better public policy development to address workforce needs.

Enforcement of existing federal laws and guidelines

The U.S. Department of Justice and the Federal Trade Commission should effectively enforce the antitrust laws that protect nurses from potential hospital collusion in wage-setting and should review existing guidelines to see that they adequately protect against collusive behavior. When appropriate, Congress should exercise its oversight responsibilities by conducting investigations, and state attorneys general should investigate exchanges of wage information or wage-setting agreements that violate existing DOJ/FTC guidelines.

Fair corporate behavior

Hospitals should agree to comprehesive corporate integrity practices related to wage-setting. These practices include:

1. Free speech. Hospitals should rescind any policies that silence nurses on wage or quality of care issues, or discourage them from sharing their wage information with other nurses.

2. Whistleblower protection. Hospitals should agree not to retaliate against nurses who speak out about hospital practices that unfairly suppress wages or reduce the quality of patient care. Federal and state statutes should be strengthened to provide stronger protections for workers speaking out about wage issues.

Staffing ratios

Some policy-makers have taken steps to ensure that nurse staffing levels are adequate for patient well-being. These efforts should be expanded through additional state initiatives as well as federal legislation such as the *Nurse Staffing Standards for Patient Safety and Quality Care Act of* 2005, sponsored by Rep. Janice Schakowsky (D-Ill.).

Nurse faculty salaries

Increasing wages for nurse educators would allow expansion of nurse training capacity so that all qualified applicants can pursue education as nurses. Rising nurse wages draw students to the field of nursing, but the ability to attract and retain sufficient qualified faculty is crucial for allowing nurse supply to naturally adjust to increasing demand.

Education regarding comparable worth and hospital working conditions

As a traditionally female-dominated occupation, nursing is affected by discriminatory practices that unfairly suppress wages and interfere with supply-and-demand functions in wage-setting. State and industry task forces should be set up to explore the impact of these practices and educate hospitals about developing more equitable assessments of the work performed by nurses and determining fair compensation for that work. Assistance should also be provided to hospitals to improve working conditions and better support the delivery of high-quality patient care.

Research on public health care costs and patient outcomes

Analysis of public policies such as California's staffing ratio legislation can provide critical insight into the impact of nurse working conditions on public health care costs and patient outcomes.

For most hospital patients, nurses are the human face of care. Nurses are asked to contribute more every year to our growing health care system. Fair pay can help ensure that medical needs are handled adequately and compassionately, now and for generations to come.

APPENDIX A: Data and Methodology for Wage and Union Density Analysis

Data for the Institute for Women's Policy's (IWPR) analysis of hospital RNs' wages and for union density among hospital RNs are from the September 1995 through April 2005 Outgoing Rotation Group files of the Current Population Survey (ORG). The ORG dataset was compiled by the Urban Institute and analysis was performed by the Institute for Women's Policy Research. Only workers aged 18 to 64 who reported their occupation as registered nurse and their industry as the hospital industry are included. The final sample of hospital nurses includes 18,337 observations, 8,269 of which contained an MSA (Metropolitan Statistical Area) identifier and could be used for the MSA-level analyses. Where hourly wages were not reported, they were calculated as usual weekly earnings divided by actual work hours. Median wages and union density were calculated using the ORG weight and represent monthly averages over the study period. Wages were converted to 2005 dollars using the CPI-U-RS.

The dependent variable in the wage equations used to examine the adjusted union premium was the log of hourly earnings, and the regressions controlled for year, potential work experience (age minus years of education minus five) and experience squared, marital status, race and ethnicity, and union membership (union membership or coverage by collective bargaining agreements).

The MSA-level analyses presented here report findings for 67 of the 71 largest MSAs in the country, where sample sizes were adequate for that analysis.

The IWPR ORG dataset covers 9-2/3 years of nurses' reports of their employment experiences. It was necessary to combine this many years of data to compile sample sizes that are sufficient for evaluating wages and union density for individual MSAs. Due to changes in hospital RNs' wages over this period—in particular, some observed increase in those wages in recent years—the median wages reported here may not match current wage measures. However, the IWPR dataset provides important insights into differences among MSAs and states in nurse wages and unionization.

