

**SKILL SHORTAGES AND MISMATCHES IN NURSING RELATED
HEALTH CARE EMPLOYMENT**

April 2002

Nancy Pindus
Jane Tilly
Stephanie Weinstein

This report was prepared for the U.S. Department of Labor, Employment and Training Administration, under Contract No. K-6830-8-00-80-30, Task Order No. 8. The views expressed are those of the authors and should not be attributed to the U.S. Department of Labor or to the Urban Institute, its trustees, or its funders.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1.0 Introduction.....	1
2.0 What is a Labor Shortage?	2
Other Explanations of Labor Shortages.....	3
Using Labor Market Indicators to Measure Shortages.....	4
3.0 The Health Care Industry and the Role of Nurses	7
The Role of Nursing Staff in the Health Services Industry	8
4.0 Summary of the National Picture	12
Evidence of a Nurse Staffing Shortage.....	12
Demand for Nurses	15
Supply of Nurses.....	17
5.0 Regional and Local Labor Market Evidence and Issues.....	21
New York: Evidence of Shortages and Impacts of Earlier Cost Containment Policies	21
California: Ahead of the Nation in Experiencing Shortages and in Setting Policy	24
Improving Data for Regional and Local Planning	26
6.0 Approaches, Recommended Solutions, and Implications	27
National Legislative Efforts	27
State Legislative Efforts.....	29
Programmatic Initiatives.....	30
Opportunities for DOL.....	34
7.0 Conclusion	39
Bibliography	40
Appendix: Labor Shortage Models	A-1
Illustration of a Labor Shortage	A-1
Arrow-Capron and Blank-Stigler Models.....	A-2

EXECUTIVE SUMMARY

Concerns about a shortage of nurses have existed for decades. Today, many providers see a shortage because of high vacancy rates and the difficulties they face in recruiting and retaining nursing staff. A number of studies at the national and state levels document providers' perceptions of a nurse staffing shortage, and recent research projects a severe shortage as the U.S. population and the nursing workforce ages.

Evidence of a current shortage is based primarily on reports by employers, and indicates that, so far, shortages are regional or local and related to certain nursing specialties. Differences in assessments of the immediacy and severity of the nursing shortage result from the variety of measures used to identify a labor shortage, data limitations, and the lack of a consensus on optimal nurse staffing in a variety of health care settings.

Projections indicate that it will be nearly ten years before demographic changes in the population and the aging of the existing workforce converge to create a severe shortage of nurses. Therefore, the country has the time and an opportunity to address the problem and avert a crisis situation. On the basis of our review of the research as well as a selection of promising practices, we believe the country needs to adopt a multi-pronged approach that addresses recruitment, retention, and training. Policies should seek to retain those already trained in the profession, attract new entrants to the labor market, and tap into the pool of workers already employed in health care that, with further training, can enter the nursing profession.

Who are nurses and where do they work?

Nursing staff—broadly defined to include registered nurses (RNs), licensed practical nurses (LPNs), and nurse aides—play a key role in direct patient care in most major health services sectors. The three types of nursing staff (RNs, LPNs, and nurse aides) each have very different levels of responsibility, training, and compensation. Registered nurses have the most education, often have a supervisory role, and receive higher pay than other types of nursing staff. Licensed practical nurses (LPNs or licensed vocational nurses in Texas and California) provide basic bedside care under the direction of RNs or physicians, and, in nursing homes, take on additional responsibilities such as evaluating residents needs, developing care plans, and supervising the activities of nurse aides. LPNs must obtain state licensure and receive their education through one year training programs. Nurse aides have the least education, deliver much of the “hands-on” care to patients, and have average hourly wages under \$9.00.

The Health Resources and Services Administration (HRSA) estimates that, in 2000, the U.S. had 2.7 million licensed, registered nurses, an increase of 62 percent since 1980.

An estimated 81.7 percent of nurses or 2.2 million persons were employed in nursing in 2000. Most RNs (59 percent), are employed in hospitals, but the percentage of nurses employed in this setting has declined steadily since 1984. The average age of nurses in 2000 was 45.2 years; nursing is a female-dominated profession with men accounting for 5.4 percent of nurses in 2000.

Nursing Supply and Demand

Several factors affect the supply of nursing staff, including the shrinking labor pool for these staff, the availability of other career paths for women, the number of graduates of nursing schools, and staff's level of satisfaction with various aspects of their jobs such as workload, hours, and wages. Data from the National League for Nursing show that there was only a 10 percent increase in graduates from RN education programs between the 1975-1976 and the 1997-1998 academic years (Levine 2001). These data also show that the number of graduates in nursing programs began to decline in the 1995-1996 academic year and fell 13 percent by 1998.

Job satisfaction cannot be overlooked when considering the nursing labor supply. Nursing staffs' concerns about staffing levels and working conditions are likely to affect current nurses' commitment to remain in direct patient care. These concerns may also affect willingness to enter the nurse workforce in the future. Evidence from surveys and focus groups of nurses and former nurses, as well as early evidence of nurses' response to staffing changes, suggests a cost tradeoff between resolving the nursing shortage with higher wages and resolving the shortage by increasing nurse to patient ratios. Nurses have expressed concerns about patient load, inadequate staffing to handle the acuity of patients, inadequate time with patients, and inadequate time for required paperwork.

There are several reasons why demand for nursing is likely to increase in the future. Among them are the aging of the population, increased survival of people who are ill or have disabilities, and organizational changes in the health care industry, including the waning influence of managed care on providers' employment of nurses. Increases in the elderly population and in the number of persons with disabilities and chronic illness, and changes in the health care system will result in higher demand for all types of nursing staff in the future.

Indicators of a Nursing Shortage

Strong employment growth and greater increases in wages relative to other occupations are two indicators commonly used to identify shortage occupations. The U.S. Bureau of Labor Statistics (BLS) estimates that the rate of growth in employment of RNs from 2000-2010 will be 25.6 percent, which exceeds the projected growth in all occupations by 7.3 percent (Hecker, 2001). The rate of growth for LPNs will be 20.3

percent during this time period, while employment of aides will grow fastest of all. Nurse aide employment growth is projected to be 30.4 percent from 2000-2010.

However, “real” salaries of nurses employed full-time, taking into account changes in purchasing power of the dollar using the consumer price index, have remained relatively flat since 1992. The average annual earnings for all full-time nurses increased by 2.7 percent on an annual basis between 1996 and 2000. The actual average annual earnings for registered nurses working full-time in 2000 was \$46,782. On the other hand, the New York State Department of Health’s Institutional Cost Report data showed that after several years of flat or negative growth in real wages, real wages for nurses began increasing in the late 1990s, likely in response to labor shortages (Brewer and Kovner 2000).

Nursing shortages have also been identified using self-reported shortage status (as reported by hospital administrators); vacancy rate; turnover rate, adjusted number of RNs per inpatient year; and RN supply per 100,000 population. Several national studies document the difficulties involved in finding nurses, the relatively high nurse vacancy rates, and the fact that many providers and workers believe there is a nurse shortage.

Vacancy rates. According to an analysis of the 2001 American Hospital Association Workforce Survey (AHAWS), the RN vacancy rate was 11 percent, and 75 percent of the hospitals’ 168,000 vacancies were for RNs (Lewin Group 2001). In addition, 75 percent of hospitals reported that they had more difficulty in recruiting nurses in 2001 than they had had in 2000.

Preliminary analysis of a 2001 survey of nursing homes conducted by the American Health Care Association (AHCA) shows that responding facilities had weighted average vacancy rates of 18.4 percent for RNs, 14.4 percent for LPNs and 11.7 percent for nurse aides (American Health Care Association 2001). The vacancy rates varied by region—for example the RN vacancy rate ranged from 16.2 percent in the West North Central region of the country to 21 percent in the Pacific region. Similar to the AHAWS, the AHCA found that the majority of responding facilities reported that recruiting nursing staff was more difficult in 2001 than it was in 2000.

State-level studies show results consistent with those at the national level:

- The Association of Maryland Hospitals and Health Systems reported that the average hospital in the state had a nurse vacancy rate of 14.7 percent in 2000 and hospitals took, on average, 60 days to fill a nurse vacancy (U.S. GAO 2001c).
- California had a nurse vacancy rate of 20 percent in 2000.
- In 2001, Florida, Nevada, and Vermont reported nurse vacancy rates ranging from 7.8 to 16 percent (U.S. GAO 2001b). In Vermont, nursing homes and home health

agencies in 2000 reported nurse aide vacancy rates of 16 and 8 percent, respectively.

- A Pennsylvania study showed that in 2000, 75 percent of nursing homes and more than half of home health agencies reported staff shortages.
- New York City, where many hospitals downsized their staffs in the 1990s in an effort to reduce expenditures, is now showing indications of a nurse shortage. In February 1999, 30 percent of hospitals in the New York City area reported taking at least three months to fill RN positions in these departments. In fall 2000, 92 percent of hospitals in New York State reported vacant RN jobs and 71 percent reported vacant LPN jobs (New York State Education Department 2001).

Turnover rates. Health care providers also report high employee turnover rates. The U.S. General Accounting Office (GAO) found a 26.2 percent annual turnover of nurses in a national survey of hospitals in 2000, a 51 percent rate for RNs and LPNs in 13 nursing home chains in 1997, and a 21 percent turnover for RNs in a 2000 national survey of home health agencies (U.S. GAO 2001c). Reported turnover rates among nurse aides are even higher, ranging from 40 to 100 percent in 12 nursing home chains in 1998. Preliminary results from the 2001 AHCA survey indicate that annualized turnover rates for responding nursing facilities were 55.5 percent for RNs, 51.5 percent for LPNs, and 76.1 percent for nurse aides (American Health Care Association 2001). These turnover rates varied markedly by region, and the methods used to calculate rates vary from study to study, but there is little doubt that turnover rates are substantial.

Some nurses are not just changing jobs within nursing, but are leaving the profession entirely. The 2000 National Sample Survey of Registered Nurses reports that, in March 2000, about 18.3 percent of nurses with current licenses (494,797 nurses) were not employed in nursing. Between 1992 and 2000, the number of RNs not employed in nursing increased about 28 percent.

Future Nurse Shortages

Several projections of the future supply of nurses suggest that the nation will be facing shortages over the next several decades. The Bureau of Labor Statistics projects that the supply of nurses will fall short of demand in 2008 and this shortfall will continue to worsen through 2020 (Levine 2001). In that year, demand for nurses is projected to exceed supply by 291,000 or 13 percent.

A model constructed by Buerhaus, Staiger, and Auerbach (2000) projects that the number of full-time RNs per capita will peak in 2007 and then will decline through 2020; the absolute number of nurses will begin declining in 2012. Based on HRSA's projections of need for nurses, the nurse workforce supply will meet requirements until 2010 but will be 20 percent below them by 2020. The aging of the workforce is projected to continue and

peak at age 45.4 years in 2010. These projections assume that future cohorts will enter the nursing profession at the same rate as cohorts who were born from 1971–1975.

In California, for example, the current shortage is termed a “public health crisis” owing to a projected shortfall of 25,000 nurses by 2006 (California Strategic Planning Committee for Nursing (CSPCN) 2000).

Addressing the Nursing Shortage

The range of domestic approaches that have been implemented or proposed to address the projected nursing shortage includes both short-term and longer-term initiatives, legislative as well as program development activities, and national as well as regional or local efforts. And, the actors represent a broad range of stakeholders—nursing associations, labor unions, hospital/health industry associations, state government, federal government, higher education, and private foundations.

National Legislative Efforts. Legislative initiatives at the federal level that have been introduced or passed are aimed at easing the nation’s nursing shortage by addressing education, staffing, and working conditions for nurses. The Nurse Reinvestment Act was passed in both the U.S. Senate (S. 1864) and in the House of Representatives (H.R. 3487) on December 20, 2001. The Nurse Reinvestment Act, if enacted, would amend the Public Health Service Act to direct the Secretary of Health and Human Services to make grants to support national, state, and local broadcast public service announcements promoting the nursing profession. It expands eligibility for the nursing loan repayment program and authorizes the Secretary to provide nursing scholarships in exchange for nursing services in designated health facilities. It grants preference to applicants with the greatest financial need or willingness to serve in geographic areas with nursing shortages and need. The Act also requires the Secretary to award grants to schools of nursing and/or health care facilities to develop and support outreach programs to encourage entry into the profession; encourage long-term care nursing services for the elderly as a career choice; and demonstrate models and best practices in nursing care, including retention strategies.

Many of the other national legislative efforts that were introduced to the 107th Congress aim to amend the Public Health Service Act and focus on improving nurse retention and education. Pending legislation in the Senate and House of Representatives also aims to amend other Acts, in order to address the working conditions of nurses, including prohibiting forced overtime for registered nurses, and limiting the number of mandatory overtime hours a nurse may be required to work.

State Legislative Efforts. State legislative activity has focused on five state legislative priorities identified by the American Nurses Association:

- No Mandatory Overtime
- Whistleblower Protection
- Collection and Reporting of Nursing-sensitive Quality Data
- Requiring Valid and Reliable Staffing Systems (e.g., better tools to calculate the appropriate level and mix (RN, LPN, unlicensed assistants) of nursing staff required to deliver safe, quality care)
- Collection of Nursing Supply and Demand Data

State legislation for funding to expand enrollment in nursing schools, loan forgiveness, and grants is pending in California, Illinois, Maine, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, and Texas.

Programmatic Initiatives

Another area of activity for addressing the nursing shortage is at the program level. A broad range of mostly local efforts are underway to tap new sources of labor, provide advancement opportunities for health care workers, and change organizational culture in order to attract and retain nurses. The examples described indicate the diverse organizational possibilities and highlight some important linkages to the workforce development system include:

Career Ladders in Long-Term Care: Extended Care Career Ladder Initiative. In Massachusetts, the Extended Care Career Ladder Initiative (ECCLI) is a \$5 million program funded by the state's legislature as part of the larger Nursing Home Quality Initiative to improve nursing home care. The Commonwealth Corporation, which administers the Workforce Investment Act (WIA), oversees ECCLI. The approach of ECCLI is to establish career ladders and training and support systems for incumbent certified nursing assistant and other entry level nursing home workers. The initiative aims to increase the supply and quality of nurse aides as well as address the nursing shortage by "growing the profession from within."

