

**Staffing of Nursing Services in Long Term Care:  
Present Issues and Prospects for the Future**

**Prepared by:**

**Health Services Research and Evaluation  
American Health Care Association**

**February 2001**

**(Revised and updated from edition of November 2000)**

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# Staffing of Nursing Services in Long Term Care: Present Issues and Prospects for the Future

## Executive Summary

Today, consumer advocates argue that nursing services in nursing homes need to be staffed at a greater level to ensure quality of care. At the same time, administrators of nursing homes voice concern about the problems they have now in recruiting and maintaining qualified staff. Added to the concerns of consumer advocates and nursing home administrators is the general shortage in nursing personnel that research is beginning to reveal.

Given the crucial roles of nursing aides (NAs), licensed practical nurses (LPNs), and registered nurses (RNs) in the care of nursing home patients—largely the elderly of our country—it is imperative that we try to understand, both citizens and policymakers alike, what the evidence tells us about the present and future staffing of nursing services in long term care.

**Present-day Availability of Nursing Personnel for Nursing Homes.** Today we have a situation in which the nursing labor force is aging as the enrollment in nursing schools is on the decline. Findings from the National Sample Survey of Registered Nurses show that the average age of RNs grew from 40.3 years in 1980 to 44.3 years in 1996.<sup>i</sup> In 1996, the average age of RNs in nursing homes was 45.0 years while the average age of RNs in hospitals was 40.8 years.<sup>ii</sup>

The aging of the RN workforce could be related to a number of factors, including:

- changes in population demographics with a decrease in the size of the age cohort(s) from which new entrants into the nursing labor force typically come; and
- decreasing interest in nursing as a career in which a smaller proportion of young adults, and women in particular, are choosing nursing as a career.

Researchers have found the latter factor—decreased interest in nursing as a career—to be the major determinant of the aging of the RN workforce.<sup>iii</sup> This finding is reflected in the recent decline in enrollment in nursing programs. Researchers in recent surveys report a 5.5% drop in enrollments in baccalaureate nursing programs in the fall of 1998 and a 4.6% drop in 1999.<sup>iv</sup>

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<sup>i</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997.

<sup>ii</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997, p. 22.

<sup>iii</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

<sup>iv</sup> American Association of Colleges of Nursing, *Annual Report [Incorporating Annual State of Schools]*, 1999; American Association of Colleges of Nursing, "News Release," February 17, 2000 ([www.aacn.nche.edu/Media/NewsReleases](http://www.aacn.nche.edu/Media/NewsReleases)).

Nursing homes compete with other health care settings to fill positions from a nursing labor pool that is already strained. Aside from a limited workforce from which to hire staff, nursing homes have a difficult time recruiting personnel for several other reasons. Among them, one of the most obvious is salary. A study by Buck Consultants in 1998 showed that RNs in nursing homes are making on average 16% less than RNs in hospitals, and LPNs and Certified Nurse Assistants (CNAs) respectively are making 6% and 16% less than their counterparts in hospitals.<sup>v</sup> Other studies and data also show the wide disparity in wages between long term and acute care settings for RNs and CNAs, but not for LPNs.<sup>vi</sup>

**Average Hourly Wages for Direct Care Staff as Reported by Various Sources**

Source	Nursing Facilities			Hospitals		
	Nurse Aides	LPN	RN	Nurse Aides	LPN	RN
Buck Consultants, 1998 <sup>vii</sup>	\$7.45	\$11.90	\$16.64	\$8.86	\$12.72	\$19.83
Bureau of Labor Statistics, 1998 <sup>viii</sup>	\$7.93	\$13.42	\$18.62	\$8.67	\$13.39	\$21.12
HHCS, 1999-2000 <sup>ix</sup>	\$7.07-\$8.16*	\$13.71	\$17.69	\$8.80-\$8.91**	\$13.52	\$20.85

A major contributor to this discrepancy is that most nursing facilities are publicly financed by the Medicare and Medicaid programs. Current government reimbursement rates for nursing facility care limit wage compensation to nursing facility staff, in part, because rates are based upon historical costs, not present or future needs.<sup>x</sup>

**Future Availability of Nursing Personnel for Nursing Homes.** The recruitment of nursing personnel could become more problematic for nursing homes unless there are substantial changes to alter the systemic problems in the long term care field. As the need for long term care services increases over the years, in part due to the aging of the baby boomers, the proportion of available nursing personnel needed in settings that care for the aged increases. The projected need for RNs in nursing homes is estimated to increase 66.1% between 1991 and 2020. The number of LPNs needed in nursing homes is estimated to grow by 71.5% from 1991 to 2020. A similar growth (69.1%) in the proportion of nursing aides needed in nursing homes is projected.<sup>xi</sup>

<sup>v</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

<sup>vi</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupational Employment Survey*, 1998. Hospital wages are from Standard Industry Code (SIC) 806 and Nursing Facility wages are from SIC 805 which includes intermediate care facilities; Hospital & Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*, HHCS:Oakland, New Jersey.; Hospital & Healthcare Compensation Service (HHCS), *Nursing Department Compensation Services, 1999-2000* (November 1999), HHCS:Oakland, New Jersey.

<sup>vii</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

<sup>viii</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupational Employment Survey*, 1998. Hospital wages are from Standard Industry Code (SIC) 806 and Nursing Facility wages are from SIC 805 which includes intermediate care facilities.

<sup>ix</sup> Hospital and Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*. HHCS:Oakland, New Jersey.

\* Includes non-certified nurse aides at \$7.07 and certified nurse aides at \$8.16.

Hospital and Healthcare Compensation Service (HHCS), *Nursing Department Compensation Service, 1999-2000*. HHCS:Oakland, New Jersey.

\*\*Includes \$8.80 for nurse aides and \$8.91 for nurse assistants.

<sup>x</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, Chapter 2, p. 2-23.

<sup>xi</sup> Projections prepared by Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," December

These projections are based upon current staffing configurations and do not take into account any proposed changes in the nursing staff ratios (e.g., number or hours of staff to patients) in nursing homes, proposals discussed later in this summary.

Projections of labor supply reveal the attrition in the availability of full-time equivalent (FTE) RNs per capita in the labor force. Buerhaus et al. in a recent study projected that the full-time equivalent RNs per capita in the labor force would peak around the year 2007 and drop thereafter as many current RNs retire.<sup>xii</sup>

The projections of the supply of RNs, alone, do not indicate whether the supply will be adequate to meet demand. Keeping in mind the increasing proportion of nursing personnel in future years required to care for the aged, it is instructive to look at the differences in the projections in the demand and supply of RNs. According to data from the U.S. Department of Health and Human Services, gross supply (i.e., not standardized in terms of a per capita rate) increases to around the year 2015 and then declines while demand grows, so that by the year 2020 there is a 14% shortage of RNs nationwide.<sup>xiii</sup> Other researchers indicate a similar shortage. Projections from the model developed by Buerhaus et al. suggest that the supply of RNs by 2020 will be the same as the current supply, resulting in a shortage of RNs about 20% below projected future requirements.<sup>xiv</sup>

Projections from different studies show clearly that the labor force supply for nursing services is declining at the same time that the demand or need for nursing services is increasing. Buerhaus et al. stated the issue well when, referring to the supply of RNs, they wrote:

(T)he impending decline in the supply of RNs will come at a time when the first of 78 million baby boomers begin to retire and enroll in the Medicare program in 2010. Because RNs are vital in ensuring access to and quality of health care, it is critical that policymakers understand, and develop appropriate responses to, the implications of a rapidly aging RN workforce.<sup>xv</sup>

The same implication applies to a declining supply of CNAs and LPNs.