APPENDIX B: Best/Worse States for Nurse Wages

Best and worst states for hospital nurses: Median hourly wages

Best State	Median hourly wage
Hawaii	$ 28.35
Washington	28.24
California	28.12
Massachusetts	27.55
Connecticut	27.30
Alaska	26.18
Oregon	26.03
Minnesota	25.80
Nevada	25.57
Rhode Island	25.52

Worst State	Median hourly wage
Alabama	$ 20.72
Kentucky	20.46
Virginia	20.46
Wyoming	20.46
Mississippi	20.25
Tennessee	20.21
Iowa	20.18
North Dakota	20.15
West Virginia	19.43
Arkansas	18.26

Source: Institute for Women's Policy Research analysis of September 1995 through April 2005 Current Population Survey Outgoing Rotation Group files.

APPENDIX C: Most/Least Unionized States

Most and least unionized states for hospital nurses: Union density and median hourly wages

Most unionized MSA	Union density	Median hourly wage
Hawaii	70%	$28.35
Washington	60%	28.24
Minnesota	58%	25.80
New York	53%	23.39
Oregon	45%	26.03
Alaska	43%	26.18
Rhode Island	42%	25.52
California	41%	28.12
Montana	40%	21.33
Massachusetts	36%	27.55
Average	49%	$26.05

Least unionized MSA	Union density	Median hourly wage
South Dakota	5%	$20.93
Tennessee	5%	20.21
Utah	4%	22.44
Virginia	4%	20.46
Kansas	4%	22.05
Colorado	4%	24.63
South Carolina	4%	22.57
Indiana	4%	21.33
Arizona	4%	24.89
North Carolina	3%	21.77
Average	4%	$22.13
Difference in wages, most highly and least unionized		$3.92
Union premium		18%

Source: Institute for Women's Policy Research analysis of September 1995 through April 2005 Current Population Survey Outgoing Rotation Group files.

APPENDIX D: Summary of state analyses of the nurse workforce

State	Report	Source [a]	Finds that wages are a factor in state's nurse shortage?	Recommends wage increases for staff nurses?
California, Connecticut, Florida, Illinois, Iowa, Texas, Utah, Washington, West Virginia, and Wisconsin (2001); Colorado, Maine, Minnesota, Missouri, New Mexico, New York, Ohio, and Tennessee (2002); Arizona, Georgia, Massachusetts, Michigan, Montana, Nebraska, Oklahoma, and Oregon (2004).				
	The Health Care Workforce: Education, Practice & Policy. U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Healthcare Professions.	Gov.	Generally, no, though a few do; most refer to a "consensus" that lack of training capacity causes shortages.	No.
Arizona	*Boom or Bust? The Future of the Healthcare Workforce in Arizona* (2002). St. Luke's Health Initiatives.	NP	Yes; notes that nurses are leaving for higher pay in other states.	No.
	Arizona's Nursing Shortage (2005). Arizona Hospital and Healthcare Association.	HA	No.	No.
Arkansas	*Our Health Care Crisis: The Arkansas Nursing Shortage* (2002). Arkansas Legislative Commission on Nursing (PowerPoint).	WC	Yes; notes that nurses are leaving for higher pay in other states.	No.
	Arkansas' 2010 Nursing Workforce Needs (2002). Arkansas Legislative Nursing Commission.	WC	No.	No.
California	*Nursing in California: A Workforce Crisis* (2001). Coffman, Spetz, Seago, Rosenoff, and O'Neil.	Univ.	Yes.	No.
	Survey of RNs in California (2004). Fletcher, Guzley, Barnhill, and Philhour.	Board	Yes.	Compensation for work included as one of five themes.
Colorado	*The Nursing Workforce in Colorado* (2003). Miller.	NP	No.	No.
	A Workforce in Crisis: A Time for Innovation in Nursing (n.d.) Colorado Alliance of Nursing Workforce Development.	NP	No.	Recommends "distinct salary for distinct role and competency."
Delaware	*Solving the Nursing Shortage in Delaware* (2002). Delaware Health Care Commission Committee on Nursing Workforce Supply.	Gov.	Yes.	Yes.
District of Columbia	*Predicting the Demand for Nursing Personnel in DC* (2000). Hunt-McCool.	Univ.	No.	No.