Sectoral Employment Initiative: Good Faith Fund. Two organizations are focussing on health care employment under the sectoral employment initiative, a 3-year project in 10 organizations, funded by the Charles Stewart Mott Foundation. A sectoral employment initiative is a workforce development strategy aimed at helping low-skilled workers advance in the workforce and earn a decent living and at the same time creating systemic change in a targeted industry or occupation. One of these organizations, the Good

Faith Fund (GFF) Careers in Health Care, works throughout the rural Arkansas delta region. GFF enrolls low-income minority women leaving welfare in a high quality, industry-driven CNA training program for 12 weeks (about three times the state's current minimum requirements) and helps the women overcome their significant barriers to training completion and job retention. In the first two years of this 3-year project GFF had enrolled 107 women—55 percent had graduated, and 97 percent of the graduates were placed in jobs.

Industry Initiatives: VHA. Through VHA, Inc. and the VHA Foundation,¹ the health care industry has also initiated efforts to address the nursing shortage. VHA is a member organization of 2200 nonprofit hospitals and other health care organizations. “Tomorrow’s Workforce” is an 18-month initiative that is helping hospitals redefine the work environment to promote recruitment and retention of workers. VHA’s focus is on all levels and types of staff, including pharmacy, food service, and other areas as well as nursing.

In another project, with funding from the Annie E. Casey Foundation, the VHA Foundation convened a National Health Care Welfare to Work task force whose members represented nine industry leaders involved in welfare to work programs. Working with state and local providers, health systems have tapped welfare recipients and former welfare recipients as a pool of labor by developing customized programs for recruitment, training, and retention. Program outcomes, including one-year retention rates, participation in continuing education and training, and wage rates, met or exceeded welfare to work efforts of other industries. (VHA Foundation 2001).

Expanding the Pool of Nursing Candidates: District 1199C Training & Upgrading Fund. A community career ladder is in the making in Philadelphia through the auspices of the District 1199C Training and Upgrading Fund. The Training Fund operates a learning center that serves union members as well as community residents, and has used its strong linkages with health care employers and community based organizations to recruit and train entry level health care workers for skilled nursing positions. With funding from the U.S Department of Labor under the H-1B program,² matching funds provided by three employers, and employer funds contributed to the Training and Upgrading Fund, an extensive array of preparatory classes are available free of charge. The program targets three groups who have difficulty overcoming the financial, academic, and schedule barriers

¹ VHA is a nationwide network of community-owned, nonprofit health care systems. VHA is a for-profit cooperative. The VHA Foundation is the nonprofit arm of VHA, Inc.

² The H-1B Technical Skill Training Grant Program was authorized under the American Competitiveness and Workforce Investment Act of 1998 (ACWIA 1998). Grants funded under the Act have the longer term goal of raising skill levels of domestic workers to fill specialty occupations presently being filled by temporary workers admitted to the United States under the provisions of the H-1B visa. (The H-1B visa is permitted for foreign non immigrants working in high skill or specialty occupations experiencing shortages of domestic workers).

to entering the nursing profession: current health care workers in entry level positions, minority populations, and immigrant groups.

Opportunities for DOL

Responses to nursing workforce issues are coming from all levels of government, from the private sector, from industry organizations, and from organizations representing health care workers. Programs supported by the U.S. Department of Labor are a critical piece in responding to the impending nursing shortage. Four areas of opportunity for DOL are: data, workforce development, training, and working conditions.

Data. The Department of Labor, through BLS, serves as the primary source for national workforce data. A closer collaboration between DOL and HRSA could enhance health care workforce planning capability. HRSA has funded four Regional Centers for Health Workforce Studies to examine geographic imbalance across five health professions disciplines: medicine, nursing, dentistry, allied health and public health. Located at the University of California at San Francisco, the University of Illinois at Chicago, the State University of New York at Albany and the University of Washington, the Centers investigate geographic distribution and related health workforce issues. The Centers work with State agencies and conduct research, including state and regional studies, and develop analytic tools that help states resolve pressing issues in health professions training. Given the importance of regional, state, and local data in analyzing labor market supply and demand, DOL could also provide technical assistance to states in their workforce planning efforts, promoting the use of consistent measures across states and agencies.

Workforce Development. Title I of the Workforce Investment Act (WIA) increases the opportunities for partnerships between government programs, employers, and education and training providers at the policy and planning level (through Workforce Investment Boards) and at the service delivery level (through One-Stop Career Centers). One-Stop Career Centers make use of technology to provide access to job listings, labor market information, resume preparation software, and information about local training programs. Adult programs under WIA had funds available to serve approximately 396,000 people in Program Year 2001. Each state maintains a workforce development web site with links to local One-Stop resources. These sites offer a wealth of information for job seekers and employers, and they are well-positioned to assist in recruiting workers for shortage occupations and facilitating the partnerships that will provide the necessary training.

Training. DOL programs are an ideal source of funding and expertise for the first steps on the ladder to professional nurse training. DOL programs are well-positioned to access non-traditional and other labor pools, including welfare recipients, low-income students, displaced workers, and youth. For example, the Job Corps offers potential for expanding existing health care training and providing a linkage to the nursing education system. Job Corps participants are between 16 and 24 years old; most come to the program

without a high school diploma. There are 110 Job Corps centers across the country, serving over 60,000 new participants each year. These centers unite federal agencies, private employers, and eight national unions nationwide. For example, HCR Manor care, one of the largest providers in the long-term care industry is a Job Corps employer partner. They partner with Job Corps sites in Pennsylvania, Arizona, Florida, and Illinois. Almost all Job Corp Centers offer health-related training, including Nurse Assistant training and certification. Currently, only five Job Corps Centers offer advanced training for LPNs, usually at local community/technical colleges. The program is well suited for expanding its advanced training to individuals who have difficulty accessing or succeeding in the traditional nursing education system.

The School-to-Work Opportunities initiative and Career Academies offer additional opportunities for training youth in health occupations. In partnership with the Department of Education, DOL supports states and communities in establishing School-to-Work systems in secondary and post-secondary schools with alternative learning options for youth who have dropped out or are about to leave school. Career academies now operate in an estimated 1,500 to 2,500 high schools nationwide, located in almost every state, especially in urban areas. Organized as schools within schools, Career Academies provide a smaller learning environment, emphasize the real world relevance of school, and provide work-based experiences such as job shadowing and internships. About 20 percent of the career academies nationally have a dedicated health and human services academy theme.

Working Conditions. Working conditions are a significant factor in nurse retention. The Department of Labor is responsible for administering and enforcing the Fair Labor Standards Act and other mandated worker protections. Consequently, DOL has the experience and the information to consider appropriate changes in legislation or in existing standards to address issues such as mandatory overtime, worker safety, and whistleblower protections. Demonstrations that evaluate the impacts of such changes on worker safety, patient care, nurse retention, and nurse recruitment will provide valuable information for decisionmakers weighing these policy changes against increases in wages and changes in hospital reimbursement levels.

Conclusion

Based on our review of recent research and employment projections, it is clear that the nation will face a nursing shortage in the next decade, and some localities are already facing shortages.

There is no single solution to the nursing shortage. Nursing and other health personnel shortages differ from shortages in other occupations because the health industry has some unique market characteristics. The role of the government in setting Medicare reimbursement rates and other health care policies, as well as the government's role in

safeguarding public health, limit the capacity of the market to adjust on its own, and cost containment pressures are an important factor in nurse staffing decisions. Government policies and expenditures, therefore, are central to addressing the shortage.

It is important to understand the varying underlying causes of the nursing shortage because the policy solutions vary. Expanding education is best suited for addressing the longer term expected increases in demand, but is less effective at addressing the short-term supply issue or distributional problems. To keep up with demographic changes, educational opportunities must be expanded to a broader population of potential students, including those who have not traditionally been trained as nurses in the past and those who may need significant remedial education and support to prepare for nursing education.

It is less costly and faster to bring a trained nurse back to the profession than to train new nurses, and improved working conditions have the potential to attract nurses back to direct patient care. Therefore, to address short-term supply and distributional problems, working conditions need to be addressed in a systematic way, with national support and visibility.

The Department of Labor can work with the Department of Health and Human Services to improve the quality and consistency of existing data, develop additional data on nursing staff beyond Registered Nurses, and provide technical assistance in the use of workforce data. Department of Labor programs are well positioned to attract new populations to nurse training and offer the first phases of training needed to prepare candidates for the professional training supported by HRSA.

1.0 Introduction

Concerns about a shortage of nurses have existed for decades. Today, many providers see a shortage because of high vacancy rates and the difficulties they face in recruiting and retaining nursing staff. A number of studies at the national and state levels document providers' perceptions of a nurse staffing shortage, and recent research projects a severe shortage as the U.S. population and the RN workforce ages.

Two recent reports to Congress, prepared by the Congressional Research Service (Levine 2001) and the U.S. General Accounting Office [U.S. GAO](2001b) find no definitive evidence of a current national shortage of nurses, but that projections of supply and demand for nurses point to a looming shortage beginning around 2010. Evidence of a current shortage is based primarily on reports by employers, and indicates that the shortages are regional or local and related to certain nursing specialties. Differences in assessments of the immediacy and severity of the nursing shortage result from the variety of measures used to identify a labor shortage, data limitations, and the lack of a consensus on optimal nurse staffing in a variety of health care settings.

Projections indicate that it will be nearly ten years before demographic changes in the population and the aging of the existing workforce converge to create a severe shortage of nurses. Therefore, the country has the time and an opportunity to address the problem and avert a crisis situation. On the basis of our review of the research as well as a selection of promising practices, we believe the country needs to adopt a multi-pronged approach that addresses recruitment, retention, and training. Policies should seek to retain those already trained in the profession, attract new entrants to the labor market, and tap into the pool of workers already employed in health care that, with further training, can enter the nursing profession.

This paper draws on past work on the job market for nurses to summarize the key concepts involved in identifying and describing labor shortages, highlighting state and local data and experiences, and describing potential domestic solutions and their implications.

2.0 What is a Labor Shortage?¹

A “labor shortage” is an excess demand for workers at a given wage, but the term has no single established empirical definition (Barnow, Trutko, and Lerman 1998). It is difficult to develop an uncontroversial number for an occupational labor shortage (Veneri 1999). A labor shortage, or disequilibrium, exists when the number of workers who are willing to supply their labor at a certain price is less than the amount of labor employers desire at that price or wage. A labor shortage sometimes suggests a mismatch between the jobs and the workers in the economy or a shortfall in the total number of individuals in the labor force. This paper uses the following definition of a labor shortage: “a market disequilibrium between supply and demand in which the quantity of workers demanded exceeds the supply available and willing to work at a particular wage and working conditions at a particular place and point in time.”²

Labor supply is traditionally depicted as an upwardly sloping curve because, as wages increase, more workers are prepared to enter an occupation and current workers are prepared to supply more labor. A labor market is said to be in equilibrium when the amount of labor that workers (i.e., sellers of labor) are willing to provide at a given market price is equal to the amount that employers or firms (i.e., buyers of labor) wish to purchase at that market price. If the amount of labor that is offered is greater than the amount that employers are willing to purchase, there is a surplus. Conversely, if the quantity of labor desired by firms exceeds the amount workers offer at the market price, there is a shortage.

The amount of workers that a firm wants to hire at various prices is specified by the downward-sloping demand curve. The demand curve slopes downward because as the factor price, labor, increases, the employer will usually substitute other factors of production for the factor whose price has increased. Further, a higher price of labor will commonly result in higher product prices, which in turn will result in a decrease in the quantity of the product demanded

¹ Appendix A provides a more detailed discussion of labor market theory with respect to occupational shortages.

² This definition, which was provided by the U.S. Department of Labor in a Request for Proposals (RFP) for a study of labor shortages, is essentially identical to the definition used by Franke and Sobel in their study of labor shortages: “a situation existing over an extended period of time in which employers were unable to hire at going wages or salaries sufficient numbers of qualified persons to fill positions for which there were budgeted funds and for which personnel were required to meet existing demands for services.” See Walter Franke and Irving Sobel (1970). *The Shortage of Skilled and Technical Workers*. Lexington, Massachusetts: Heath-Lexington Books.

and in the employment of labor itself. The market is said to be in equilibrium when the quantity of labor that is demanded is equivalent to the quantity of labor that is supplied.

At a below-equilibrium wage, where employees are “underpaid,” firms have difficulty locating people who will work to meet demands by consumers, and a labor shortage thus ensues because employers are seeking more workers than they are able to hire at the market price. These firms also have difficulty keeping the workers they do hire. If wages are increased, output will increase and more workers will want to enter the market.

Other Explanations of Labor Shortages

Economists and analysts have proposed other explanations of labor shortages. The static view of the labor market, described above, with the basic model of labor shortages, cannot always take into account the dynamics of adjustment that are involved in the labor market (Cohen 1998). For example, there is not perfect information about available jobs or market circumstances. A more dynamic model of the labor market was developed by Kenneth J. Arrow and William W. Capron in 1959, who note that it takes time for information to spread and also for employers to adjust the price they pay for labor. The Arrow-Capron model is characterized by increased demand (Arrow and Capron 1959). As Barnow et al. (1998) observe, Arrow and Capron deduce that shortages will be characterized by vacancies.

According to Blank and Stigler (1957), when the number of workers available increases less rapidly than the number demanded at the salaries paid in the recent past, a labor shortage exists (Blank and Stigler 1957). As Barnow, Trutko, and Lerman (1998) write, Blank and Stigler make a case that in order to lessen the shortage, the wages in an occupation must increase and a portion of the work previously completed by the occupation with the shortage will be completed by others. This situation will lead to an increase in the wage.

More recently, Trutko, Barnow, Chassanov, and Pande (1991) took an approach to dynamic labor shortages which involves looking at individual sources of disequilibrium, such as increase in demand for labor, decrease in the supply of labor, or restrictions on prices, and suggesting various approaches employers could take to alleviate shortages (Trutko, Barnow, Chassanov, and Pande 1991). They suggest increasing recruiting effort, increasing the use of

overtime, training workers, improving working conditions, offering bonuses to new employees and improving wages and fringe benefits.