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1996, updated demand forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Department of Commerce), NTIS Order Number PB97-501415GEI).

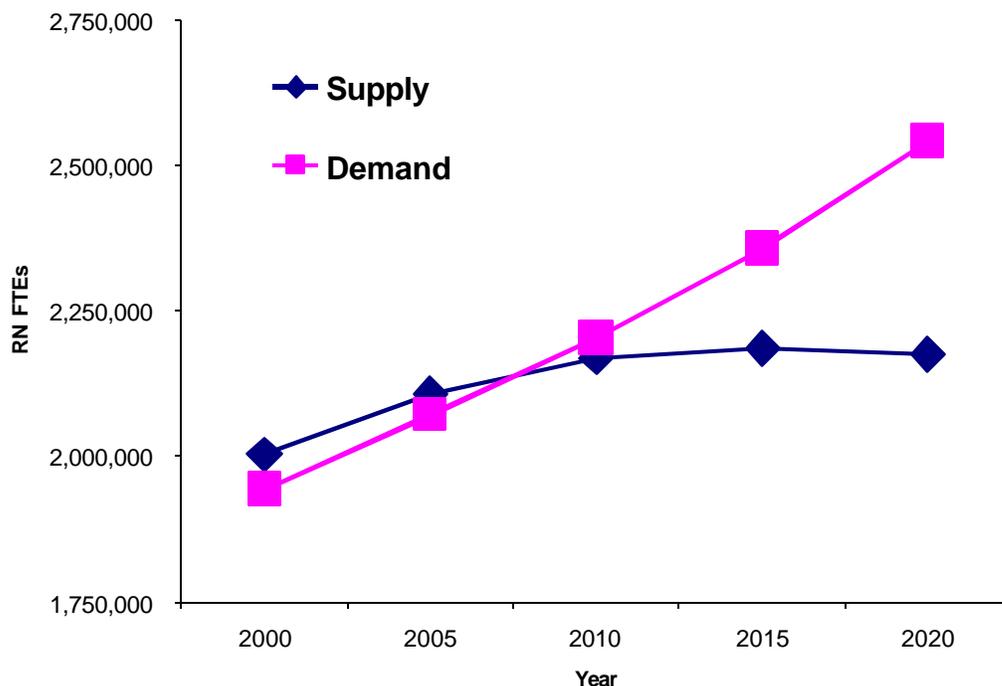
<sup>xii</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

<sup>xiii</sup> Health Resources and Services Administration (U.S. Dept. of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," Dec. 1996, updated forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Dept. of Commerce), NTIS Order Number PB97-501415GEI); and "Supply Model" based upon the 1996 National Sample Survey of Registered Nurses provided to AHCA from the Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Dept. of Health and Human Services). Analysis of surplus/shortage by AHCA Health Services Research and Evaluation.

<sup>xiv</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

<sup>xv</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2953, June 14, 2000.

### Supply and Demand for RN FTEs: 2000-2020



Sources: Health Resources and Services Administration (U.S. Department of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," December 1996, updated demand forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Department of Commerce), NTIS Order Number PB97-501415GEI); and "Supply Model" based upon the 1996 National Sample Survey of Registered Nurses provided to AHCA by the Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). Analysis of surplus/shortage by AHCA Health Services Research and Evaluation.

Attention by policymakers and consumers has focused on the staffing levels in nursing homes. Many call for an increase in the staffing levels. The projections of the supply and demand of nursing personnel also point to another issue that faces the nation in the care of its elderly citizens. If the circumstances do not change, there will not be a sufficient workforce available in the coming years to maintain even the current staffing levels in nursing homes. This staffing shortage can, in turn, lead to a declining availability of services and introduce a problem of access to care for those, particularly the elderly, requiring long term health care.

**Proposals and Research Regarding Staffing Ratios.** Groups such as the National Citizens' Coalition for Nursing Home Reform (NCCNHR) contend that current staffing levels impair quality of care and seek greater ratios of staff to patients. In 1998, an "expert panel" convened at the John A. Hartford Institute for Geriatric Nursing to review the issues of staffing ratios and quality of care in nursing facilities. The panel proposed a standard of 4.13 hours of direct care nursing staff per patient day—a proposal that

built upon the minimum standards proposed by NCCNHR.<sup>xvi</sup> The panel also agreed to endorse the NCCNHR recommended minimum standard for administrative nursing staff which, for the typical 100-bed facility, represents 0.42 RN nurse administration hours per patient day.<sup>xvii</sup>

The Health Care Financing Administration (HCFA) submitted a report to the U.S. Congress entitled *Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*. In the report, the authors stated that the research they conducted supported a minimum staffing level of 2.75 hours of direct care nursing staff per patient day and a “preferred minimum” level of 3.0 hours of direct care nursing staff per patient day. The minimum ratio was comprised of 2.0 nurse aide hours per patient day and 0.75 LPN+RN combined hours per patient day in which RNs comprised at least 0.20 hours per patient day. The preferred minimum ratio included 2.0 nurse aide hours per patient day and 1.0 LPN+RN combined hours per patient day in which RNs comprised at least 0.45 hours per patient day. One study suggested, in addition, an optimal ratio for nurse aides of 2.9 hours per patient day.<sup>xviii</sup> The authors do offer a caveat when they state that “(h)igher or lower thresholds were identified for different case mix categories”<sup>xix</sup>, hence the stated ratios should not be interpreted as universal or appropriate or even necessary across all nursing facilities. Indeed, the authors further state that “refinement of methods for taking case mix into consideration will be required to establish national critical staffing levels.”<sup>xx</sup>

**The Estimated Cost of Proposed Staffing Ratios.** The call for greater staffing levels suggests that the present-day reduction in government funding of long term care would have to be reversed, and funding increased, to enable long term care providers to meet proposed staffing levels in a manner that maintains the fiscal soundness and viability of long term care services. To illustrate the additional funds involved, we estimated the costs of the additional staff that would be required for different staffing ratios being proposed or suggested. Current Online Survey Certification and Reporting (OSCAR) data from HCFA were used to determine the present levels of nursing staff. The additional staff required to meet greater staffing ratios were calculated from the present levels of staff. The costs associated with the additional staff were estimated by two methods. One method used nursing home wages as projected for 2001 based upon historical wages in nursing homes. The second method used wages projected for 2001

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<sup>xvi</sup> Harrington, et al, “Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States”, *The Gerontologist*, 40:5-16, 2000; National Citizens’ Coalition for Nursing Home Reform (NCCNHR) “Federal & State Minimum Staffing Requirements”, October 1999 Draft. NCCNHR report printed in the appendix of HCFA’s *Report To Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>xvii</sup> Harrington, et al, “Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States”, *The Gerontologist*, 40:5-16, 2000; National Citizens’ Coalition for Nursing Home Reform (NCCNHR) “Federal & State Minimum Staffing Requirements”, October 1999 Draft. NCCNHR report printed in the appendix of HCFA’s *Report To Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>xviii</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