[a] Key to Sources: NP = nonprofit; Univ.=university; WC=state workforce commission created by state legislature; Board=state board of nursing; HA=hospital association; Gov=government (e.g., state health and human services departments); NA=nurses association.

State	Report	Source [a]	Finds that wages are a factor in state's nurse shortage?	Recommends wage increases for staff nurses?
Florida	*Florida's Nursing Shortage: It is Here and It is Getting Worse* (2001). Florida Hospital Association.	HA	Yes.	No.
	Statewide Strategic Plan for Nursing Workforce in Florida (2004). Florida Center for Nursing.	Gov.	No.	No.
	Nurse Staffing in Florida: The Challenge Continues (2005). Florida Hospital Association.	HA	No.	No.
Iowa	*Final Report of Governor Vilsack's Task Force on the Nursing Shortage* (2002). Prepared by Iowa Council of Nurses.	Gov.	No.	Yes.
	Status of Nursing Supply and Demand in Iowa (2004). Center for Health Workforce Planning, Iowa Department of Public Health.	Gov.	Yes.	No.
	Issue Brief: Status of the Nursing Workforce in Iowa (2005). Center for Health Workforce Planning, Iowa Department of Public Health.	Gov.	Yes; notes that nurses are leaving for higher pay in other states.	No.
Kansas	*Kansas Nursing Occupational Outlook 2000-2010* (2005). Schmidt.	NA	No.	No.
Maine	*2003 Overview of Maine's Nursing Graduate Capacity* (2004). OMNE, Nursing Leaders of Maine.	Gov.	No.	No.
Maryland	*Maryland's Nursing Shortage: A Workforce Crisis* (2003). Heller and Sweeney.	Univ.	Yes.	Yes, mostly to address salary compression.
	Compensation as a Function of Retention of Nurses (2003). Retention Subcommittee, Maryland Statewide Commission on the Crisis in Nursing	WC	Yes.	No.
Massachusetts	*Survey of Hospital Nurse Staffing Issues in Massachusetts* (2004). Massachusetts Hospital Organization and Massachusetts Organization of Nurse Executives.	HA	No.	No.
	Health Care Workforce Issues in Massachusetts (2000). Massachusetts Health Policy Forum.	Univ./NP	Yes.	Yes.
Michigan	*Survey of Nurses* (2004). Michigan Center for Nursing.	NP	No.	No.
Minnesota	*Findings from the Minnesota Registered Nurse Workforce Survey* (2003). Office of Rural Health and Primary Care, Minnesota Department of Health.	Gov.	No.	No.
	Creating a Strategic Roadmap for Nursing Education (2005) – PowerPoint. Rothchild.	Univ.	No.	No.
Mississippi	*Mississippi Nursing Workforce Facts* (n/d). Hoover.	WC	No.	No.
Missouri	*Missouri's Hospital Workforce: Temporary Relief for a Long-Term Problem* (2004). Becker and Porth.	HA	No.	No.
Nebraska	*Nebraska RN Survey Report 2003* (2003). Walburn and Kelly.	NP	No.	No.
	The Supply and Demand for Registered Nurses in Nebraska (2005). Rosenbaum (Center for Nursing)..	NP	No.	No.
New Hampshire	*New Hampshire Nursing Workforce Initiative Final Report* (2002). Foundation for Healthy Communities.	NP	Yes.	Indirectly; concludes that salary is an important issue.