There are also other models that analyze labor shortages. For example, the monopsonistic labor market model, where there is only one buyer for labor, has some applicability to the health care industry (Harrington and Sum 1984). In contrast to a competitive market, the monopsonist sets the wage and the wage paid by the monopsonist is lower than the wage paid in a competitive market. But, it is important to note that the number of employees hired is less than in a competitive market. The monopsonist perhaps regards the situation as a shortage because the employer would like to hire more employees at the low monopsony wage, when, in fact, the wage must be raised to encourage more workers to move into the occupation. As Ehrenberg and Smith (1993) write, a labor shortage that a monopsonist is confronted with is “more apparent than real” (Barnow, Trutko, and Lerman 1998, page 8). If the monopsonist can discriminate by paying higher wages to those who will not work for lower wages, then it is possible to have one monopsony employer without a shortage.

Using Labor Market Indicators to Measure Shortages

In measuring labor shortages, it is essential to use a combination of labor market indicators, to realize the complexity of the concept, and not to hastily conclude that a shortage exists and then quickly generate solutions. In theory, it should be simple to verify that a shortage exists. We could simply refer to the labor supply and demand in an occupation. If there is more demand for labor than there is supply of labor, then a labor shortage exists and strategies to reduce the shortage should be undertaken. Recommended strategies may be limited to private sector strategies by firms, or public policy approaches may be advisable.

But, in reality, many factors determine whether or not a labor shortage exists. The economic cycle of the economy may affect occupations differently and cause shortages in some jobs and not in others. Shortages may occur in certain areas or parts of occupations and not in other parts. Just because employers have vacancies does not mean a shortage exists in that occupation (Veneri 1999). Wages may not adjust because of government policy measures. In the case of nursing, government price and expenditure controls might limit the market's wage adjustment process and lead to shortages.

Cohen (1998) suggests using a combination of numerous labor market indicators to measure labor shortages. If most or all of the indicators for an occupation are neutral or negative, then there is no labor shortage in that occupation. However, if positive indicators are prevalent, the occupation is likely to have a shortage. In identifying occupational shortages during the nation's 1991-98 expansionary period, Veneri (1999) considered the following indicators:

- *employment growth*—a shortage occupation would have strong employment growth
- *wages*—a shortage occupation's wages would increase relative to other occupations, indicating the market response by employers to attract more workers
- *unemployment rate*—the unemployment rate for a shortage occupation would be expected to decline or remain relatively low

Different measures for identifying a shortage occupation may lead to different conclusions. Grumbach, Ash, Seago, Spetz, and Coffman (2001) compared the following different methods of identifying hospitals and regions with a shortage of registered nurses:

- self-reported shortage status (as reported by hospital administrators)
- vacancy rate
- turnover rate
- adjusted number of RNs per inpatient year
- RN supply per 100,000 population

Associations were strongest between self reported shortage status and vacancy rates. Turnover rates were also relatively highly correlated with vacancy rates, but were less strongly associated with self-reported shortage status. Self-reported shortage status was much less closely associated with the actual staffing level of nurses per inpatient year, and the supply of nurses per capita had the weakest correlation with self-reported shortage.

Data limitations also contribute to the difficulty in measuring and identifying labor shortages. Data sources and measures suggested by Cohen (1998) include:³

- The *Current Population Survey (CPS)*, a monthly survey of approximately 57,000 households conducted by the Census Bureau for the Bureau of Labor Statistics (BLS) collects data on employment, unemployment, wages, and replacement demand. Labor market indicators are published by BLS.

³ There has been a reduction in relevant labor market information collected. Four major sources related to labor shortage determination have disappeared. The relevant two of these four sources are a labor turnover survey and a job vacancy survey.

- *BLS employment forecast.* Every two years, the BLS publishes forecasts approximately 10-14 years into the future. The Bureau uses an econometric model to forecast employment by industry, then uses current data from its Occupational Employment Statistics (OES) survey to obtain staffing patterns. These patterns are assumed to prevail in the future and are applied to predict future occupational employment in each industry.
- *Labor certification data,* collected by the Employment and Training Administration of the U.S. Department of Labor, which administers a number of foreign labor certification programs to assure that admitting foreigners to work in the United States will not adversely affect the job opportunities, wages, and working conditions of American workers.

In addition, a number of occupation and profession-specific data are available, including graduates from community colleges, professional schools, and graduate programs (collected by the U.S. Department of Education); and data on apprenticeship completers collected by the U.S. Department of Labor, Bureau of Apprenticeship and Training. With respect to nursing in particular, the Health Resources and Services Administration (HRSA), in the U.S. Department of Health and Human Services (DHHS), conducts a National Sample Survey of Registered Nurses, and industry surveys are conducted by the American Hospital Association, the American Health Care Association, the American Nurses Association, as well as other industry groups and researchers. It is important to recognize that every labor market statistic has limitations. The availability of consistent local and regional data is limited, and national data do not appear sensitive enough to identify labor market shortages that are local or regional or that apply only to certain nursing specialties (Veneri 1999).

3.0 The Health Care Industry and the Role of Nurses

The health services industry, which provides health and long-term care in a variety of settings including individual practitioners' offices and institutions, is part of the larger services industry. The services sector is the biggest employer in the country, employing 37.7 million employees in 2000 or 29.5 percent of all employees covered by unemployment insurance; this industry represents 39.1 percent of all establishments, followed by the retail trade, government, and manufacturing sectors (Bureau of Labor Statistics [BLS], U.S. Department of Labor [DOL] 2001).

The health services industry is one of the largest and fastest growing components of the services industry; health and long-term care providers employed over 11 million people in 2000 and the U.S. Department of Labor projects that the health services industry will account for 13 percent of all new wage and salary jobs between 2000 and 2010. The four largest categories of employers in the health services industry in 2000 were hospitals, health care practitioners' offices, nursing and personal care facilities, and home health agencies (see table 1).

Health care services are largely provided in hospitals and health care practitioners' offices. Hospitals provide a wide range health services including diagnostic services, surgery, and continuous nursing services on an inpatient or outpatient basis. Although they represent less than two percent of health care establishments, hospitals employ almost forty percent of all health care workers. Offices of physicians or dentists represent about two thirds of health services establishments but only employ about one quarter of all health care workers (Career Guide to Industries, DOL 2001).

The health services industry's post-acute and long-term care generally is delivered either in a person's home, largely by home health agencies, or in residential care facilities. These facilities include nursing homes, assisted living facilities, and board and care homes; they provide nursing, rehabilitation or personal care services to persons who reside in these facilities. Nursing and personal care facilities represent about 4.5 percent of health services establishments and employ about 18 percent of health care workers. Home health agencies provide services similar to those of some residential care facilities but in the patient's own home, and these agencies account for about three percent of establishments and employ about six percent of health care workers.

Table 1: Employment in the Health Services Industry

	Percentage of Health Services Establishments in 2000	Percentage of Health Care Workers Employed in 2000
Hospitals	1.6	39.3
Offices of Physicians and Dentists	64.9	26.5
Nursing and Personal Care Facilities	4.5	17.9
Home Health Agencies	3.1	6.3
All Other Establishments	25.9	10.0
Total	100.0	100.0

Source: Career Guide to Industries 2002-03 Edition, U.S. Department of Labor, accessed from www.bls.gov/oco/cg/cgs035 in April 2002.

The Role of Nursing Staff in the Health Services Industry

Nursing staff—broadly defined to include registered nurses (RNs), licensed practical nurses (LPNs), and nurse aides—play a key role in direct patient care in most major health services sectors (U.S. GAO 2001a). According to the General Accounting Office, nursing staff represent at least 38 percent of hospital staff, 58 percent of nursing home staff, and 78 percent of home health agency workers. Registered nurses are roughly one quarter to one third of all workers in hospitals, nursing homes, and home health agencies. Nurse aides represent less than one-tenth of workers in hospitals but comprise more than one third of workers in nursing homes and more than one half in home health care (see table 2).

The three types of nursing staff (RNs, LPNs, and nurse aides)⁴ each have very different levels of responsibility, training and compensation. Registered nurses have the most education, often have a supervisory role, and receive higher pay than other types of nursing staff. Nurse aides have the least education, deliver much of the “hands-on” care to patients, and earn relatively low hourly wages.

⁴ The RN category also includes those who have taken additional clinical training to become advanced practice nurses (clinical nurse specialists, nurse anesthetists, nurse midwives, and nurse practitioners).

**Table 2:
Nursing Staff as a Percentage of Total Employees in Various Settings, 1999**

	Hospital	Nursing Home	Home Health Care
RNs	30	20	24
Nurse aides	8	38	54

Source: U.S. GAO analysis of Bureau of Labor Statistics' 1999 Occupational Employment Statistics data (U.S. GAO 2001a).

Registered Nurses

Registered nurses (RNs) assist physicians, assess and record symptoms, administer medications, develop and manage nursing care plans, educate patients, and help them maintain their health. Hospital nurses provide bedside care, carry out medical regimens, and supervise LPNs and nurse aides; 59 percent of all RNs work in this setting (HRSA 2002). In nursing homes, RNs manage nursing care and spend most of their time on administrative and supervisory tasks rather than providing direct care; 6.9 percent of RNs work in nursing homes or other residential care facilities (HRSA 2002). Home health nurses provide nursing care in a patient's home and supervise home health aides.

Registered nurses must have state licensure and receive their training through one of three educational tracks—diploma programs (which take 2-3 years to complete) offered in a small number of hospitals, two year associate degree programs, and 4-5 year bachelor degree programs. A small minority of nurses go on to receive advanced practice training after completing their RN degrees. According to HRSA, 30 percent of RNs had diplomas, 40 percent had associate degrees, and 29 percent had bachelor degrees in 2000. About seven percent of RNs had advanced practice training in 2000 and about 45 percent of these nurses were trained as nurse practitioners, about 28 percent as clinical nurse specialists, and about 15 percent as nurse anesthetists (HRSA 2002).

The HRSA National Sample Survey of Registered Nurses of 2000 provides estimates of the number of nurses, and a demographic profile and the geographic distribution of these health care workers. Unfortunately, similar, in-depth profiles of other types of nursing staff are not available. HRSA estimates that, in 2000, the U.S. had 2.7 million licensed, registered nurses, an increase of 62 percent since 1980. However, the years between 1996 and 2000 marked the slowest growth in the RN population over the 20-year period. An estimated 81.7 percent of

nurses or 2.2 million persons were employed in nursing in 2000. The average age of nurses in 2000 was 45.2 years; nursing is a female-dominated profession with men accounting for 5.4 percent of nurses in 2000. However, the number of men in nursing has grown at a much faster rate than has the total RN population; in 1980, only 2.7 percent of RNs were men.

The actual average annual earnings for nurses working full-time in 2000 was \$46,782. “Real” salaries of nurses employed full-time, taking into account changes in purchasing power of the dollar using the consumer price index (CPI), have remained relatively flat since 1992. Employment of nurses varies dramatically across regions with New England employing the highest number of RNs per capita at 1,075 per 100,000 persons. The Pacific area had the lowest number at 596 per 100,000 persons; the national rate was 782 per 100,000 persons (HRSA 2002).

Licensed Practical Nurses

In all health care settings, licensed practical nurses (LPNs or licensed vocational nurses in Texas and California) provide basic bedside care under the direction of RNs or physicians (Occupational Outlook Handbook, DOL 2001). This basic care includes taking vital signs, helping patients or residents with daily activities such as eating and personal hygiene, giving injections and, in states where the licensure laws permit, administering prescription drugs. Beyond basic care, LPNs provide other services, which depend upon the setting. In nursing homes, LPNs take on additional responsibilities such as evaluating residents needs, developing care plans, and supervising the activities of nurse aides. In doctors’ offices, LPNs may perform clerical duties. LPNs in home health agencies also teach family members simple nursing tasks.

LPNs, who earned an average hourly wage of \$14.65 in 2000, must obtain state licensure and receive their education through one year training programs. Of the approximately 700,000 employed LPNs in 2000, 28 percent worked in hospitals, 29 percent in nursing homes, and 14 percent in doctors’ offices and clinics (Occupational Outlook Handbook, DOL 2001).

Nurse Aides, Home Health Aides, Home Care Aides, and Personal Care Aides

There are several types of workers who perform simple nursing tasks. Nurse aides help hospital patients and residents of group residential facilities with daily activities such as eating, bathing, and dressing, take vital signs, and report changes in patients’ conditions to other nursing

or medical staff. These aides also keep records of services delivered and changes in the client's condition. Nurse aides, or certified nurse assistants (CNAs) in nursing homes that are certified for participation in Medicare and Medicaid, must complete a 75 hour training course and must pass a competency test within four months of employment. One quarter of the 1.4 million nurse aides in 2000 worked in hospitals and half in nursing homes (Occupational Outlook Handbook, DOL 2001).

Three groups of aides—home health, home care, and personal care aides, work outside of hospitals and group residential facilities. Home health aides provide health-related services such as taking vital signs and assisting with medications in a person's home under the orders of a physician and the direction of a nurse. Those home health aides who work in Medicare certified home health agencies must complete a 75 hour training course. Personal and home care aides, who may or may not work for an agency, help with daily activities, such as eating, bathing and dressing, and provide some housekeeping services such as laundry. Requirements regarding training and certification of personal and home care aides vary by state. All aides delivering services outside of facilities keep records of services and changes in clients' conditions. In 2000, there were 615,000 home health care aides, most of whom worked for agencies (Occupational Outlook Handbook, DOL 2001).

The U.S. GAO examined data from the Bureau of Labor Statistics and found that in 1999 nurse aides' average hourly wage in nursing homes was \$8.29 compared to \$9.22 for all service workers (U.S. GAO 2001c). Aides in home health agencies and hospitals made an average of \$8.67 and \$8.94 respectively. These relatively low wages result in serious problems for aides, including difficulty making ends meet and reliance on public benefit programs. Those aides who worked in home health agencies and nursing homes were more than twice as likely as all other workers to be receiving food stamps or Medicaid. One third of home health aides and one fourth of nursing home aides do not have any form of health insurance compared to 16 percent of all workers (U.S. GAO 2001c).