<sup>xix</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

<sup>xx</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

**Estimate of Costs in 2001 to Increase Nursing Staff to Meet Proposed Staffing Ratios in Nursing Homes**

Staffing Ratio (Hours of Staff Per Patient Day (PPD))	Additional Estimated Costs for the Year 2001 (Dollars in Billions)	
	Estimate Based Upon 2001 Nonparity Wages* (Billions)	Estimate Based Upon 2001 Parity Wages* (Billions)
<b>Hartford Institute/NCCNHR Proposals</b>		
4.13 Hours of Direct Care Staff PPD	\$ 11.239	\$ 11.970
RN Nurse Administration Standard**	\$ 2.852 to \$ 2.966***	\$ 3.272 to \$ 3.403***
<b>Total</b>	<b>\$ 14.091 to \$ 14.205***</b>	<b>\$ 15.242 to \$ 15.373***</b>
<b>HCFA's Minimum Staffing Ratios</b>		
2.0 CNA Hours PPD	\$ 1.647	\$ 1.776
0.55 LPN Hours PPD	\$ .743	\$ .743
0.20 RN Hours PPD	\$ .436	\$ .488
<b>Total</b>	<b>\$ 2.826</b>	<b>\$ 3.007</b>
<b>HCFA's Preferred Minimum Staffing Ratios</b>		
2.0 CNA Hours PPD	\$ 1.647	\$ 1.776
0.55 LPN Hours PPD	\$ .743	\$ .743
0.45 RN Hours PPD	\$ 2.594	\$ 2.902
<b>Total</b>	<b>\$ 4.984</b>	<b>\$ 5.420****</b>
<b>HCFA's Optimal Staffing Ratios</b>		
2.9 CNA Hours PPD	\$ 6.696	\$ 7.220
0.55 LPN Hours PPD	\$ .743	\$ .743
0.45 RN Hours PPD	\$ 2.594	\$ 2.902
<b>Total</b>	<b>\$ 10.033</b>	<b>\$ 10.864****</b>

\* Nonparity wages are nursing home wages as projected for 2001 based upon historical wages in nursing homes. Parity wages are wages projected for 2001 based upon a rate that represents wage parity between nursing home and acute care hospitals.

\*\*The proposed RN administrative standard is 0.42 RN administrative hours per patient day for facilities with less than 100 beds and 7.8 nursing administration FTEs for facilities with 100 beds or more.

\*\*\*The lower estimate of cost for the standard for RN administrative staff includes a benefit structure of 37% of wages (which includes paid leave as part of the percent). The greater estimate includes the 37% benefits and an annual bonus of 5.5% that some compensation data show nursing managers receive.

\*\*\*\*Components do not sum exactly to total due to rounding.

based upon a rate that represented wage parity between nursing home and acute care hospital settings.

**Depending upon the ratios proposed, the added costs to increase staff to meet the ratios can range from approximately \$3 billion to over \$15 billion in 2001 alone.** The estimates concern additional staff required to conform to the proposed staffing ratios. For example, the estimates based upon wage parity do not include the additional funds that would be required to increase the wages of current nursing staff in nursing homes to obtain parity with the wages paid similar positions in acute care hospitals. The estimates also assume no growth in, or hold constant, the patient volume in nursing homes. As the patient volume increases with the aging of the baby boomer

generation, the additional costs will naturally be greater. And as demand increasingly surpasses supply, the rate of inflation in wages can be expected to spiral upward.

**Concluding Remarks.** The demand for nursing staff in nursing homes is projected to increase dramatically during the first half of the twenty-first century. This dramatic increase will occur even if the staffing ratios in nursing services were kept at their present level. Greater staffing ratios, even increases in staffing justified by research to enhance quality, will only further increase the demand.

Clearly the challenge for today and the future is to develop and maintain a supply of nursing labor to adequately meet the demand. It is a challenge fiscally in terms of providing the additional funding to train and recruit more individuals into nursing services. Aside from the monetary resources required to meet the challenge, the issue is magnified by one simple fact: the pool of persons in the general work force relative to the aged population will continually decrease over the next 50 years. Researchers in one study concluded that the ratio of workers to retirees will be five workers per retiree in 2005 and thereafter decline to where in 2050 the ratio is only 2.75 workers per retiree.<sup>xxi</sup> While the demand grows in terms of the sheer numbers of persons—especially, the elderly—needing long term care, the ratio of workers in the population per aged persons decreases. So, even if the same proportion of total workers who work in nursing services today was maintained over the next 50 years, the fact that the ratio of workers to retirees will drop radically warns of a major crisis in the supply of available staff for nursing.

If the nation is going to meet this challenge, particularly one that includes increasing staffing ratios to further the quality of care provided, government has a crucial role in implementing and funding initiatives that develop a labor supply to meet the growing demand for nursing services. Long term care providers also have an important role to play by maintaining a work environment that is professionally satisfying and rewarding to the staff who provide the quality care that the elderly and non-elderly alike deserve.

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<sup>xxi</sup> Pizer, S.D., Frakt, A. B., and Kidder, D. E., "Development and Analyses of New Models for Financing Long-Term Care: Project Summary Report." September 27, 2000. Abt Associates Inc.: Cambridge, MA.

# Staffing of Nursing Services in Long Term Care: Present Issues and Prospects for the Future

## Introduction

In a survey conducted by the American Health Care Association (AHCA) in 1987, researchers found that nearly half (46%) of the responding facilities had problems filling registered nurse (RN) vacancies in a timely manner. Filling positions often took more than three months. Nearly a quarter (23%) of the respondents also indicated a "severe" shortage of available licensed practical nurses (LPNs). The shortage of nurse aides also was considered a severe problem by 25% of the responding facilities. Overall, the majority of the facilities reported experiencing some degree of difficulty, from moderate to severe, in recruiting nursing personnel.<sup>1</sup>

There is little reason to believe that the circumstances today, over a decade later, have improved. The problems that existed over 10 years ago appear to exist today. And there is no real prospect that the future holds definitive improvement, given the payment methods in the government financing of long term care and the likely shortage of nursing staff available for or interested in a career in nursing homes. Only if the broad and pervasive systemic problems facing the long term care field change will the prospects for the future be other than a repeat of the past.

For example, wages for nursing personnel in long term care today are, as they have been historically, lower than the wages in other health care settings for nursing. This discrepancy can be attributed in part to the fact that the majority of care in nursing homes is publicly financed by governmental programs, Medicare and Medicaid, in which present payment is determined by historical cost, which leaves little room to expand wages in the present or the future.