State	Report	Source [a]	Finds that wages are a factor in state's nurse shortage?	Recommends wage increases for staff nurses?
New Jersey	*New Jersey's Educational Capacity: Impact on Nursing* (2005). Dickson and Flynn.	Gov.	No.	No.
	Remedies for the Nursing Shortage (2005). Advisory Council to Promote the Profession of Nursing in New Jersey, Division of Consumer Affairs.	Gov.	Indirectly.	No.
New Mexico	*Addressing New Mexico's Nursing Shortage: A Statewide Strategy Framework* (2002). New Mexico Commission on Higher Education and University of New Mexico Health Sciences Center.	Gov.	No.	No.
New York	*The Nursing Shortage* (2001). New York State Education Department, Office of the Professions.	Gov.	No.	No.
	Current Issues in Nursing (2003). New York State Education Department., Office of the Professions.	Gov.	Indirectly.	Yes.
North Carolina	*Task Force on the North Carolina Nursing Workforce Report* (n/d). Task Force on the North Carolina Nursing Workforce.	WC	Yes.	Yes.
North Dakota	*An Examination of Supply vs. Demand* (2003). Center for Rural Health, University of North Dakota School of Medicine and Health Sciences.	Univ.	Yes.	No.
Ohio	*Workforce Survey Summary* (2004). State of Ohio Board of Nursing.	Board	No.	No.
Oregon	*WHEN, Not If… A Report on Oregon's Registered Nurse Workforce* (2005). Burton, Morris, and Campbell.	NA	No.	Not directly.
Pennsylvania	*White Paper on the Nurse Workforce in Pennsylvania* (2004). Pennsylvania Department of Health.	Gov.	No.	No.
Rhode Island	*Help Wanted: The Growing Crisis in RI's Nursing Workforce* (2004). Rhode Island SHAPE Foundation.	NP	Yes.	Yes.
South Dakota	*Registered Nurse Survey* (2002). South Dakota Consortium: Colleagues in Caring.	Board (coalition)	No.	No.
Tennessee	*Supply and Demand Study* (n/d). Tennessee Center For Nursing.	NP	No.	No.
	Curing the Crisis in Nursing Education: A Master Plan for TN (2005). Tennessee Center For Nursing.	NP	No.	No.
Texas	*Hospital Nursing in Texas* (2004). Texas Department of State Health Services Center For Health Statistics and Statewide Health Coordinating Council Nursing Workforce Data Advisory Committee.	Gov.	No.	Yes, to increase returns to experience.
Vermont	*A Call to Action: Addressing Vermont's Nursing Shortage* (2001). Blue Ribbon Nursing Commission.	Gov.	Yes.	Yes.
Virginia	*Strategic Plan and Recommendations to Ensure an Adequate Supply of Nurses in Virginia* (2004). State Council of Higher Education for Virginia.	Gov.	No.	No.
Washington	*How are Washington's Hospitals Affected by the Nursing Shortage?* (2002). Skillman, Hutson, Andrilla, Berkowitz, and Hart.	Univ.	No.	No.
Wisconsin	*Hospital Workforce Report* (2004). Wisconsin Hospital Association.	HA	No.	No.

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ENDNOTES

[1] In this report, unless otherwise specified, the term "nurse" refers to registered nurses (RNs).

[2] IWPR analysis of U.S. Department of Labor, various years.

[3] Cho, Ketefian, Barkauskas, and Smith 2003.

[4] Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky 2002.

[5] Cho, Ketefian, Barkauskas, and Smith 2003; Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky 2002.

[6] Hecker 2005, Appendix.

[7] Ibid.

[8] See, e.g., Steinbrook 2002, 1761.

[9] First Consulting Group 2001.

[10] Friss 1994.

[11] Spratley et al. 2001, Table 13.

[12] Rivers, Tsai, and Munchus 2005.

[13] Schumacher and Hirsch 1997.

[14] St. Luke's Health Initiatives 2002, 12.

[15] IWPR analysis of U.S. Department of Labor, various years.

[16] Ibid.

[17] Ibid.; Hecker 2005, Appendix.

[18] U.S. Department of Health and Human Services (US DHHS) 2003, Table 101.