4.0 Summary of the National Picture

The national picture provides more anecdotal than quantitative evidence of a current shortage of nurses, but does provide evidence of a number of factors that raise concerns for the future, including industry changes and demographic changes in the nation's population and in the nursing workforce.

Evidence of a Nurse Staffing Shortage

Given the difficulties inherent in defining a labor shortage and the limitations of available data, it is not surprising that no definitive study has confirmed a national nursing shortage. The General Accounting Office concluded that, "National data are not adequate to describe the nature and extent of these potential nurse workforce shortages, nor are data sufficiently sensitive or current to allow a comparison of the adequacy of the nurse workforce size across states specialties, or provider types." (U.S. GAO 2001b, page 3). Linda Levine of the Congressional Research Service states, "It cannot be stated conclusively, based upon the available labor market indicators, that there is an across-the-board shortage of RNs at the present time." (CRS 2001, page 19). Key indicators that have been considered are nurse vacancy rates and retention of nursing staff.

Nurse Vacancy Rates

Several national studies document the difficulties involved in finding nurses, the relatively high nurse vacancy rates, and the fact that many providers and workers believe there is a nurse shortage. A 1998 survey of a random sample of senior nurse managers from 388 acute care hospitals across the country found that finding skilled nurses was among the managers' most pressing concerns (American Organization of Nurse Executives 2001). According to an analysis of the 2001 American Hospital Association Workforce Survey (AHAWS), the RN vacancy rate was 11 percent, and 75 percent of the hospitals' 168,000 vacancies were for RNs (Lewin Group 2001). In addition, 75 percent of hospitals reported that they had more difficulty in recruiting nurses in 2001 than they had had in 2000.

A 2000 survey conducted for the Federation of Nurses and Health Professionals showed that nurses nationwide believe there is a shortage (Peter D. Hart Research Associates 2001). The

Federation's telephone survey of a nationally representative sample of 700 current direct care nurses and 207 former direct care nurses showed that 89 percent of current nurses believe there is a nurse shortage in their local areas and 45 percent of them think the shortage is severe. Preliminary analysis of a 2001 survey of nursing homes conducted by the American Health Care Association (AHCA) shows that responding facilities had weighted average vacancy rates of 18.4 percent for RNs, 14.4 percent for LPNs and 11.7 percent for nurse aides (American Health Care Association 2001). The vacancy rates varied by region—for example the RN vacancy rate ranged from 16.2 percent in the West North Central region of the country to 21 percent in the Pacific region. Similar to the AHAWS, the majority of responding facilities in the AHCA survey reported that recruiting nursing staff was more difficult in 2001 than it was in 2000.

Retention of Nursing Staff

Health care providers also report high employee turnover rates. The U.S. GAO found a 26.2 percent annual turnover of nurses in a national survey of hospitals in 2000, a 51 percent rate for RNs and LPNs in 13 nursing home chains in 1997, and a 21 percent turnover for RNs in a 2000 national survey of home health agencies (U.S. GAO 2001c). Reported turnover rates among nurse aides are even higher, ranging from 40 to 100 percent in 12 nursing home chains in 1998. Preliminary results from the 2001 AHCA survey indicate that annualized turnover rates for responding nursing facilities were 55.5 percent for RNs, 51.5 percent for LPNs, and 76.1 percent for nurse aides (American Health Care Association 2001). These turnover rates varied markedly by region with turnover rates for RNs ranging from 41.8 percent in the West North Central region of the country to 70.0 percent in the Mountain region. Home health agencies reported a 28 percent turnover rate among aides in 2000. Reports of staff turnover rates must be viewed with some caution, as the methods used to calculate rates can vary from study to study. However, there is little doubt that turnover rates are substantial.

Registered nurses also perceive a problem in retaining staff. The Federation's survey showed that 70 percent of current nurses believe retaining nurses is problematic and 81 percent of former nurses share this view (Peter D. Hart Research Associates 2001). Retention appears to be considered most problematic among RNs in hospitals—47 percent of current nurses in these facilities say retention is a major problem, whereas a third of nurses in other types of institutions

share this view. These perceptions contrast with findings of the highest turnover rates among nurses working in nursing homes.

Some nurses are not just changing jobs within nursing, but are leaving the profession entirely. The 2000 National Sample Survey of Registered Nurses shows that 500,000 nurses—more than 18 percent of the nurse workforce—who have active licenses are not working in nursing (HRSA 2001). In Congressional testimony on direct care staffing shortages, the President of the Illinois Nursing Association reported that the number of licensed RNs who are no longer working in nursing increased by 8 percent in the years between 1996 and 2000 (O’Sullivan 2001).

Future Nurse Shortages

Several projections of the future supply of nurses suggest that the nation will be facing shortages over the next several decades. The Bureau of Labor Statistics projects that the supply of nurses will fall short of demand in 2008 and this shortfall will continue to worsen through 2020 (Levine 2001). In that year, demand for nurses is projected to exceed supply by 291,000 or 13 percent.

In more recent projections, Buerhaus and his co-authors showed that the nurse workforce is aging and forecasted that shortages will occur as the current cohort of nurses retires (Buerhaus, Staiger, and Auerbach 2000). The researchers analyzed information on employed registered nurses aged 23 to 64 years using 25 years (1973 - 1998) of data from the U.S. Census’ Current Population Survey (CPS). Using the CPS data, the researchers constructed a model to forecast the total number of full-time equivalent registered nurses from 2000 to 2020. The model projects that the number of full-time RNs per capita will peak in 2007 and then will decline through 2020; the absolute number of nurses will begin declining in 2012. Based on projections of need for nurses from the federal Health Resources and Services Administration, the nurse workforce supply will meet requirements until 2010 but will be 20 percent below them by 2020. The aging of the workforce is projected to continue and peak at age 45.4 years in 2010. These projections assume that future cohorts will enter the nursing profession at the same rate as cohorts who were born from 1971–1975. The latest projections from the Bureau of Labor Statistics indicate 561,000 additional jobs for RNs over the period 2000 to 2010, a 26 percent increase (Hecker

2001). In order to better evaluate the projections of future nurse shortages, we present a description of some of the factors affecting nursing demand and supply.

Demand for Nurses

There are several reasons why demand for nurses is likely to increase in the future. Among them are the aging of the population, increased survival of people who are ill or have disabilities, and organizational changes in the health care industry, including the waning influence of managed care on providers' employment of nurses.

Increasing Number of People with Chronic Illnesses and Disabilities

People with disabilities and chronic illnesses who require health and long-term care are a diverse and growing population, including elderly persons, people with physical disabilities or cognitive impairments, persons with acquired immunodeficiency syndrome (AIDS), children who are dependent on medical technology (e.g., ventilators), and persons with mental retardation and related conditions. Approximately 13 million persons in 1995 had a problem performing the activities of daily living (e.g., eating, bathing and dressing) or instrumental activities of daily living (e.g., shopping, housekeeping, and managing money) (Komisar, Lambrew, and Feder 1996).

Disability rates increase with age, with older persons much more likely to have disabilities than younger people (Spector, Fleishman, Pezzin, and Spillman 1998). The number of persons age 65 and older is likely to increase from 35.5 million in 2000 to 45.0 million in 2015 as the leading edge of the baby boom generation reaches age 65 (Lewin Group 2000). The number of older people with disabilities is projected to increase from 5.2 million in 1998 to 6.8 million in 2017.

The population age 85 and older is currently the fastest growing segment of the older population. In 2000, an estimated 2 percent of the population was age 85 and older. By 2050, the percentage in this age group is projected to increase to almost 5 percent of the U.S. population. (Federal Interagency Forum on Aging Related Statistics 2000). The need for assistance with activities of daily living increases dramatically for individuals 85 years of age or older. These

individuals tend to be in poorer health and require more services than the younger old. As a result, the aging of the population is likely to increase the need for all types of nursing staff.

Disability rates for the non-elderly population have been increasing somewhat, although that should not change the overall number of people with disabilities very much (Kaye, LaPlante, Carlson, and Wegner 1996). This growth has been attributed in part to a decline in mortality rates for certain conditions, such as heart disease and hypertension, which increases the prevalence of these disabling conditions. Improvements in trauma care and emergency medicine have decreased mortality rates for individuals with major physical impairments such as spinal cord injury (DeJong, Batavia, and Griss 1989). Medical and technological advances have not only increased survival rates for many diseases and injuries, but these advances have made it possible for the physically and developmentally disabled to lead long lives without being institutionalized.

Organizational Changes in the Health Care Industry

The continued rise in health care costs, changing social attitudes, and an aging and increasingly diverse population have stimulated growth and change in the health care industry. Key organizational changes in health care include a move from reliance on hospital-based care to more care being provided on an outpatient basis and in nursing homes; the influence of managed care; an increase in for-profit health care providers; and corporate restructuring (Pindus and Greiner 1997). A growing amount of care is being provided in non-hospital settings, such as physicians offices, patients' homes, and freestanding outpatient clinics or surgery centers. Changes in ownership and management patterns are reflected in increased concentration of the hospital industry through closure and merger and an increase in for-profit hospitals. Powerful buyers—big employers, insurance companies, and managed care companies are putting pressure on hospitals by demanding contracts with deep discounts in order to cut their insurance bills. These factors affect the settings in which nurses are employed, the salaries they earn, and the staffing decisions made by their employers (Pindus and Greiner 1997).

The presence of health maintenance organizations (HMOs) has been found by at least one study to influence the employment of nurses. In areas of the country with a high concentration of HMOs, demand for nursing staff moderated and fell in some cases, and RN employment began to shift out of hospitals during most of the 1990s. Buerhaus and Staiger (1999) documented this

trend by using the Census' Current Population Surveys from 1983 through 1997 to compare growth in employment of RNs in states with high HMO enrollment to those states with low rates. In 1997, however, nurse employment began to grow again in the high HMO enrollment states.

In summary, increases in the elderly population and in the number of persons with disabilities and chronic illness, and changes in the health care system will result in higher demand for all types of nursing staff in the future. The U.S. Bureau of Labor Statistics estimates that the rate of growth in employment of RNs from 2000-2010 will be 25.6 percent, which exceeds the projected growth in all occupations by 10.4 percent (Hecker 2001). The rate of growth for LPNs will be 20.3 percent during this time period while employment of aides will grow fastest of all. Nurse aide employment growth is projected to be 30.4 percent from 2000-2010.

Supply of Nurses

Several factors affect the supply of nursing staff, including the shrinking labor pool for these staff, the availability of other career paths for women,⁵ the number of graduates of nursing schools, and staff's level of satisfaction with various aspects of their jobs such as workload and wages. The number of women age 25–54, who make up the bulk of the RN workforce, will remain relatively stable over the next several decades (U.S. GAO 2001a). So, the labor pool from which nurses are drawn will shrink in relation to the increasing number of older persons. In addition, women have more career opportunities available to them than they have had in the past, causing the nursing field to compete with others for students (Levine 2001). Data from the National League for Nursing show that there was only a 10 percent increase in graduates from RN education programs between the 1975-1976 and the 1997-1998 academic years (Levine 2001). These data also show that the number of graduates in nursing programs began to decline in the 1995-1996 academic year and fell 13 percent by 1998. However, the Health Resources and Services Administration estimates that the number of nursing school graduates will increase

⁵While the number of men in nursing has grown at a much faster rate than has the total RN population, in 2000 only 5.4 percent of nurses were men.

to a somewhat greater degree, 13 percent, between the academic years ending in 1998 and 2020 (HRSA 1996, cited in Levine 2001).

Nurses' Job Satisfaction

Another factor affecting the nursing labor supply is the proportion of nursing staff who are dissatisfied with various aspects of their work. Evidence that worker dissatisfaction plays a role in decreasing the supply of nurses is found primarily in survey and focus group responses provided by nurses themselves. Although a 2000 survey of RNs in the US shows that 73 percent of all employed RNs reported being satisfied with their jobs (68 percent of hospital nurses) (Geolot 2001), other surveys show that a significant percentage of RNs have considered leaving direct patient care for reasons largely related to working conditions. A national survey of RNs conducted for the Federation of Nurses and Health Professionals found that about half of current nurses have thought about leaving direct patient care (Peter D. Hart Research Associates 2001). In addition, only 44 percent of current RNs were satisfied with nurse staffing levels and only 47 percent were satisfied with their "voice in decisions that affect them." About two-thirds of current nurses regard patient load, inadequate staffing to handle the acuity of patients, inadequate time with patients, and inadequate time for required paperwork as serious problems.

Working conditions largely explain why half of the current RNs surveyed by the Federation have considered leaving direct care for non-retirement reasons. Fifty-six percent of RNs who have considered leaving have done so because they want a less stressful or less physically demanding job and twenty-two percent wanted regular hours or a regular schedule (Peter D. Hart Research Associates 2001). More money was important to 18 percent of these nurses and 14 percent were interested in leaving direct patient care to pursue advancement opportunities.

Twenty-one percent of current nurses age 18 – 59 have considered leaving direct patient care within the past two years and expect to do so within five years for reasons other than retirement (Peter D. Hart Research Associates 2001). These "potential leavers" have a demographic profile similar to that of current nurses but experience lower levels of satisfaction with their jobs. About three-quarters of "potential leavers" would consider remaining in direct patient care longer if their working conditions improved.

Dissatisfaction with the nursing profession is not confined to the United States. Aiken and her colleagues surveyed nurses in 711 hospitals in five countries—the United States (Pennsylvania only), Canada, England, Scotland, and Germany—in 1998 and 1999 (Aiken, Sochalski, et al. 2001). Response rates varied from 42 to 53 percent across the countries. At least one third of nurses in every country but Germany were dissatisfied with their present jobs. Dissatisfaction was highest in the U.S. at 41 percent. The percentage of nurses planning to leave their present jobs in the next year ranged from 16.6 percent in Canada to 38.9 percent in England; in the U.S. the percentage was 22.7 percent. Only about 30 to 40 percent of nurses in the five countries (34.4 percent in the U.S.) believed that “there are enough registered nurses to provide high-quality care” and “enough staff to get the work done.” In the U.S., 83.2 percent of Pennsylvania nurses said that they had had an increase in the number of patients assigned to them between 1998 and 1999 and 58.3 percent said there had been a decrease in nurse managers.