Findings from the National Sample Survey of Registered Nurses, March 1996, indicated that a registered nurse in an acute-care hospital on average earned \$40,097 while a nurse with the same qualifications in a nursing facility earned \$33,230, which was 17% less than the RN in the acute-care setting before benefits.<sup>2</sup> And a study by Buck Consultants in 1998 showed that the present-day comparison is similar with RNs in nursing homes making on average 16% less than RNs in hospitals, and LPNs and Certified Nurse Assistants (CNAs) respectively making 6% and 16% less than their counterparts in hospitals.<sup>3</sup>

In addition to low wages, a negative image of nursing work in nursing homes exists among many in the nursing professions. While acute care is often viewed as exciting and on the cutting-edge of nursing technology, long term care nursing is viewed,

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<sup>1</sup> American Health Care Association (AHCA), Manpower Survey, July 1988.

<sup>2</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997, Table 26.

<sup>3</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

unfortunately, with less favor. Studies have shown that nursing students have a negative perception about geriatric care in nursing homes.<sup>4</sup>

A symptom of the problems in staffing nursing services, and a contributing factor, is the high rate of turnover among nursing positions. Although the studies on turnover in nursing homes report differing rates, the story is consistent: turnover among nursing staff in nursing homes is high,<sup>5,6</sup> comparatively higher than that existing in acute-care hospitals.<sup>7</sup> High turnover in nursing homes exists among the direct care staff as well as directors of nursing.

As the recruitment and retention of nursing personnel remains a problem today, the demand continues to grow. A number of factors contribute to the increased demand for geriatric nursing services today and ever growing in the future, including:

- Hospital discharge of high acuity patients to long term care settings for post-acute care;
- Increased life expectancies associated in part with advances in medical care; and
- Growing population over the age of 65, as the nation's "baby boomers" become senior citizens.

Coupled with the apparent systemic problems in recruitment and retention and the growing need for long term care services, some states mandate minimum nurse staffing ratios (e.g., ratio of staff hours to patient days and/or staff per shift). And some consumer groups—displeased with the state-mandated ratios—propose mandated ratios beyond the present-day ratios in nursing homes.

In this paper, we summarize, in more detail, data and research pertinent to defining the staffing issues facing the long term care profession. This detail includes a summary of data on the supply and demand of nursing personnel, data on wages and turnover, and an evaluation and discussion of current and proposed regulations for the staffing of nursing services in nursing homes. First, we outline the definition and general roles of the three central positions of direct care staff in nursing facilities: the registered nurse, the licensed practical nurse, and the nurse assistant.

### **Definition of Nursing Personnel in Direct Care**

For the purpose of this paper, we will focus primarily on three occupational categories for direct care staff attending to the needs of the aged. These occupations are

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<sup>4</sup> See Strahan, G. "Characteristics of Registered Nurses in Nursing Homes: Preliminary Data from the 1985 National Nursing Home Survey", *NCHS (National Center for Health Statistics) Advancedata*, No. 152, p. 4, April 14, 1988.

<sup>5</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

<sup>6</sup> Hospital and Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*. HHCS:Oakland, New Jersey.

<sup>7</sup> Hospital and Healthcare Compensation Service (HHCS), *Hospital Salary and Benefits Report, 1999-2000*. HHCS:Oakland, New Jersey.

registered nurses (RNs), licensed practical/vocational nurses (LP/VNs) and nursing aides (NAs).

Registered nurse training can be obtained in several different settings. Diploma programs are usually hospital based and three years in length. Two-year associate degree programs are primarily conducted at community colleges. Thirdly, there is the baccalaureate program that is based at a college or university and lasts four years. Regardless of which educational approach is taken, all candidates for registered nurse take the same licensure examination.

Registered nurses in a nursing facility manage nursing care for patients with conditions ranging from a fracture to Alzheimer's disease. Although they generally spend most of their time on administrative and supervisory tasks, RN's also assess patients' medical condition, develop treatment plans, supervise licensed practical nurses and nursing aides, and perform difficult procedures such as starting intravenous fluids. They also work in specialty-care departments, such as long-term rehabilitation units for strokes and head injuries.<sup>8</sup>

Licensed practical/vocational nursing programs are approximately 12 months in length and are typically conducted at community colleges or adult vocational education settings. Candidates for LP/VN must pass an examination to become licensed. This examination is different than the exam for registered nurses. According to the Bureau of Labor Statistics' (BLS) *Occupational Outlook Handbook*, nursing facilities will offer the most new jobs in the future for LP/VNs.

LP/VNs care for the sick or injured, convalescent, and disabled, under the direction of physicians or registered nurses. An LP/VN in nursing facilities, in addition to providing routine bedside care, may also help evaluate patients' needs, develop care plans, and supervise the care provided by nursing aides.<sup>9</sup>

Nursing assistants/aides/orderlies work under the direction of nursing or medical staff to provide auxiliary services in the care of patients. Aides perform duties such as answering patients' call bells, serving and collecting food trays, and feeding patients. Orderlies are primarily concerned with setting up equipment and relieving nurses of heavier work. Aides may also provide skin care to patients, take temperatures, pulse, respiration, and blood pressure, and assist with patient's activities of daily living: bathing, dressing, eating, toileting, and transferring.

Training and certification for nursing aides is usually conducted on site. Minimum education and training are required for this entry-level job. The BLS indicates that the job prospects for this occupation are good due to the fast growth and high turnover.

Nursing aides in nursing facilities are often principle caregivers, having more minute-to-minute contact with patients than other members of the staff. Since some patients may

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<sup>8</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupation Outlook Handbook*, 1998.

<sup>9</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupation Outlook Handbook*, 1998.

stay in a nursing facility for months or even years, aides develop ongoing relationships with them and interact with them in a positive caring manner.<sup>10</sup>

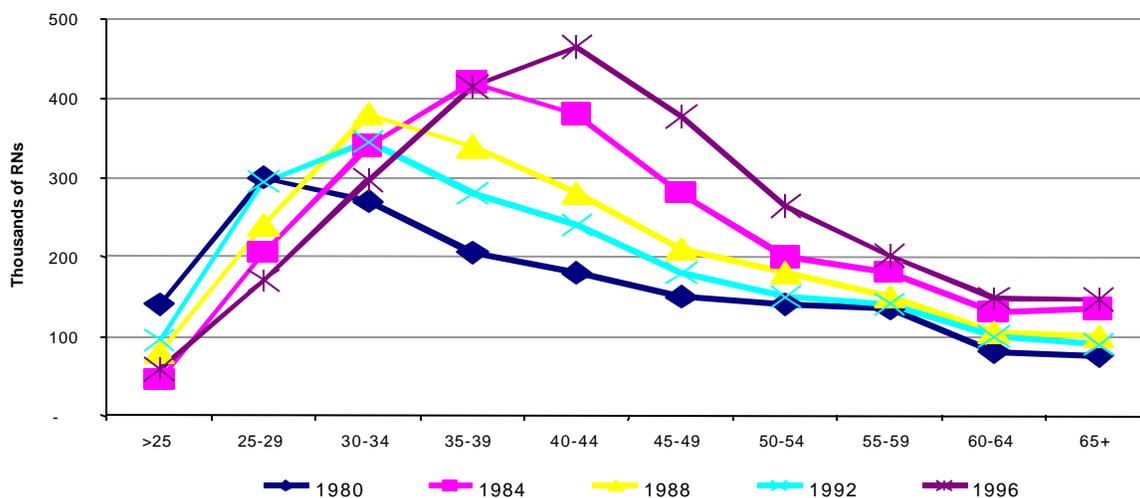
Given the crucial roles of registered nurses, licensed practical nurses, and nursing aides in the care of nursing home patients—largely the elderly of our country—it is imperative that we try to understand the issues related to the present and future staffing of nursing services in long term care.