[19] Hecker 2005, Appendix.

[20] Levine 2001.

[21] Weinberg 2003.

[22] Carpenter 2000, 36.

[23] Hurst, Simoens, and Villeneuve 2005.

[24] Lafer, Moss, Kirtner, and Rees 2005.

[25] Berney et al. 2005.

[26] Berney, Needleman, and Kovner 2005.

[27] HSM Group, Ltd. 2002.

[28] Lafer et al. 2003. Congress provides a fifth option—hiring foreign-trained nurses—by creating special immigration visas. However, this tack has little impact on the nurse supply; fewer than 4 percent of nurses working in the United States were trained abroad (Chiha and Link 2003). Recruitment costs, which may reach $10,000 per nurse, and competition from other countries limits the feasibility of this approach to increasing the nurse workforce (Spetz and Given 2003).

[29] Spratley et al. 2001.

[30] Nurses are much more likely than other workers to be employed—while 61 percent of all women are in the labor force, 84 percent of married female nurses, and 89 percent of single female nurses, are (Chiha and Link 2003, Table 7)—so there is only a small pool of unemployed trained nurses that could be drawn into the workforce.

[31] HSM Group, Ltd. 2002.

[32] U.S. Government Accountability Office 2001, 3 (emphasis added).

[33] Levine 2001.

[34] Lafer, Moss, Kirtner, and Rees 2003.

[35] Levine 2001, 8.

[36] Lafer, Moss, Kirtner, and Rees 2003, 19.

[37] Joint Commission on Accreditation of Healthcare Organizations 2002.

[38] Frase-Blunt 1999.

[39] Spratley et al. 2001.

[40] Schumacher and Hirsch 1997.

[41] Rivers, Tsai, and Munchus 2005.

[42] Booton and Lane 1985. Hospitals have already accomplished part of this objective through the transfer of training from hospital-based diploma training to college RN programs.

[43] See Appendix A for description of the data analysis and dataset.

[44] State-level data showing variation in hospital nurses' wages is provided in Appendix C.

[45] Phipps 1990.

[46] Cooksey et al. 2002.

[47] Ibid.

[48] Author's calculation based on Cardinale 2005.

[49] Cooksey et al. 2002.

[50] Frederick 2002, Frederick 2004, and Ukens 2004.

[51] U.S. Bureau of Labor Statistics 2004-2005.

[52] Phipps 1990.

[53] Ibid.

[54] U.S. Department of Labor 2005.

[55] Schreiber 1993.

[56] U.S. Department of Health and Human Services 2002.

[57] Chiha and Link 2003.

[58] U.S. Bureau of Labor Statistics 2005a, Table 14.

[59] Ault and Rutman 2002.

[60] Robinson 2002. Diploma training is being replaced by associate degree programs and, increasingly, by four-year degrees (National Center for Health Workforce Analysis 2003), so nurses who were trained in diploma programs are older on average than other nurses.

[61] U.S. Bureau of Labor Statistics 2005b.

[62] Schumacher and Hirsch 1997.

[63] Slattery 1998.

[64] A new report from the U.S. Government Accountability Office finds that the prices hospitals charge for their services are 18 percent higher in metropolitan areas with the least competitive hospital markets than in cities with the most competition for hospital services (U.S. Government Accountability Office 2005).

[65] Bergmann 2004.

[66] Pillsbury Winthrop Shaw Pittman LLP n.d.

[67] Cleland 1990.

[68] Schreiber 1993.

[69] Hutner 1986.

[70] Register 1986.

[71] U.S. Government Accountability Office 2001.

[72] Buerhaus, Staiger, and Auerbach 2004.

[73] Skillman, Hutson, Andrilla, Berkowitz, and Hart 2002.

[74] U.S. Department of Health and Human Services 2004, 7.

[75] Massachusetts Health Policy Forum 2000.

[76] Subsidies are not an inexpensive way of increasing the supply of RNs, costing $48,900 per new nurse (Eastaugh 2004).