Registered nurses are not the only staff with demanding work. Being a nurse aide is a very difficult job, particularly in the nursing home (U.S. GAO 2001a). The job is physically demanding in that it requires lifting and moving patients, long hours of standing and walking, and dealing with patients who can be difficult and disoriented. Accordingly, nursing home staff were injured at a rate of 13 per 100 employees in 1999, one of the highest rates of workplace injury, while construction workers had an injury rate of 8 per 100 employees.

There is some anecdotal evidence that improving working conditions does increase retention and facilitate recruitment. Hi-Desert Medical Center, a 175-bed community hospital in Joshua Tree, California, found nurse vacancy rates plummeted from 50 percent to less than 1 percent in the year following a reduction in the RN-to-patient ratio on its medical/surgical units. Griffin Hospital, a 160-bed community hospital in Derby, Connecticut has retained the primary care nursing model characterized by a low RN-to-patient ratio and a high proportion (80 percent) of direct care staff comprised of RNs. Hospital management reports low turnover and vacancy rates despite paying salaries that are less than other hospitals in the area (COR Health 2001).

Nursing staffs’ concerns about staffing levels and working conditions are likely to affect current nurses’ commitment to remain in direct patient care. These concerns may also affect willingness to enter the nurse workforce in the future. Evidence from surveys of nurses and former nurses, as well as early evidence of nurses’ response to staffing changes, suggests a cost

tradeoff between resolving the nursing shortage with higher wages and resolving the shortage by increasing nurse to patient ratios.

5.0 Regional and Local Labor Market Evidence and Issues

State-level studies show results consistent with those at the national level (U.S. GAO 2001b; U.S. GAO 2001c). State hospital associations that have issued 2001 Workforce Reports, some specifically on nursing, include: Arizona, Florida, New York, Maine, Maryland, Pennsylvania, Washington. State reports on the nursing workforce prepared by government or academic institutions in 2001 include: California, Connecticut, Georgia, Iowa, New York, and Pennsylvania.

The Association of Maryland Hospitals and Health Systems reported that the average hospital in the state had a nurse vacancy rate of 14.7 percent in 2000 and hospitals took, on average, 60 days to fill a nurse vacancy (U.S. GAO 2001c). California had a nurse vacancy rate of 20 percent in 2000, while in 2001, Florida, Nevada, and Vermont reported nurse vacancy rates ranging from 7.8 to 16 percent (U.S. GAO 2001b). A Pennsylvania study showed that in 2000, 75 percent of nursing homes and more than half of home health agencies reported staff shortages. In Vermont, nursing homes and home health agencies in 2000 reported nurse aide vacancy rates of 16 and 8 percent, respectively. More detailed evidence from New York and California indicates the importance of understanding regional labor market conditions in addressing the nursing shortage.

New York: Evidence of Shortages and Impacts of Earlier Cost Containment Policies

New York State, like many others, appears to be experiencing a shortage of nursing staff, including RNs, LPNs, and aides. This shortage varies by region of the state and extends to all types of providers. Just a few years ago, in the late 1990s, the state's health care system was downsizing.

The situation in New York City provides an example of how the health care system in New York State has changed since the mid-1990s. Three major developments began affecting the City's hospital sector in the mid-1990s—managed care expansion, deregulation of hospital rates, and Medicare and Medicaid cost containment efforts (McCall 1997). Managed care plans entered the city and began placing downward pressure on hospital expenditures, like health plans in other areas of the country. In addition, the state eliminated its hospital rate regulation system, which controlled the rates that third-party payers paid hospitals. This led to hospitals and payers

negotiating reductions in hospital rates. Medicare and Medicaid also implemented payment changes designed to contain health care costs. In response to these cost containment pressures, many hospitals downsized their staffs in an effort to reduce expenditures. Public hospitals were particularly hard hit; between fiscal years 1994 and 1997, the Health and Hospitals Corporation, which operates public hospitals in New York City, experienced a workforce decrease of 8,000 employees or 18 percent (McCall 1997). Overall hospital employment in New York City decreased by 9 percent between 1994 and 1999, with public hospitals accounting for most of this decline (Center for Health Workforce Studies 2001b). Nurses were among the staff who lost their jobs during this period.

By the late 1990s, the situation began to turn around and several factors indicate that New York City and the state are beginning to experience a nurse shortage. Some hospital departments are reporting a shortage of nurses including hospital emergency departments, critical care units, and peri-operative units, jobs which are quite physically demanding and require high levels of specialization (New York State Education Department 2001). In February 1999, 30 percent of hospitals in the New York City area reported taking at least three months to fill RN positions in these departments. In fall 2000, 92 percent of hospitals in New York State reported vacant RN jobs and 71 percent reported vacant LPN jobs (New York State Education Department 2001). Several other factors indicate a tightening labor market for nurses. About 10 percent of hospitals responding to a 1999 survey by the Greater New York Hospital Association said that they were using “sign-on” bonuses to attract nurses (Brewer and Kovner 2000). The New York State Department of Health’s Institutional Cost Report data showed that after several years of flat or negative growth in real wages, real wages for nurses began increasing in the late 1990s, likely in response to labor shortages (Brewer and Kovner 2000).

Regional Variation in Nurse and Nurse Aide Shortages in New York

A 2001 survey by the New York Association of Homes and Services for the Aging (NYAHSA) indicates that other parts of the health care system are also experiencing staffing shortages and the severity of the problem varies markedly by region within the state (New York Association of Homes and Services for the Aging 2001). NYAHSA surveyed 475 nursing homes, home care agencies, and adult care facilities and received 163 responses. More than 90

percent of responding providers reported shortages of nurses and aides in 2001. For RNs, the percentage of providers with vacancies ranged from 54 percent in the Western region of the state to 88 percent in the New York City/Long Island region. For LPNs, the percentage of providers with vacancies ranged from 73 percent to 94 percent. The range for certified nurse assistants was 68 percent to 100 percent. RN and LPN positions remained vacant longer than other direct care positions; the average times to fill these positions were 16 and 14 weeks respectively in 2000. And, the average times to fill these positions varied by region of the state.

Current and Future Supply of Nurses

As of April 2001, New York State had 234,000 RNs and 68,900 LPNs. The number of RNs increased by 10,700 while the number of LPNs dropped by 1,200 between 1997 and 2001 (New York State Education Department 2001). In New York State, the demand for nurses is expected to exceed supply by 17,000 nurses in 2005 and the gap will approach 34,000 in 2015. In 2015, the supply of nurses will be about 250,000 and the projected demand will be about 284,000 (New York State Education Department 2001).

The gap between supply and demand for nurses is likely to be due, in part, to New York state's aging population. By 2020, the population aged 65 and over will grow by 24 percent, while total population in the state will only grow by 7 percent (New York State Education Department 2001). This gap is reflected in the average age of nurses. In the state, the average age of RNs is 47 and the average retirement age for these nurses is 49. And, less than 10 percent of employed RNs were under age 30 in 2000, compared to 25 percent in 1980.

In New York, there is little expectation that production of RNs will close the gap between demand for and supply of nurses. The total number of RN graduates in New York State was 7,686 in 1996 and declined each year to reach 5,789 in 2000; however, the number of graduates is projected to rise slightly to 5,930 in 2002 (Center for Health Workforce Studies 2001a). The projected declines in the number of RN graduates between 1996 and 2002 range from 14.8 percent in northeastern New York to 32.1 percent in western New York.

Proposals to Ameliorate the Nurse Shortage in New York

There is some disagreement over proposed approaches to address the nurse shortage in New York. NYAHSAs recommendations to deal with the shortage include: more funding for increased wages and other benefits, more scholarship money and loan forgiveness programs, a marketing campaign on the attractiveness of health care jobs, cross-training in aide certification programs, and elimination of barriers to using unlicensed personnel to do some tasks such as feeding residents (New York Association of Homes and Services for the Aging 2001).

In contrast, the Board of Regents' opposes delivery of nursing care by unlicensed personnel who are not under nursing supervision, lowering established licensure standards, and creation of new categories of health personnel (New York State Education Department 2001). They believe these steps would lower quality of care. The Board proposes to clarify that refusing overtime does not constitute patient abandonment, and to set a maximum number of hours that nurses can work during a specific time period. These two steps counter some of the strategies, such as increased use of overtime, that some providers are using to deal with the nurse shortage.

The New York State Nurses Association (NYSNA) proposals to resolve the nurse shortage include providing more funding to those providers that provide quality nursing, establishing nurse staffing guidelines, protecting whistleblowers who report unsafe staffing, banning mandatory overtime, creating a conditional scholarship program for those who commit to work in the state, and financially supporting nursing schools, among others (New York State Nurses Association 2001).

The Governor, the Speaker of the Assembly, and the Senate Majority Leader in New York agreed to a package of benefits in January 2002, which are designed in large part to address the shortage of nursing staff (McKinley 2002). The \$1.8 billion, three year package will provide for salary increases and efforts to recruit new workers in hospitals, nursing homes and home health agencies.

California: Ahead of the Nation in Experiencing Shortages and in Setting Policy

In California, the current shortage is termed a "public health crisis" owing to a projected shortfall of 25,000 nurses by 2006 (California Strategic Planning Committee for Nursing

(CSPCN) 2000). Certain factors that are unique or more pronounced in California contributed to this shortfall, and recommendations for addressing the issue reflect the state's educational and health policy environment. Health care cost containment trends of the early 1990s were especially strong in California, and were accompanied by the rapid growth of health maintenance organizations (HMOs) and other forms of managed care. The resulting consolidation of hospitals and other health facilities and restructuring of hospital care created a stressful working environment for nurses (Coffman, Spetz, Seago, Rosenoff, and O'Neil 2001).

California was the first state in the nation to mandate minimum staffing levels for nurses in hospitals, in legislation passed in 1999.⁶ But, passage of this legislation did not come without a price. The debate over RN staffing polarized hospitals and unions representing RNs. According to a report of the California Workforce Initiative (Coffman et al. 2001, p.36), "The lack of trust among senior management, nurse administrators, unions, and staff RNs in hospitals has led to bitter public attacks that may reinforce negative images of nursing in the minds of young persons considering career options and the public at large."

Increasing the Supply of Nurses in California

On the supply side, increasing out of state recruitment is not expected to alleviate the situation because half of RNs working in California already are educated in other states or countries (State of California, Department of Consumer Affairs, Board of Registered Nursing 1999 in Keating and Sechrist 2001). In California, the public systems of education—California Community College, California State University, and University of California—are not well coordinated with respect to providing an integrated educational path for nurses. This is especially important because there is a need for more baccalaureate and specialty trained nurses. Approximately 70 percent of nurses in California received their initial education at the associate degree level and, of these, only 16 percent return to school for the bachelor's degree in nursing (Keating and Sechrist 2001). Furthermore, in order to prepare nurses for today's demanding hospital environment, better linkages are needed between academic institutions and clinical

⁶ Assembly Bill 394 directs the California Department of Health Services (DHS) to institute minimum nurse staffing ratios for acute care hospitals by January 2002. Accordingly, Governor Davis has proposed staffing rules developed by DHS, but the rules must still go through a regulatory review process before being implemented.

training settings. In addition to proposing minimum nurse staffing requirements in January 2002, Governor Gray Davis has pledged \$60 million to train 5,100 nurses during the next three years using money from special funds earmarked for workforce training, and from health-oriented foundations. (Perera and Morain 2002).

Improving Data for Regional and Local Planning

Recognizing the limitations of national data to analyze labor shortage and distribution issues, the Health Resources and Services Administration funded four Regional Centers for Health Workforce Studies to examine geographic imbalance across five health professions disciplines: medicine, nursing, dentistry, allied health and public health. Located at the University of California at San Francisco, the University of Illinois at Chicago, the State University of New York at Albany and the University of Washington, the Centers investigate geographic distribution and related health workforce issues. The Centers work with State agencies and conduct research, including state and regional studies, and develop analytic tools that help states resolve pressing issues in health professions training, such as how many residency slots to fund and how to recruit and retain health professionals in shortage areas (HRSA 2001).

6.0 Approaches, Recommended Solutions, and Implications

The literature generally confirms that a nursing shortage is on the horizon and that there are a number of contributing factors. These factors relate to the demand for nursing services as well as the supply of nurses. On the supply side, there are issues of recruitment and retention as well as attracting new students and training more nurses.

The range of domestic approaches that have been implemented or proposed includes both short-term and longer-term initiatives; legislative as well as program development activities, and national as well as regional or local efforts. And, the actors represent a broad range of stakeholders—nursing associations, labor unions, hospital/health industry associations, state government, federal government, higher education, and private foundations.

National Legislative Efforts

Legislative initiatives at the federal level that have been introduced or passed are aimed at easing the nation's nursing shortage by addressing education, staffing, and working conditions for nurses. The Nurse Reinvestment Act was passed in both the U.S. Senate (S. 1864) and in the House of Representatives (H.R. 3487) on December 20, 2001. The Nurse Reinvestment Act, if enacted, would amend the Public Health Service Act to direct the Secretary of Health and Human Services (HHS) to make grants to support national, state, and local broadcast public service announcements promoting the nursing profession. It expands eligibility for the nursing loan repayment program to include private hospitals, state or local departments of public health, skilled nursing facilities, home health agencies, hospice programs, and ambulatory surgical centers. The Act authorizes the Secretary to provide nursing scholarships in exchange for nursing services in designated health facilities. It grants preference to applicants with the greatest financial need or willingness to serve in geographic areas with nursing shortages and need. The Act requires the Secretary to award grants to schools of nursing and/or health care facilities to develop and support: (1) education outreach programs to encourage entry into the profession; (2) career ladder programs; (3) gerontology curriculum and competencies and efforts to encourage long-term care nursing services for the elderly as a career choice; (4) nurse internship and residency programs; and (5) demonstrations of models and best practices in nursing care, including retention strategies. Finally, the Act establishes a National Commission on the

Recruitment and Retention of Nurses to make innovative and creative recommendations concerning recruitment, retention, and advancement. All appropriations are authorized for FY 2003 through FY 2007 (H.R. 3487 and S. 1864 2001).