### Present-day Availability of Nursing Personnel for Nursing Homes

The difference in wages for RNs in a long term care setting versus an acute care setting was highlighted above. In terms of the ability to recruit staff, this difference would be insignificant in a purely buyer’s market. That is, if the supply was substantially greater than the demand, the nursing staff would be plentiful and the recruitment effort accomplished with ease. However, available data and projections suggest that the competition for nursing staff between long term care settings and acute care settings is great.

Regarding RNs, for example, today we have a situation in which the labor force is aging at the same time that the enrollment in nursing schools is on the decline. Figure 1 shows how the RN labor force has aged over the years. As the labor force has aged the peak of the curve of the age distribution has moved further to the right or toward the upper ages of the distribution.

Figure 1. Age Distribution of Registered Nurse Population, 1980-1996

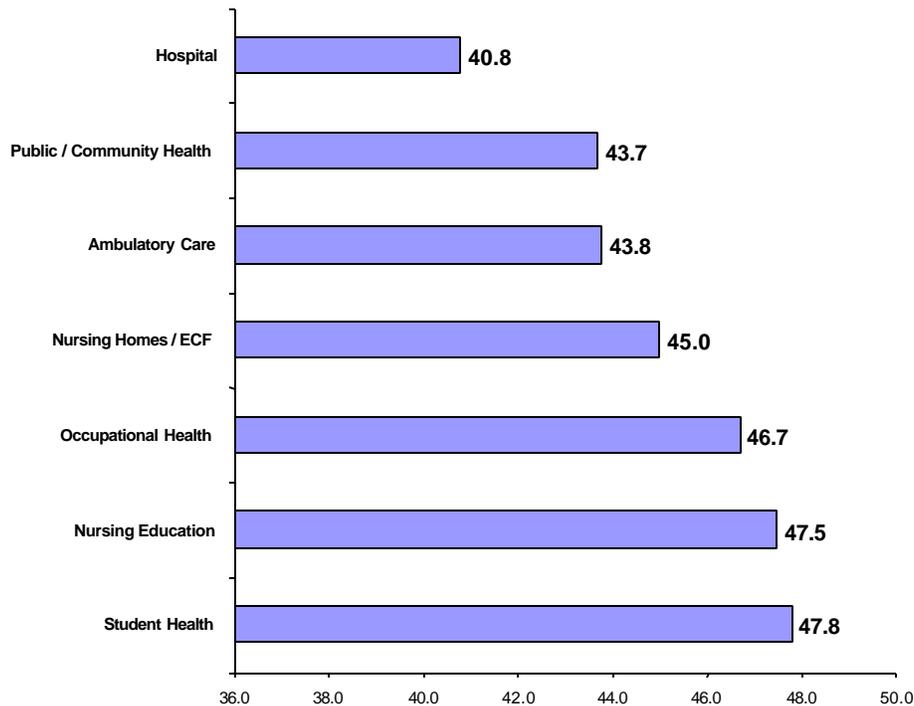


Source: Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population, March 1996*, p. 8. Data points estimated from Chart 4 on page 8 of reference source to construct Figure 1 in this paper.

<sup>10</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupation Outlook Handbook*, 1998.

**Aging of the Current Nurse Supply.** The average age of working RNs increased 4.5 years between 1983 and 1998, according to recent analysis by Buerhaus et al. of data from the Current Population Survey (CPS).<sup>11</sup> Findings from the National Sample Survey of Registered Nurses show a similar aging of the RN population in the United States. According to this survey, the average age of RNs grew from 40.3 years in 1980 to 44.3 years in 1996. About 20% of the RNs in 1980 were between 40 to 50 years of age; by 1996, 33% of RNs were in this age range.<sup>12</sup> The average age of RNs in nursing homes was 45.0 years in 1996 compared to 40.8 years in hospitals (Figure 2).<sup>13</sup>

**Figure 2. Average Age of RNs by Employment Setting, March 1996**



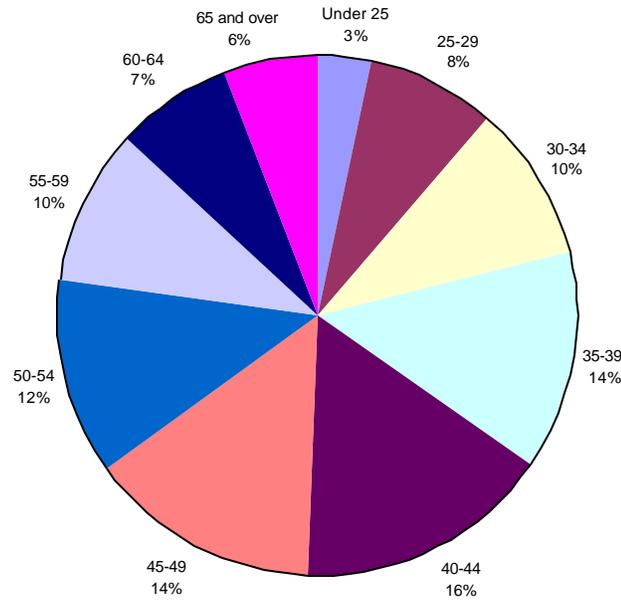
Source: Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population, March 1996*, p. 22.

<sup>11</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

<sup>12</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997.

<sup>13</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997, p. 22.

**Figure 3. Age Distribution of RNs working in Nursing Facilities, 1996**



Source: Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population, March 1996*, Table 18.

Among the RNs employed in nursing homes, 52% in 1996 were between the age of 40 and 60 years (Figure 3).

**Nursing School Enrollment.** The aging of the RN workforce could be related to a number of factors, including:

- changes in population demographics with a decrease in the size of the age cohort(s) from which new entrants into the nursing labor force typically come; and
- decreasing interest in nursing as a career in which a smaller proportion of young adults, and women in particular, are choosing nursing as a career.

Researchers have found the latter factor—decreased interest in nursing as a career—to be the major determinant of the aging of the RN workforce.<sup>14</sup> This finding by researchers is reflected in the recent decline in enrollment in nursing programs.