[77] Chiha and Link 2003. These authors find a minor effect of higher wages on RNs' labor force participation, but they note that, because of the effect in attracting RN students, "the long-run supply is very likely to be affected by the wages in the nursing profession" (369).

[78] Brewer 1996; Parker and Rickman 1995.

[79] Brewer 1996.

[80] Spetz and Given 2003.

[81] Buerhaus, Staiger, and Auerbach 2004.

[82] Hurst, Simoens, and Villeneuve 2005.

[83] Steinbrook 2002, 1761.

[84] Spratley et al. 2001.

[85] Ibid.

[86] Ibid, Table 33.

[87] Respondents to the survey from which these findings are drawn could report multiple reasons for their occupational change.

[88] Schumacher and Hirsch 1997.

[89] Chiha and Link 2003.

[90] Joint Commission on Accreditation of Healthcare Organizations n.d.

[91] Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky 2002.

[92] Cho, Ketefian, Barkauskas, and Smith 2003; Kovner, Jones, Zhan, Gergen, and Basu 2002.

[93] Kovner and Gergen 1998.

[94] Pronovost, Dang, Dorman, Lipsett, Garrett, Jenckes, and Bass 2001.

[95] See Stanton and Rutherford 2004 for discussion.

[96] Pronovost, Jenckes, Dorman, Garrett, Breslow, Rosenfeld, Lipsett, and Bass 1999.

[97] Mark, Harless, McCue, and Xu 2004; Person, Allison, Kiefe, Weaver, Williams, Centor, and Weissman 2004.

[98] Aiken, Clarke, Sloane, Sochalski, and Silber 2002.

[99] Aiken, Sloane, Lake, Sochalski and Weber 1999.

[100] Medication errors increase hospital stays by an average of more than two days and add $4,500 to costs (Cho, Ketefian, Barkauskas, and Smith 2003).

[101] Hall, Doran, and Pink 2004.

[102] Blegen and Vaughn 1998.

[103] Hall, Doran, and Pink 2004; Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky 2002.

[104] Cho, Ketefian, Barkauskas, and Smith 2003.

[105] Krakauer, Bailey, Skellan, Stewart, Hartz, Kuhn, and Rimm 1992.

[106] Page 2004.

[107] Vahey, Aiken, Sloane, Clarke, and Vargas 2004.

[108] Page 2004.

[109] Rogers, Hwang, Scott, Aiken, and Dinge 2004.

[110] Ibid.

[111] Ibid. This study also shows that fewer than half of full-time RNs' hospital shifts include a break or meal free from patient-care responsibilities.

[112] Page 2004.

[113] HSM Group 2002.

[114] See discussion in Page 2004.

[115] Hurst, Simoens, and Villeneuve 2005.

[116] Kovner and Gergen 1998.

[117] Vicca 1999.

[118] Cho, Ketefian, Barkauskas, and Smith 2003.

[119] Kovner, Jones, Zhan, Gergen, and Basu 2002.

[120] Kovner and Gergen 1998, 319.

[121] McCue, Mark, and Harless 2003.

[122] Steinbrook 2002.

[123] US DOL 1991 and 2001.

[124] Kimball and O'Neil 2002.

[125] Nurses who are union members tend to be somewhat older, more experienced, and better educated than those who are not. Regression analysis controlling for differences such as these (as well as marital status and race/ethnicity)—in essence, calculating what the union wage premium would be if union and non-union workers were the same in terms of these characteristics—finds an adjusted union wage premium of 5 percent.

[126] Seago and Ash 2002.

[127] Unpublished Service Employees International Union analysis of data from the 2003 American Hospital Association's Annual Survey of Hospitals and the Center for Medicare and Medicaid Medicare Cost Reports and Historical Impact Files. The nurse/patient ratio is the number of full-time-equivalent outpatient and inpatient nurses in general hospitals as a percentage of the average daily patient census, adjusted for the average level of patient acuity.

[128] Author's calculation based on Price Waterhouse Coopers 2003 and PriceWaterhouseCoopers 2005.

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