Many of the other national legislative efforts that were introduced to the 107th Congress aim to amend the Public Health Service Act and focus on improving nurse retention and education. These include:

- The *Nursing Home Staffing and Quality Improvement Act*⁷ aims to establish a program to provide grants to States to test innovative ways to increase nursing home staff levels, reduce turnover, and improve the quality of care of residents in nursing homes (H.R. 118 2001).
- The *Nursing Employment and Education Development Act (NEED Act)*⁸ aims to amend the Public Health Service Act to establish a Nurse Corps and recruitment and retention strategies to address the nursing shortage (S. 721 2001).
- The *Hospital-Based Nursing Initiative Act*⁹ plans to amend the Public Health Service Act to establish a nurse grant and scholarship program to enable hospitals to retain and further educate their nursing staffs (S. 1585 2001).
- The *Nurse Retention and Quality Care Act*¹⁰ amends the Public Health Service Act to provide programs to improve nurse retention, the nursing workplace, and the quality of care (S. 1594 2001).

Pending legislation in the Senate and House of Representatives also aims to amend other Acts, in order to address the working conditions of nurses.

- The *Registered Nurses and Patient Protection Act*¹¹ aims to amend the Fair Labor Standards Act of 1938 to prohibit forced overtime hours for certain licensed health care employees, including registered nurses (H.R. 1289 2001).
- The *Safe Nursing and Patient Care Act*¹² aims to amend Title VXII of the Social Security Act to provide for patient protection by limiting the number of mandatory overtime hours a nurse may be required to work in certain providers of services to which payments are made under the Medicare Program (H.R. 3238 and S. 1686 2001).

⁷ Introduced as H.R. 118 in the U.S. House of Representatives on January 3, 2001

⁸ Introduced as S. 721 in the U.S. Senate on March 5, 2001

⁹ Introduced as S. 1585 in the U.S. Senate on October 30, 2001

¹⁰ Introduced as S. 1594 to the U.S. Senate on October 30, 2001

¹¹ Introduced as H.R. 1289 in the U.S. House of Representatives on March 29, 2001

¹² Introduced as H.R. 3238 and S. 1686 in the U.S. House of Representatives and Senate on November 6th and 14th of 2001 respectively.

State Legislative Efforts

Constituent member associations of the American Nurses Association (ANA) are implementing state legislative agendas (see table 3 for a summary of individual state legislative activities). The ANA has identified five state legislative priorities (American Nurses Association 2001):

- *No Mandatory Overtime:* With pending nursing shortages, employers have used mandatory overtime to staff facilities. Nurses want to know that they will not be forced to work extended hours when they are tired, or when they have obligations outside the workplace.
- *Whistleblower Protection:* Nurses want to know that when conditions are unsafe for patients and they cannot effect change within their facility, they can report unsafe conditions to the appropriate agency without fear of punishment.
- *Collection and Reporting of Nursing-sensitive Quality Data:* Nurses want to know that hospitals will not only be made publicly accountable for the cost of care delivered to patients but also the quality of care they receive. Hospitals will also be held accountable for the staffing levels used to provide that care.
- *Requiring Valid and Reliable Staffing Systems:* Nurses want hospitals to use better tools to calculate the appropriate level and mix (RN, LPN, unlicensed assistants) of nursing staff required to deliver safe, quality care.
- *Collecting Nursing Supply and Demand Data:* Nurses want states to collect data so that appropriate workforce projections and plans may be made. Nurse workforce studies are currently required by legislation in Florida, Illinois, Nebraska, Oregon, Rhode Island, Texas, Virginia, and Wisconsin.

While most of the initiatives addressing funding for nursing education are federal, states are also working on this front. State legislation for funding to expand enrollment in nursing schools, loan forgiveness, and grants is pending in California, Illinois, Maine, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, and Texas.

Table 3: STATE LEGISLATIVE AGENDAS

	No Mandatory Overtime	Whistleblower Protection	Collection and Public Reporting of Nursing-sensitive Quality Data	Requiring Valid and Reliable Staffing Systems	Collecting Nursing Supply and Demand Data
California	X			O	
Connecticut	X				
Florida					O
Georgia					X
Hawaii	X	X		X	X
Illinois		X		X	
Maine	O			X	
Maryland	X				
Massachusetts			X		
Minnesota	X				
Missouri		X			
Mississippi					O
New Jersey	X		X		X
New Mexico					X
New York	X	X	X		
North Dakota					O
Ohio	X			X	
Oregon	O	O	X	O	
Pennsylvania	X			X	
Rhode Island	X	X			
Tennessee					O
Texas					O
Washington	X				
West Virginia	X	O			

Introduced: X
Signed into law: O
Source: www.nursingworld.org/gova/state/gastaff.htm (Accessed 12/6/01)

Programmatic Initiatives

Another area of activity for addressing the nursing shortage is at the program level. A broad range of mostly local efforts are underway to tap new sources of labor, provide advancement opportunities for health care workers, and change organizational culture in order to attract and retain nurses. The examples described indicate the diverse organizational possibilities and highlight some important linkages to the workforce development system.

Career Ladders in Long-Term Care: Extended Care Career Ladder Initiative

In Massachusetts, the Extended Care Career Ladder Initiative (ECCLI) is a \$5 million program funded by the state's legislature as part of the larger Nursing Home Quality Initiative to improve nursing home care. The Commonwealth Corporation, which administers the Workforce Investment Act (WIA), oversees ECCLI. The approach of ECCLI is to establish career ladders and training and support systems for incumbent certified nursing assistant and other entry level nursing home workers. The initiative aims to increase the supply and quality of nurse aides as well as address the nursing shortage by "growing the profession from within." Certified Nurse Assistants (CNAs) who have an interest in long-term care are provided with the opportunity to obtain the education and training to become licensed practical nurses and registered nurses.

Typically under the initiative, nursing homes have formed partnerships with their community colleges which provide English literacy and math skills instruction. Community based organizations have been tapped to provide soft skills instruction, case management, coaching, mentoring, and assistance with child care and transportation. One-stop career centers have been key partners, helping facilities find workers and assisting with career counseling, leadership seminars and management training. Also, some facilities have implemented computer-based basic skills training on-site and offer paid release time so workers can attend training. Participants in the CNA program are also receiving instruction at local community colleges in clerical documentation, medications, gerontology, cognitive and dementia issues, standard precautions and infection control, alternative therapies, work safety and patient safety to help them move up the CNA ladder. (Maloney 2001).

The ECCLI model also seeks to change work practices and the culture of institutions to make the industry more attractive to entry-level workers. Some facilities in the state have developed teams representing laundry, housekeeping, nursing, and management employees who meet to discuss issues and solve problems by consensus. The model is similar to that of progressive manufacturing firms where line workers make important contributions to their workplaces. The program is "empowering staff" to provide feedback to management about patient care and discuss issues, including who gets training (Maloney 2001).

Sectoral Employment Initiative: Good Faith Fund

Two organizations are focussing on health care employment under the sectoral employment initiative, a 3-year project in 10 organizations, funded by the Charles Stewart Mott Foundation. A sectoral employment initiative is a workforce development strategy aimed at helping low-skilled workers advance in the workforce and earn a decent living and at the same time creating systemic change in a targeted industry or occupation. One of these organizations, the Good Faith Fund (GFF) Careers in Health Care, works throughout the rural Arkansas delta region. GFF enrolls low-income minority women leaving welfare in a high quality, industry-driven CNA training program for 12 weeks (about three times the state's current minimum requirements) and helps the women overcome their significant barriers to training completion and job retention. In the first two years of this 3-year project GFF had enrolled 107 women— 55 percent had graduated, and 97 percent of the graduates were placed in jobs. But, sectoral employment initiatives go beyond individual training objectives. GFF also hired a full-time policy advocate to work with legislators in Little Rock and drafted provisions that were approved for the state's TANF legislation that allow participation in employment-related training to fulfill welfare recipients' work obligation. GFF also worked with counties to allow TANF funds to be used for purchasing cars for program participants. Another objective has been to make community colleges more accessible to the women the program serves. One college has revamped its remedial programs to admit people with low reading and math skills who used to be turned away. The relationship established with community colleges has resulted in one community college giving GFF graduates preferred admission to its allied health programs. (Elliott, Roder, King, and Stillman 2001).

Industry Initiatives: VHA

Through VHA, Inc. and the VHA Foundation,¹³ the health care industry has also initiated efforts to address the nursing shortage. VHA is a member organization of 2200 nonprofit hospitals and other health care organizations. "Tomorrow's Workforce" is an 18-month initiative

¹³ VHA is a nationwide network of community-owned, nonprofit health care systems. VHA is a for-profit cooperative. The VHA Foundation is the nonprofit arm of VHA, Inc.

that is helping hospitals redefine the work environment to promote recruitment and retention of workers. VHA's focus is on all levels and types of staff, including pharmacy, food service, and other areas as well as nursing. Participating institutions work together, with group and individual consultation from VHA, to address five areas: leadership, organizational culture, job roles, human resources policies and procedures, and building the organization as the employer of choice in the community, including promoting health careers down to the elementary school level. Currently, 10 institutions are engaged in the "Tomorrow's Workforce" initiative. A second launch, to include 30 more institutions, is planned for May, with plans to involve a total of 100 organizations by the end of 2002. According to VHA spokespersons,¹⁴ the hospitals' motivation to participate in Tomorrow's Workforce stems from high vacancy rates and concerns about customer service.

In another project, with funding from the Annie E. Casey Foundation, the VHA Foundation convened a National Health Care Welfare to Work task force whose members represented nine industry leaders involved in welfare to work programs. Working with state and local providers, health systems have tapped welfare recipients and former welfare recipients as a pool of labor by developing customized programs for recruitment, training, and retention. Program outcomes, including one-year retention rates, participation in continuing education and training, and wage rates, met or exceeded welfare to work efforts of other industries. (VHA Foundation 2001). Benefits cited by the health care organizations involved included consistency with their organizational mission (i.e., improving individual and community health, enhancing community capacity) and the opportunity to "grow their own employee." The health care organizations believe that, with training and soft skills development, these individuals become dedicated and informed employees who better reflect the racial, ethnic, and cultural backgrounds of the patient population (VHA Foundation 2001). In a related new project, also funded by the Annie E. Casey Foundation, the VHA Health Foundation is working with three member health care organizations to study the concept of community career ladders in the health care sector. A community career ladder is an "educational opportunity that current and future employees of a

¹⁴ Telephone interview with Chief Nursing Officer, and staff of VHA, Inc.

health care organization in the community may access to learn and advance their health care career within or across separate organizations" (VHA Health Foundation news release 2001).

Expanding the Pool of Nursing Candidates: District 1199C Training & Upgrading Fund

A community career ladder is already in the making in Philadelphia through the auspices of the District 1199C Training and Upgrading Fund. The Training Fund operates a learning center that serves union members as well as community residents, and has used its strong linkages with health care employers and community based organizations to recruit and train entry level health care workers for skilled nursing positions. With funding from the U.S Department of Labor under the H-1B program,¹⁵ matching funds provided by three employers, and employer funds contributed to the Training and Upgrading Fund, an extensive array of preparatory classes are available free of charge. The program targets three groups who have difficulty overcoming the financial, academic, and schedule barriers to entering the nursing profession: current health care workers in entry level positions, minority populations, and immigrant groups. Participants have the opportunity to become trained as nurse aides, pass the state certification test, and obtain employment in the long term care industry. Once trained as a nurse aide, a variety of preparatory classes enable students to start at any point in the continuum (from basic skill remediation to pre-nursing classes) and work up to the level needed to qualify for nursing schools. Class schedules are designed to accommodate work responsibilities; there are no time limits for completing training; and nursing students are eligible for tuition support and assistance with books, uniforms, fees, and other educational support expenses. (District 1199C Training and Upgrading Fund 2001).

Opportunities for DOL

As illustrated in the previous sections, there is a need for action on all fronts, and fortunately, responses to nursing workforce issues are coming from all levels of government,

¹⁵ The H-1B Technical Skill Training Grant Program was authorized under the American Competitiveness and Workforce Investment Act of 1998 (ACWIA 1998). Grants funded under the Act have the longer term goal of raising skill levels of domestic workers to fill specialty occupations presently being filled by temporary workers admitted to the United States under the provisions of the H-1B visa. (The H-1B visa is permitted for foreign non immigrants working in high skill or specialty occupations experiencing shortages of domestic workers).

from the private sector, from industry organizations, and from organizations representing health care workers. Programs supported by the U.S. Department of Labor are a critical piece in responding to the impending nursing shortage. Four areas of opportunity for DOL are: data, workforce development, working conditions, and training.¹⁶

Data

The Department of Labor, through BLS, serves as the primary source for national workforce data. A closer collaboration with HRSA and its four regional centers for workforce studies could enhance health care workforce planning capability. Given the importance of regional, state, and local data in analyzing labor market supply and demand, DOL could also provide technical assistance to states in their workforce planning efforts, promoting the use of consistent measures across states and agencies.

Workforce Development

Title I of the Workforce Investment Act (WIA) increases the opportunities for partnerships between government programs, employers, and education and training providers at the policy and planning level (through Workforce Investment Boards) and at the service delivery level (through One-Stop Career Centers). WIA authorizes three levels of service which are available to all job seekers. “Core” services include outreach, job search and placement assistance, and labor market information. “Intensive” services include more comprehensive assessments, development of individual employment plans, and counseling and career planning. Those customers who cannot find employment through intensive services may receive “training” services linked to job opportunities in their communities, including both occupational training and training in basic skills. WIA also authorizes the provision of supportive services (e.g., transportation and child care assistance) to enable an individual to participate in a training program. One-Stop Career Centers make use of technology to provide access to job listings, labor market information, resume preparation software, and information about local training programs.

¹⁶ The Department of Labor can, and does, address the nursing shortage through the H-1C program as well. The Nursing Relief for Disadvantaged Areas Act of 1999 allows qualifying hospitals to employ temporary workers (nonimmigrants) as RNs for up to three years under H-1C visas. Only 500 H-1-C visas can be issued each year during the four year period of the H-1C program (2000-2004).