Data reported in the *Health Workforce Personnel Factbook* indicate an annual decline in enrollments in basic RN programs between the 1994/1995 school year and the 1996/1997 school year. Enrollments in baccalaureate nursing programs decreased at an annual rate of 4.3% during this period, while enrollments in practical nursing

<sup>14</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

programs declined at an annual rate of 2.9%.<sup>15</sup> Researchers in recent surveys report a 5.5% drop in enrollments in baccalaureate nursing programs in the fall of 1998 and a 4.6% drop in 1999.<sup>16</sup>

**Table 1. Percent Change in Number of Programs, Enrollments, Admissions, and Graduates from Select Types of Nursing Programs, 1990/91 - 1994/95 and 1994/95 - 1996/97**

	Programs*	Enrollments*	Admissions**	Graduates**
<b>Basic RN Programs (a)</b>				
90/91 - 94/95 %change	2.1%	21.3%	12.0%	34.4%
Average annual % change	0.5%	5.0%	2.9%	7.7%
94/95 - 96/97 %change	0.5%	-11.2%	-6.3%	-2.4%
Average annual % change	0.2%	-5.8%	-6.3%	-2.4%
<b>Associate Degree Nursing Programs (a)</b>				
90/91 - 94/95 %change	4.7%	15.7%	8.8%	68.3%
Average annual % change	1.2%	3.7%	2.1%	13.9%
94/95 - 96/97 %change	0.9%	-10.0%	-4.1%	-28.1%
Average annual % change	0.5%	-5.2%	-4.1%	-28.1%
<b>Diploma Nursing Programs (a)</b>				
90/91 - 94/95 %change	-18.4%	-9.9%	-24.5%	14.2%
Average annual % change	-5.0%	-2.6%	-6.8%	3.4%
94/95 - 96/97 %change	-12.1%	-35.4%	-19.3%	-19.1%
Average annual % change	-6.2%	-19.6%	-19.3%	-19.1%
<b>Baccalaureate Nursing Programs (a)</b>				
90/91 - 94/95 %change	4.1%	37.7%	29.9%	62.2%
Average annual % change	1.0%	8.3%	6.8%	12.9%
94/95 - 96/97 %change	2.8%	-8.4%	-7.8%	3.7%
Average annual % change	1.4%	-4.3%	-7.8%	3.7%
<b>Practical Nursing Programs (b)</b>				
90/91 - 94/95 %change	2.7%	12.7%	3.1%	16.1%
Average annual % change	0.7%	3.0%	0.8%	3.8%
94/95 - 96/97 %change	2.1%	-5.7%	NA	NA
Average annual % change	1.0%	-2.9%	NA	NA

\* As of October 15 of each year.

\*\*Time period for the academic year is August 1 through July 31. 1996/97 data not available, 1995/96 is used instead.

Sources: (a) National League for Nursing, *Nursing Datasource*, Vol. 1, 1992 and 1997 editions. (b) National League for Nursing, *Nursing Datasource*, Vol. III, 1996 as used and reported in Health Resources and Services Administration, Bureau of Health Professions (U.S. Department of Health and Human Services). *United States Health Workforce Personnel Factbook*, 1999, Tables 405-408, 410.

<sup>15</sup> Health Resources and Services Administration, Bureau of Health Professions (U.S. Department of Health and Human Services). *United States Health Workforce Personnel Factbook*, 1999, Tables 405-408, 410.

<sup>16</sup> American Association of Colleges of Nursing, *Annual Report [Incorporating Annual State of Schools]*, 1999; American Association of Colleges of Nursing, "News Release," February 17, 2000 ([www.aacn.nche.edu/Media/NewsReleases](http://www.aacn.nche.edu/Media/NewsReleases)).

**Nursing Staff Per 100,000 Population.** As the nursing labor force ages and enrollments in nursing educational programs decrease, the extent of competition for nursing staff will likely vary across regions of the country. This fact is illustrated by inspection of the nursing labor force per 100,000 individuals in a state or region. Table 2 indicates the five states in each direct care staff (DCS) category with the lowest ratios of staff to 100,000 persons 65 years of age or older and with the lowest ratios of staff to 100,000 individuals in the total population. The number of staff positions represented in the tables are from the 1998 Bureau of Labor Statistics Occupational Employment Statistics and the population numbers are from the 1998 Bureau of the Census state population statistics. This analysis suggests that the states in Table 2 are experiencing a greater shortage of nursing personnel and, assuming comparable health care utilization, more competition with acute care settings for the recruitment of staff than other states.

The analysis indicates that Nevada has the lowest rate among all the states (and the District of Columbia) of total direct care staff (RNs, LPNs and nurse aides) per 100,000 state residents in the total population and in the population 65 years of age and older. Nevada has 815.7 total direct care staff per 100,000 state residents and 7,125.0 per 100,000 state residents 65 years of age and older. Nevada also has the lowest ratio of nurse aides per 100,000 state residents 65 years of age or greater in the nation at 1,410.0.

**Table 2. States with Lowest Ratio of Direct Care Staff Per 100,000 Individuals**

<i>Per 100,000 Individuals 65 Years of Age or Older</i>				
	<b>DCS</b>	<b>Aides</b>	<b>LPN</b>	<b>RN</b>
1	Nevada	Nevada	Nevada	Florida
2	Florida	Florida	Oregon	Arizona
3	Arizona	Arizona	Hawaii	Nevada
4	California	California	California	California
5	Oregon	Hawaii	Arizona	Oregon

<i>Per 100,000 Individuals in Total Population</i>				
	<b>DCS</b>	<b>Aides</b>	<b>LPN</b>	<b>RN</b>
1	Nevada	Alaska	Alaska	California
2	Alaska	Nevada	Nevada	Nevada
3	California	Utah	Oregon	New Mexico
4	Utah	California	California	Idaho
5	Arizona	Arizona	Utah	Arizona

The national ratio of staff per 100,000 individuals in the total population for each direct care staff position is 1,465.0 total direct care staff, 465.5 nurse aides, 249.3 LPNs, and 750.2 RNs. Table 3 indicates the ratio of staff to 100,000 in the population aged 65 or over and to 100,000 in the total population by direct care staff position for all states and the nation. Noteworthy is the substantial variation across states in the ratio of nursing personnel both to the population aged 65 or over, and to the total population.

**Table 3. Nursing Direct Care Staff Per 100,000 Populaton, 1998**

	Population Aged 65+				Total Population			
	Total DCS	Aides	LPN	RN	Total DCS	Aides	LPN	RN
<b>United States</b>	<b>11,510.6</b>	<b>3,657.2</b>	<b>1,958.6</b>	<b>5,894.7</b>	<b>1,465.0</b>	<b>465.5</b>	<b>249.3</b>	<b>750.2</b>
Alabama	10,875.0	3,211.3	2,711.3	4,952.5	1,419.3	419.1	353.9	646.4
Alaska	15,911.8	2,911.8	1,794.1	11,205.9	881.1	161.2	99.3	620.5
Arizona <sup>3</sup>	8,326.9	2,276.7	1,399.7	4,650.5	1,102.2	301.3	185.3	615.5
Arkansas	13,022.1	4,477.9	3,290.1	5,254.1	1,857.4	638.7	469.3	749.4
California <sup>4</sup>	8,570.8	2,443.8	1,361.9	4,765.1	948.2	270.4	150.7	527.2
Colorado	11,733.8	3,333.3	1,579.6	6,820.9	1,187.9	337.4	159.9	690.5
Connecticut	13,204.7	5,232.4	1,688.7	6,283.6	1,891.6	749.5	241.9	900.1
Delaware	12,208.3	4,177.1	1,583.3	6,447.9	1,575.3	539.0	204.3	832.0
Florida <sup>2</sup>	8,037.7	2,156.9	1,605.0	4,275.8	1,473.3	395.3	294.2	783.7
Georgia	13,751.0	4,221.2	2,822.5	6,707.3	1,358.5	417.0	278.9	662.7
Hawaii	9,382.2	2,662.4	1,267.5	5,452.2	1,234.7	350.4	166.8	717.5
Idaho	11,410.1	4,223.0	1,841.7	5,345.3	1,290.5	477.6	208.3	604.6
Illinois	11,563.5	3,312.2	1,680.5	6,570.9	1,436.2	411.4	208.7	816.1
Indiana	12,052.7	3,483.8	2,286.5	6,282.4	1,512.0	437.0	286.8	788.1
Iowa	11,708.3	4,175.9	1,791.7	5,740.7	1,767.3	630.3	270.4	866.5
Kansas	12,749.3	4,262.0	2,081.7	6,405.6	1,721.6	575.5	281.1	865.0
Kentucky	12,326.6	3,894.5	2,087.2	6,344.8	1,544.0	487.8	261.4	794.7
Louisiana	14,301.6	4,555.6	3,361.1	6,384.9	1,649.8	525.5	387.7	736.6
Maine	13,360.0	5,194.3	1,525.7	6,640.0	1,879.4	730.7	214.6	934.1
Maryland	12,258.4	3,810.8	1,557.4	6,890.2	1,413.2	439.3	179.6	794.4
Massachusetts	14,828.1	4,485.5	1,974.4	8,368.2	2,076.9	628.3	276.6	1,172.1
Michigan	10,473.4	3,323.0	1,426.0	5,724.4	1,304.8	414.0	177.7	713.2
Minnesota	14,576.3	5,034.3	2,862.8	6,679.2	1,798.5	621.2	353.2	824.1
Mississippi	12,607.1	3,907.7	2,660.7	6,038.7	1,539.2	477.1	324.9	737.3
Missouri	13,418.8	4,887.2	2,010.7	6,520.8	1,838.0	669.4	275.4	893.2
Montana	11,720.3	3,915.3	2,000.0	5,805.1	1,571.6	525.0	268.2	778.4
Nebraska	14,375.5	4,803.5	2,707.4	6,864.6	1,979.6	661.5	372.8	945.3
Nevada <sup>1</sup>	7,125.0	1,410.0	1,005.0	4,710.0	815.7	161.4	115.1	539.2
New Hampshire	13,202.8	4,181.8	1,678.3	7,342.7	1,593.2	504.6	202.5	886.1
New Jersey	24,477.8	3,436.2	14,905.0	6,136.7	3,333.1	467.9	2,029.6	835.6
New Mexico	9,974.9	3,286.4	1,417.1	5,271.4	1,142.8	376.5	162.3	603.9
New York	12,771.0	4,540.0	2,011.6	6,219.5	1,703.3	605.5	268.3	829.5
North Carolina	12,492.6	4,446.1	1,714.6	6,331.9	1,566.1	557.4	214.9	793.8
North Dakota	16,608.7	6,597.8	3,010.9	7,000.0	2,395.0	951.4	434.2	1,009.4
Ohio	13,004.0	4,127.8	2,206.4	6,669.8	1,742.5	553.1	295.7	893.7
Oklahoma	12,213.8	4,285.1	2,775.1	5,153.7	1,638.5	574.8	372.3	691.4
Oregon <sup>5</sup>	9,016.2	3,111.1	1,046.3	4,858.8	1,186.8	409.5	137.7	639.5
Pennsylvania	11,041.5	3,723.6	1,869.7	5,448.2	1,750.9	590.5	296.5	863.9
Rhode Island	13,564.9	5,655.8	1,564.9	6,344.2	2,114.4	881.6	243.9	988.9
South Carolina	11,104.7	3,316.2	2,068.4	5,720.1	1,354.8	404.6	252.3	697.9
South Dakota	14,367.9	5,424.5	1,754.7	7,188.7	2,063.7	779.1	252.0	1,032.5
Tennessee	12,857.1	3,715.8	2,839.5	6,301.9	1,607.4	464.6	355.0	787.9
Texas	13,576.2	4,409.3	2,916.5	6,250.4	1,374.8	446.5	295.3	632.9
Utah	11,800.0	2,956.8	1,773.0	7,070.3	1,039.5	260.5	156.2	622.9
Vermont	12,736.1	3,402.8	2,208.3	7,125.0	1,551.6	414.6	269.0	868.0
Virginia	12,154.9	3,868.5	2,325.5	5,960.9	1,374.6	437.5	263.0	674.1
Washington	11,015.3	3,436.4	1,511.5	6,067.4	1,264.4	394.4	173.5	696.4
Washington DC	20,876.7	4,657.5	2,931.5	13,287.7	2,914.0	650.1	409.2	1,854.7
West Virginia	10,850.9	3,130.9	2,323.6	5,396.4	1,647.7	475.4	352.8	819.4
Wisconsin	12,916.1	5,188.1	1,704.8	6,023.2	1,708.5	686.3	225.5	796.7
Wyoming	11,527.3	3,527.3	1,600.0	6,400.0	1,318.1	403.3	183.0	731.8

1,2,3,4,5 - The states with the lowest per capita direct care nursing staff for the population aged 65+ in 1998.

Sources: Bureau of Labor Statistics (U.S.), *Occupational Employment Statistics, 1998* online at [www.bls.gov](http://www.bls.gov) and the Bureau of the Census (U.S.), *Statistical Abstract of the United States: The National Databook*, 119<sup>th</sup> Edition, 1999, Population Estimates for 1998, Tables 26 and 33, pp. 28 and 33. Analysis by AHCA Health Services Research and Evaluation.

**Wages.** Nursing homes compete with other health care settings to fill positions from a nursing labor pool that is already strained. It may be implied from the nursing staff to population ratios reported in Table 3 that this competition in staff recruitment is likely more severe in states with lower than average ratios of nursing staff per population in the state. Aside from a limited workforce from which to hire staff, nursing homes have a difficult time recruiting personnel for several other reasons. Among them, one of the most obvious is salary.

The difference in salaries between long term care facilities and acute care settings, while not of the magnitude of previous decades, remains today. Findings from the National Sample Survey of Registered Nurses, March 1996, indicated that a registered nurse in an acute-care hospital on average earned \$40,097 while a nurse with the same qualifications in a nursing facility earned \$33,230, which was 17% less than the RN in the acute-care setting before benefits.<sup>17</sup> And a study by Buck Consultants in 1998 showed that the present-day comparison is similar with RNs in nursing homes making on average 16% less than RNs in hospitals, and LPNs and Certified Nurse Assistants (CNAs) respectively making 6% and 16% less than their counterparts in hospitals.<sup>18</sup> Other studies and data also show the wide disparity in wages between long term and acute care settings for RNs and CNAs, but not for LPNs.<sup>19</sup>

Third quarter 1999 data from the Bureau of Labor Statistics<sup>20</sup> indicate that nursing facility wages increased at an average annual rate of slightly over 4% from 1995 to 1999, while private hospital wages increased an average of 3% annually for the same time period. Yet despite this growth in wages at nursing homes, private hospital wages continue to be significantly higher than wages paid in nursing facilities.