Adult programs under WIA had funds available to serve approximately 396,000 people in Program Year 2001 (www.doleta.gov/programs/adult_program.asp accessed 2/1/02). A number of ETA-sponsored grant programs offer training in nursing or pre-nursing careers. The H-1B Technical Skill Training Program, the Minority Colleges and Universities Partnership Building and Training Program, and the Contextual Learning Grants (to help non-English speaking job seekers) are just a few examples that target programs that train workers for shortage occupations. Each state maintains a workforce development web site with links to local One-Stop resources. These sites offer a wealth of information for job seekers and employers, and they are well-positioned to assist in recruiting workers for shortage occupations and facilitating the partnerships that will provide the necessary training. As just one example, the Texas Workforce web site includes an occupational snapshot of registered nurses, including wage and employment data, projected growth in RN jobs by local workforce development area, and a description of job activities (www.texaswrkforce.org/careers accessed 1/23/02).

Working Conditions

The evidence presented in this paper indicates that working conditions are a significant factor in nurse retention. The Department of Labor is responsible for administering the Fair Labor Standards Act and other mandated worker protections. DOL's Employment Standards Administration, in conjunction with state Departments of Labor, closely monitors and enforces laws protecting the wage, hours, equal employment opportunity, working conditions and injury compensation of workers. Consequently, DOL has the experience and the information to consider appropriate changes in legislation or in existing standards to address issues such as mandatory overtime, worker safety, and whistleblower protections. Demonstrations that evaluate the impacts of such changes on worker safety, patient care, nurse retention, and nurse recruitment will provide valuable information for decisionmakers weighing these policy changes against increases in wages and changes in hospital reimbursement levels.

Training

DOL programs are an ideal source of funding and expertise for the first steps on the ladder to professional nurse training. DOL programs are well-positioned to access non-traditional

and other labor pools, including welfare recipients, low-income students, displaced workers, and youth.

The Job Corps offers potential for expanding existing health care training and providing a linkage to the nursing education system. Job Corps participants are between 16 and 24 years old; most come to the program without a high school diploma. The program's goal is to help youths become more responsible, employable, and productive citizens. It currently serves over 60,000 new participants each year. Job Corps is distinguished from other programs by the intensive education, training, and support services it provides in a residential setting—about 88 percent of students live at centers while enrolled (Burghardt, Scochet et al., 2001). There are 110 Job Corps centers across the country. These centers unite federal agencies, private contractors, private businesses, and eight national unions nationwide. For example, HCR Manor care, one of the largest providers in the long-term care industry is a Job Corps employer partner. They partner with Job Corps sites in Pennsylvania, Arizona, Florida, and Illinois. HCR Manor Care facilities provide Job Corps students with on-the-job training experiences and the company uses Job Corps as a source for qualified entry-level certified nursing assistants. They also hire licensed practical nurses. Almost all (90 of 110) Job Corp Centers offer health-related training, including Nurse Assistant training and certification. Currently, only 5 Job Corps Centers offer advanced training for LPNs, usually at local community/technical colleges. (www.jobcorpworks.com accessed 1/25/02). Job Corps instruction is individualized and self-paced, and curricula are developed with input from employers and labor organizations. The program is well suited for expanding its advanced training to individuals who have difficulty accessing or succeeding in the traditional nursing education system.

The School-to-Work Opportunities initiative and Career Academies offer additional opportunities for training youth in health occupations. In partnership with the Department of Education, DOL supports states and communities in establishing School-to-Work systems in secondary and post-secondary schools with alternative learning options for youth who have dropped out or are about to leave school. Career academies have existed for 30 years and now operate in an estimated 1,500 to 2,500 high schools nationwide in almost every state, especially in urban areas. Organized as schools within schools, Career Academies provide a smaller learning environment, emphasize the real world relevance of school, and provide work-based

experiences such as job shadowing and internships. About 20 percent of the career academies nationally have a dedicated health and human services academy theme. Of particular interest, there is a National Network of Health and Human Services Career Academies sponsored by the Bureau of Primary Health Care, DHHS, Office of Minority and Womens' Health.

The opportunities for DOL complement the initiatives of other federal agencies that are also addressing the nursing shortage. For example, the Department of Health and Human Services (DHHS) recently announced grant and contract awards totaling more than \$20 million to increase the number of qualified nurses and the quality of nursing services across the country (HRSA Press Office 9/28/01). The awards went to colleges, universities and other organizations to increase the number of nurses with bachelors and advanced degrees, help diversify the nurse workforce, and prepare nurses to serve in public health leadership roles. DHHS also launched an education campaign in February 2002 to attract children's interest in careers in nursing and the health professions.

7.0 Conclusion

It is difficult to accurately identify labor market shortages, and national data do not adequately capture local and regional labor market differences. However, based on our review of recent research and employment projections, it is clear that the nation will face a nursing shortage in the next decade, and some localities are already facing shortages.

There is no single solution to the nursing shortage. Nursing and other health personnel shortages differ from shortages in other occupations because the health industry has some unique market characteristics. The role of the government in setting Medicare reimbursement rates and other health care policies, as well as the government's role in safeguarding public health, limit the capacity of the market to adjust on its own, and cost containment pressures are an important factor in nurse staffing decisions. Government policies and expenditures, therefore, are central to addressing the shortage.

It is important to understand the varying underlying causes of the nursing shortage because the policy solutions vary. Expanding education is best suited for addressing the longer term expected increases in demand, but is less effective at addressing the short-term supply issue or distributional problems. Furthermore, to keep up with demographic changes, educational opportunities must be expanded to a broader population of potential students, including those who have not traditionally been trained as nurses in the past and those who may need significant remedial education and support to prepare for nursing education. It is less costly and faster to bring a trained nurse back to the profession than to train new nurses, and improved working conditions have the potential to attract nurses back to direct patient care. Therefore, to address short-term supply and distributional problems, working conditions need to be addressed in a systematic way, with national support and visibility.

Bibliography

- Aiken, Linda H., Sean P. Clarke, Douglas M. Sloane, Julie A. Sochalski, Reinhard Busse, Heather Clark, Phyllis Giovannetti, Jennifer Hunt, Anne Marie Rafferty, and Judith Shamiam. Nurses' Reports On Hospital Care in Five Countries. *Health Affairs*, May-June 2001.
- American Health Care Association. Preliminary Results of the 2001 AHCA Nursing Position Vacancy and Turnover Survey, Washington, DC, October 4, 2001.
- American Nurses Association. 2001 State Legislative Trends. <http://www.nursingworld.org/gova/state/2001/agstaff.htm>, December, 2001.
- American Organization of Nurse Executives. Executive Summary: Nurse Staffing Survey, February 23, 1999.
- American Organization of Nurse Executives. Nurse Staffing Survey, February, 1999.
- Arrow, Kenneth J. and William M. Capron. Dynamic Shortages and Price Rises: The Engineer-Scientist Case. *Quarterly Journal of Economics* (1959).
- Barnow, Burt S., John Trutko and Robert Lerman. Skill Mismatches and Worker Shortages: The Problem and Appropriate Responses. The Urban Institute, submitted to Office of the Assistant Secretary for Policy, U.S. Department of Labor, February 28, 1998.
- Blank, David J. and George J. Stigler. *The Demand and Supply of Scientific Personnel*. New York: National Bureau of Economic Research, 1957.
- Braddock, Douglas. Employment Outlook: 1998-2008. *Monthly Labor Review*, November 1999, 51-77.
- Brewer, Carol S. and Christine T. Kovner, New York State Nurses Association, Albany, New York. Supply and Demand for Registered Nurses in New York State, February 14, 2000.
- Brubaker, Bill. Hospitals Go Abroad To Fill Slots For Nurses. *Washington Post*, June 11 2001, A01. Washington D.C.
- Buerhaus, Peter I. and D.O Staiger. Trouble in the Nurse Labor Market? Recent Trends and Future Outlook. *Health Affairs* 18, no. 1 (January/February 1999): 214-222.
- Buerhaus, Peter I., Douglas O. Staiger, and David I. Auerbach. Implications of an Aging Registered Nurse Workforce. *JAMA* 283, no. 22 (June 14 2000).
- Burghardt, John, Peter Z. Schochet, and Sheena McConnell. Does Job Corps Work? Summary of the National Job Corps Study. Mathematica Policy Research, Inc., June, 2001.

- California Strategic Planning Committee for Nursing Colleagues in Caring: Regional Collaboratives for Nursing Work Force Development. .
- Center for Health Workforce Studies, University at Albany. Trends in Nursing Education 1991-2002, April, 2001a.
- Center for Health Workforce Studies, University at Albany. The Health Care Workforce in New York City, 2001, September, 2001b.
- Coffman, Janet, Joanne Spetz, Jean Ann Seago, Emily Rosenoff, and Edward O'Neil. Nursing In California: A Workforce Crisis. San Francisco, CA: California Workforce Initiative and the UCSF Center for the Health Professions, pp. i-vii, January, 2001.
- Cohen, Malcom S. *Labor Shortages as America Approaches the Twenty-First Century*. Ann Arbor: The University of Michigan Press, 1998.
- COR Health LLC. A Favorable RN-to-Patient Staffing Role is an Effective Recruitment Tool. *Patient Care Staffing Report* 1, no. 7 (October 2001): 1-3.
- Cornerstone Communications Group. Analysis of American Nurses Association Staffing Survey. American Nurses Association, February 6, 2001.
- DeJong, G., A. Batavia, and R. Griss. American's Neglected Health Minority: Working Age Persons with Disabilities. *The Milbank Quarterly* 67 (Suppl. 2, Part 2) (1989): 311-351.
- DeMoro, Rose Ann. Nursing Shortage: A Demand for Action. *San Francisco Chronicle*, August 16 2001.
- District 1199C Training and Upgrading Fund. A Solution to the Nursing Shortage: New Faces, 2001.
- Ehrenberg, Ronald G. and Robert S. Smith. *Modern Labor Economics: Theory and Public Policy*. Fifth, pp. 42-47. New York: Harper Collins, 1993.
- Elliott, Mark, Anne Roder, Elisabeth King, and Joseph Stillman. Gearing Up: An Interim Report on the Sectoral Employment Initiative, Public/Private Ventures, ed., September, 2001.
- Engel, Cynthia. Health Services Industry: Still A Job Machine? *Monthly Labor Review*, March 1999, 3-14.
- Federal Interagency Forum on Aging Related Statistics. Accessed from [Http://www.agingstats.gov/Chartbook2000/Population.html](http://www.agingstats.gov/Chartbook2000/Population.html), 2000.

- Franke, Walter and Irving Sobel. *The Shortage of Skilled and Technical Workers*. Lexington, Massachusetts: Heath-Lexington Books, 1970.
- Friss, Lois. Nursing Studies Laid End to End Form a Circle. *Journal of Health Politics, Policy and Law* 19, no. 3 (Fall 1994): 597-631.
- Grumbach, K., M. Ash, J.A. Seago, J. Spetz, and J. Coffman. Measuring Shortages of Hospital Nurses: How Do You Know a Hospital with a Nursing Shortage When You See One? *Medical Care Research and Review* 58, no. 4 (December 2001): 387-403.
- Harrington, C., C. Kovner, M. Mezey, J. Kayser-Jones, S. Burger, M. Mohler, R. Burke, and D. Zimmerman. Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States. *The Gerontologist* 40, no. 1 (2001): 5-16.
- Harrington, Paul E. and Andrew M. Sum. *Skill Shortages and Employment and Training Policy in the U.S.: Past Relationships and Desirable Future Directions*. Boston: Center for Labor Market Studies, Northeastern University, 1984.
- Health Services Research and Evaluation American Health Care Association. Staffing of Nursing Services in Long Term Care: Present Issues and Prospects for the Future, February, 2001.
- Hecker, Daniel E. Employment Outlook 2000-10: Occupational Employment Projections to 2010. *Monthly Labor Review*, November 2001, 57-84.
- Kaye, H., M. LaPlante, D. Carlson, and B. Wenger. *Trends in Disability Rates in the United States, 1970-1994*. San Francisco: University of California, San Francisco, 1996.
- Keating, S. and K. Sechrist. The Nursing Shortage in California: The Public Policy Role Of The California Strategic Planning Committee for Nursing. *Online Journal of Issues in Nursing* 6, no. 1 (January 31 2001).
- Komisar, H.J, J. Lambrew, and J. Feder. *Long-Term Care for the Elderly: A Chartbook*. Washington, DC: Georgetown University, 1996.
- Lerman, Robert I. and Stephanie K. Riegg. *The IT Workforce: Ensuring Skilled Workers for the 21st Century*. prepared at the Urban Institute for the U.S. Department of Labor, pp. 1-19, March 6, 2000.
- Levine, Linda, Specialist in Labor Economics Domestic Social Policy Division. A Shortage of Registered Nurses: Is It On the Horizon or Already Here. In *CRS Report for Congress*. Congressional Research Service The Library of Congress, pp. 1-20, May 18, 2001.
- Lewin Group. *Long-Term Care Financing Model*. Fairfax, VA: The Lewin Group, 2000.

- Lewin Group. The Hospital Workforce Shortage: Immediate and Future. *AHA Trend Watch* 3, no. 2 (June 2001).
- Maloney, Christopher. Massachusetts Nursing Homes Ask Job Training Agencies for Workers. *Employment & Training Reporter* 33, no. 10 (November 5 2001).
- McCall, Carl H. and Rosemary Scanlon. *The New York City Economy: Recent Trends in Jobs, Income, and the Health Care Industry*. Albany, New York: State of New York Controller, 1997.
- McKinley, James C. Late Night in Albany Yields \$1.8 Billion in Hospital Raise. *The New York Times*, January 2 2002.
- National Advisory Council on Nurse Education and Practice. Report to the Secretary of the Department of Health and Human Services on the Basic Registered Nurse Workforce. Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing, 1996.
- Nevidjon, Brenda and Jeanette Ives Erickson. The Nursing Shortage: Solutions for the Short and Long Term. *Online Journal of Issues in Nursing* 6, no. 1 (January 2001).
- New York Association of Homes and Services for the Aging. Desperate Times: Labor Shortages in New York's Continuing Care System, November, 2001.
- New York State Education Department, Office of the Professions, The Nursing Shortage. Accessed from [Www.Op.Nysed.Gov/Nursingshortage.Htm](http://www.op.nysed.gov/nursingshortage.htm), April, 2001.
- New York State Nurses Association. RN Solutions to the Nursing Care Crisis, 2001.
- O'Sullivan, Anne. Statement for the Committee on Governmental Affairs Subcommittee on Oversight of Government Management, Restructuring, and the District of Columbia on Addressing Direct Care Staffing Shortages, June 27, 2001.
- Perera, Andrea and Dan Morain. Davis Pledges \$60 Million to Train Nurses. *Los Angeles Times*, January 24 2002.
- Peter D. Hart Research Associates. The Nurse Shortage: Perspectives from Current Direct Care Nurses and Former Direct Care Nurses. on behalf of The Federation of Nurses and Health Professionals, April, 2001.
- Philadelphia Hospital and Health Care Training and Upgrading Fund. A Solution to the Nursing Shortage: New Faces, 2001.

- Pindus, Nancy M. and Ann Greiner. The Effects of Health Care Industry Changes on Health Care Workers and Quality of Patient Care. The Urban Institute for the U.S. Department of Labor, November, 1997.
- Pindus, Nancy M. and Demetra Smith Nightingale. Improving The Upward Mobility of Low-Skill Workers: The Case of the Health Industry. The Urban Institute for the Joyce Foundation, August, 1995.
- Schumacher, Edward J. The Earnings and Employment of Nurses in an Era of Cost Containment. *Industrial and Labor Relations Review* 55, no. 1 (October 2001): 116-132.
- Spector, W., J. Fleishman, L. Pezzin, and B. Spillman. Characteristics of Long-Term Care Users, 1998.
- Steinhauer, Jennifer. Group Push for New Money for Nursing Home Staffing. Accessed from www.nytimes.com. *The New York Times*, March 8 2001.
- Texas Workforce. Registered Nurses, January 23, 2002.
- Tri-Council Members: The American Association of Colleges of Nursing, The American Nurses Association, The American Organization of Nurse Executives. White Paper to Reverse the 'New' Nursing Shortage, 2001.
- Trutko, John W., Burt S. Barnow, Amy B. Chasanov, and Abhay Pande. Labor Shortage Case Studies. U.S. Department of Labor Employment and Training Administration, 1993.
- U.S. Department of Health and Human Services, Health Resources and Services Administration. National Sample Survey of Registered Nurses - March 2000. In *The Registered Nurse Population*, February, 2001.
- U.S. Department of Health and Human Services, Health Resources and Services Administration Press Office. HHS Awards \$27.4 Million to Address Emerging Nursing Shortage, September 28, 2001.
- U.S. Department of Labor, Bureau of Labor Statistics. Career Guide to Industries 2002-03 Edition. Accessed from <http://www.bls.gov/oco/cg/cgs035.htm>, April, 2002.
- U.S. Department of Labor, Bureau of Labor Statistics. Industry at a Glance, 2001.
- U.S. Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, 2000-1 Edition.
- U.S. Department of Labor, Employment and Training Administration. Adult Training Programs, February 1, 2002.

- U.S. Department of Labor, Employment and Training Administration. Foreign Labor Certification, 2001.
- U.S. General Accounting Office. Nursing Workforce Recruitment and Retention of Nurses and Nurse Aides is a Growing Concern, May 17, 2001a.
- U.S. General Accounting Office. Nursing Workforce: Emerging Nurse Shortages Due to Multiple Factors, pp. i-15, July, 2001b.
- U.S. General Accounting Office. Health Workforce Ensuring Adequate Supply and Distribution Remains Challenging, August 1, 2001c.
- U.S. General Accounting Office. Health Care: Adequacy of Pharmacy, Laboratory, and Radiology Workforce, pp. 1-15, October 10, 2001d.
- U.S. House of Representatives. *Nurse Reinvestment Act*. In *H.R. 3487*, 2001.
- U.S. House of Representatives. *Nursing Home Staffing and Quality Improvement Act*. In *H.R. 118*, 2001.
- U.S. House of Representatives. *Registered Nurses and Patient Protection Act*. In *H.R. 1289*, 2001.
- U.S. House of Representatives. *Safe Nursing and Patient Care Act*. In *H.R. 3238*, 2001.
- U.S. Senate. *Hospital-Based Nursing Initiative Act*. In *S. 1585*, 2001.
- U.S. Senate. *Nurse Reinvestment Act*. In *S. 1864*, 2001.
- U.S. Senate. *Nurse Retention and Quality Care Act*. In *S. 1594*, 2001.
- U.S. Senate. *Nursing Employment and Education Development Act, NEED Act*. In *S. 721*, 2001.
- U.S. Senate. *Safe Nursing and Patient Care Act*. In *S. 1686*, 2001.
- Veneri, Carolyn M. Can Occupational Labor Shortages Be Identified Using Available Data? *Monthly Labor Review*, March 1999, 15-21.
- VHA Health Foundation News Release, November 30, 2001.
- VHA Health Foundation. Welfare to Work: Strategies for Health Care Work Force Development, pp. 1-117, March, 2001.

Appendix: Labor Shortage Models

Illustration of a Labor Shortage

The quantity of labor that is offered by workers is an increasing function of the price or the wages they can obtain. The above-described relationship, all other things held constant, is referred to as the supply curve. Figure 1 illustrates the characteristic upward-sloping supply curve for labor. As wages increase, more workers are prepared to enter an occupation and current workers are prepared to supply more labor.

The amount of workers that a firm wants to hire at various prices is specified by the downward-sloping demand curve. The downward-sloping demand curve is depicted in Figure 1. One reason the demand curve slopes downward is that as the factor price, labor, increases, the employer will usually substitute other factors of production for the factor whose price has increased. In addition, as the price of labor inputs increase, so do costs and market prices of the goods produced. The price increases, in turn, reduce the quantity demanded of the good or service, thereby lowering production and labor demand.

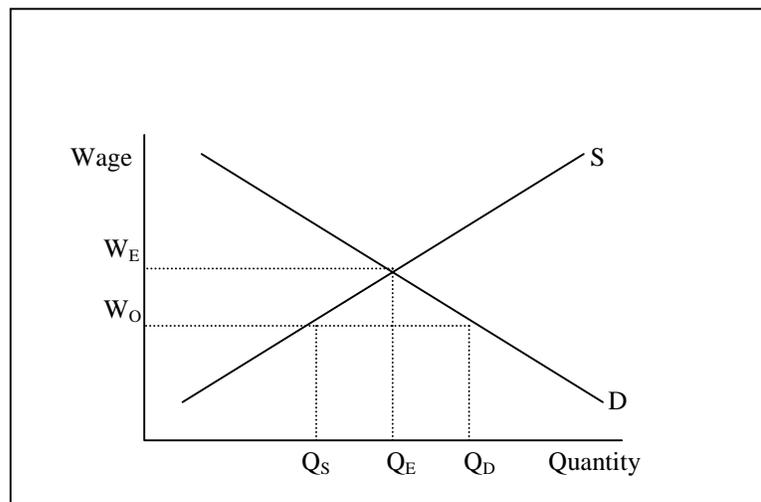


Figure 1: Illustration of a Labor Shortage

The point labeled E in Figure 1 is the market equilibrium point. If wages are equal to W_E then the quantity of labor that firms want to hire is equal to the quantity of

labor that workers wish to provide. This market is said to be in equilibrium because the quantity of labor that is demanded is equivalent to the quantity of labor that is supplied.

If the wage rate in the market is W_O instead of W_E then the quantity of labor that workers will supply is equal to Q_S . Employers, because of the lower wages, would like to hire labor at point Q_D at the wage rate of W_O . At a below-equilibrium wage, where employees are “underpaid,” firms have difficulty locating people who will work to meet demands by consumers, and a labor shortage thus ensues because employers are seeking more workers than they are able to hire at the market price. The amount of the shortage in this case is $(Q_D - Q_S)$. These firms also have difficulty keeping the workers they do hire. If wages are increased, output will increase and more workers will want to enter the market. Figure 1 shows how a wage increase from W_O to W_E would increase employment from Q_S to Q_E (Cohen 1998).

Arrow-Capron and Blank-Stigler Models

A more dynamic model of the labor market was developed by Kenneth J. Arrow and William W. Capron in 1959. They refer to a dynamic shortage, which is based on the idea that “a steady upward shift in the demand curve will produce a shortage, that is, a situation in which there are unfilled vacancies in positions where salaries are the same as those currently being paid in others of the same type and quality” (Arrow and Capron 1959). The Arrow-Capron model is characterized by increased demand. Arrow and Capron note that it takes time for information to spread and also for employers to adjust the price they pay for labor. In short, wages rise more slowly than the increase in demand. As Barnow, Trutko, and Lerman (1998) note, Arrow and Capron deduce that shortages will be characterized by vacancies. In Figure 2, note that the number of vacancies resulting from the increase in demand will be equal to $(Q_I - Q_E)$.

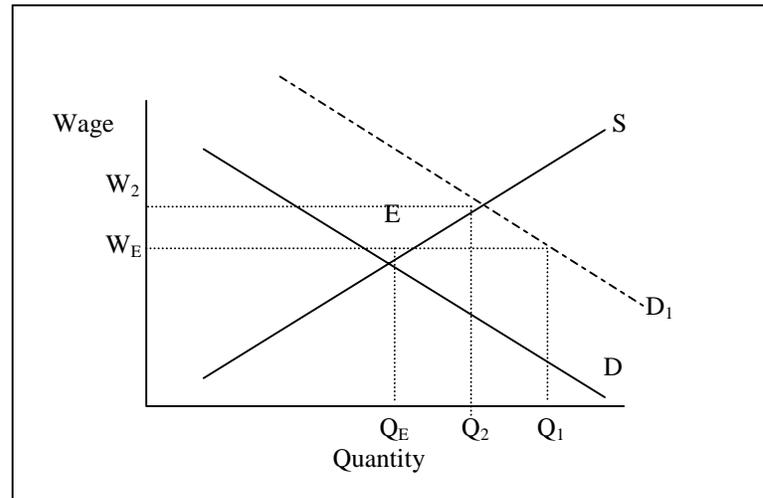


Figure 2: Illustration of Arrow-Capron and Blank-Stigler Shortages

According to Blank and Stigler (1957), when the number of workers available increases less rapidly than the number demanded at the salaries paid in the recent past, a labor shortage exists (Blank and Stigler 1957). As Barnow, Trutko, and Lerman (1998) write, Blank and Stigler make a case that in order to lessen the shortage, the wages in an occupation must increase and a portion of the work previously completed by the occupation with the shortage will be completed by others. This situation will lead to an increase in the wage. The Blank-Stigler shortage is also shown in Figure 2. As the demand for workers increases, the demand curve will shift to the right, to D_1 . A shortage will thus ensue if the wage stays at W_E because firms would like to employ Q_1 workers, yet only Q_1 workers are available at this wage. This situation will lead to an increase in the wage and the market equilibrium will ultimately become a new wage of W_2 and Q_2 workers.

Labor Demand by a Monopsonist

The monopsonistic labor market model, where there is only one buyer for labor, also has some applicability to the health care industry (Harrington and Sum 1984). A monopsony is a market where there is only one buyer for labor. Since the monopsonist is the only buyer of labor in the occupation, the monopsonist conforms to the labor supply curve for the occupation. A firm in a competitive market would, in contrast to a

monopsonist, hire all desired labor at the market price. The monopsonist sets the wage rather than acting as a price taker, as the competitive labor market forces a firm to do. Thus, a firm in a competitive market is a price taker and a monopsonist is a price maker. A monopsonist faces a steep upward-sloping marginal cost curve for labor. If an additional employee is hired, then the wages must be increased for all current workers as well as the additional employee. In order to maximize profits, the monopsonistic employer will hire additional workers until the marginal cost of labor equals the marginal product of labor, point X. Refer to Figure 3 for an illustration of the monopsonist's labor demand and supply schedule. The monopsonist will pay its workers the wage W_M and Q_M people will be employed. It is important to note that the number of employees hired is less than in a competitive market (Q_E) and the wage paid by the monopsonist is lower than the wage paid in a competitive market (W_E).

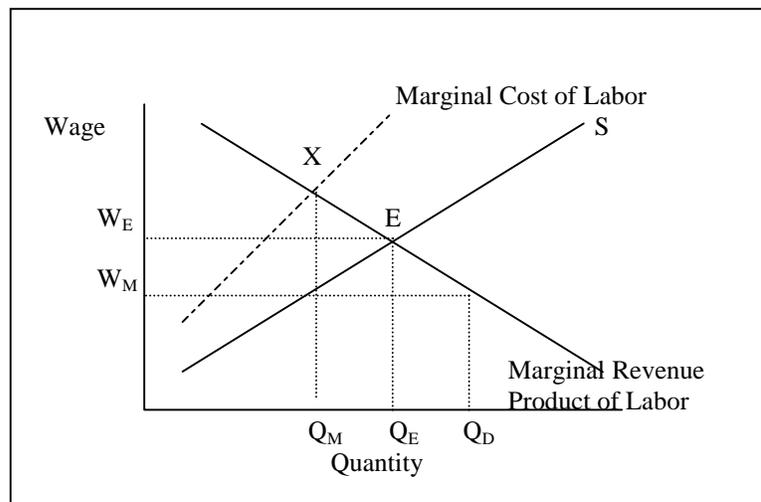


Figure 3: Illustration of Labor Demand by a Monopsonist

The monopsonist perhaps regards the situation as a shortage because the employer would like to hire more employees at the low monopsony wage. As a result of the monopsonist's facing an upward-sloping labor supply curve, the wage must be raised to encourage more workers to move into the occupation. Situations where a monopsony exists are extremely rare. Further, as Ehrenberg and Smith write, a labor shortage that a monopsonist is confronted with is “more apparent than real” (Ehrenberg and Smith 1993). Shortages need not arise in cases of monopsonies that can discriminate among

workings by paying different wage rates. The reason is that such monopsonies can and will pay more to the workers receiving higher wages without having to raise wages for the infra-marginal workers.