**Table 4. Average Hourly Wages for Direct Care Staff as Reported by Various Sources**

Source	Nursing Facilities			Hospitals		
	Nurse Aides	LPN	RN	Nurse Aides	LPN	RN
Buck Consultants, 1998 <sup>21</sup>	\$7.45	\$11.90	\$16.64	\$8.86	\$12.72	\$19.83
Bureau of Labor Statistics, 1998 <sup>22</sup>	\$7.93	\$13.42	\$18.62	\$8.67	\$13.39	\$21.12
HHCS, 1999-2000 <sup>23</sup>	\$7.07-\$8.16*	\$13.71	\$17.69	\$8.80-\$8.91**	\$13.52	\$20.85

<sup>17</sup> Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). *The Registered Nurse Population: March 1996, Findings from the National Sample Survey of Registered Nurses*, 1997, Table 26.

<sup>18</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

<sup>19</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupational Employment Survey*, 1998. Hospital wages are from Standard Industry Code (SIC) 806 and Nursing Facility wages are from SIC 805 which includes intermediate care facilities; Hospital & Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*, HHCS:Oakland, New Jersey.; Hospital & Healthcare Compensation Service (HHCS), *Nursing Department Compensation Services, 1999-2000* (November 1999), HHCS:Oakland, New Jersey.

<sup>20</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Employment and Earnings*. U.S. Government Printing Office. *Monthly Reports for January 1995-November 1999*, Washington D.C.

<sup>21</sup> Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*. Buck Consultants: Secaucus, New Jersey.

<sup>22</sup> Bureau of Labor Statistics (U.S. Department of Labor). *Occupational Employment Survey*, 1998. Hospital wages are from Standard Industry Code (SIC) 806 and Nursing Facility wages are from SIC 805 which includes intermediate care facilities.

<sup>23</sup> Hospital and Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*. HHCS:Oakland, New Jersey.

\* Includes non-certified nurse aides at \$7.07 and certified nurse aides at \$8.16.

Hospital and Healthcare Compensation Service (HHCS), *Nursing Department Compensation Service, 1999-2000*. HHCS:Oakland, New Jersey.

\*\*Includes \$8.80 for nurse aides and \$8.91 for nurse assistants.

A major contributor to this discrepancy is that most nursing facilities are publicly financed by the Medicare and Medicaid programs. Current government reimbursement rates for nursing facility care limit wage compensation to nursing facility staff, in part, because rates are based upon historical costs, not present or future needs.<sup>24</sup>

Adding to a nurse's frustration over wages is the fact that the maximum earning potential for nursing wages is usually achieved within five to seven years of entering the profession. In nursing, historically, maximum wage potential has been approximately 35% higher than starting wages.<sup>25</sup> For this reason, many nurses have chosen the more lucrative practice of joining administration for higher wages and better hours. Unfortunately, this takes the nurse away from the patient's bedside and puts her/him behind a desk.

**Turnover Rates in Nursing Homes.** Researchers have found consistently that turnover among nursing assistants, LPNs, and RNs is high in nursing homes. Although the turnover rates vary from one study to the next, the rates are in general high, as revealed in Table 5. The turnover rate among nursing aides is typically higher than the rates for RNs and LPNs. Among nurse assistants, researchers have found turnover rates ranging from 38% to 143% while the rates for LPNs, for example, range from 27% to 61% (Table 5).

Research indicates that turnover rates among nursing personnel are greater in nursing homes than in acute care hospitals. For example, studies show the turnover among RNs in nursing homes to range from 28% to 59%, with the majority of the research finding a turnover rate greater than 45% (Table 5). In contrast, for all nursing personnel in acute care hospitals, researchers in one study report a turnover rate ranging only from 12% to 23%.<sup>26</sup>

The relatively higher turnover rate in nursing homes means that staff recruitment is a constant and major effort. In this effort, nursing homes can be at a disadvantage compared to other health providers, stemming from the wage differentials, when the environment is competitive because the available labor force is not sufficiently large to meet the demands of all health care sectors simultaneously. Data indicate that such competition for staff is not likely to decrease, but rather increase, in the foreseeable future.

### **Future Availability of Nursing Personnel for Nursing Homes**

The recruitment of nursing personnel could become more problematic for nursing homes without substantial changes to alter the systemic problems in the long term care field. As the need for long term care services increases over the years, in part due to

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<sup>24</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, Chapter 2, p. 2-23.

<sup>25</sup> McKibbin, R.C. "Nurse Salaries Losing Ground," *American Nurse*, 20 (3):16, March 1988.

<sup>26</sup> Hospital and Healthcare Compensation Service, *Hospital Salary and Benefits Report, 1999-2000*. HHCS:Oakland, New Jersey.

**Table 5. Turnover Rates in Nursing Homes Found in Various Studies**

Staff Position	AAHSA <sup>27</sup>	Buck <sup>28</sup>	Caudill & Patrick <sup>29</sup>	Elvidge <sup>30</sup>	Wagnild <sup>31</sup>	American Journal of Nursing <sup>32</sup>	Halbur <sup>33</sup>	George <sup>34</sup>
Nurses' Aides	49%	94%	93%	69%	143%	38%	68%	65%
LPNs	27%	50%	--	45%	--	--	51%	61%
RNs	28%	59%	45%	45%	--	--	36%	55%
Sample	1879 nursing homes in U.S.	12 chains in U.S.	26 nursing homes in western state	Nursing homes in Indiana	11 long term care facilities in Public Health Region 6 in Texas	999 nursing homes in U.S.	Nursing homes in North Carolina	Nursing homes in North Carolina
Year Data Collected	Circa 1999	1998	Circa 1990	1987	Circa 1987	1990	Circa 1981	Circa 1982

the aging of the baby boomers, the proportion of available nursing personnel needed in settings that care for the aged increases. Table 6 illustrates this situation.

The projected change in the demand for nursing personnel in nursing homes is second only in magnitude to the change projected to meet home health needs. The projected change in the demand for nursing personnel in short term hospitals, although substantial, is less than that projected for nursing homes and home health (Table 6). The projected need for RNs in nursing homes is estimated to increase 66.1% between 1991 and 2020 (Table 6). The number of LPNs needed in nursing homes is estimated to grow by 71.5% from 1991 to 2020 (Table 6). A similar growth (69.1%) in the proportion of nursing aides needed in nursing homes is projected.

These projections are based upon current staffing configurations and do not take into account any proposed changes in the nursing staff ratios (e.g., number or hours of staff to patients) in nursing homes, proposals discussed later in this paper.

<sup>27</sup> The figures in this column are taken from Hospital and Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*, p. 30. HHCS:Oakland, New Jersey.

<sup>28</sup> The figures in this column are taken from Buck Consultants, *1998 Survey of Managerial, Supervisory and Staff Positions in Nursing Homes*, p. 187. Buck Consultants: Secaucus, New Jersey.

<sup>29</sup> The figures in this column are taken from Caudill, M. E. and Patrick, M., "Costing Nurse Turnover in Nursing Homes," *Nursing Management*, 22:62, 1991.

<sup>30</sup> The figures in this column are taken from Elvidge, S., *The Indiana Long Term Care Nursing Manpower Survey*, Indiana Health Care Association, p. 98, 1988.

<sup>31</sup> The figures in this column are taken from Wagnild, G., "A Descriptive Study of Nurse's Aide Turnover in Long-Term Care Facilities," *The Journal of Long-Term Care Administration*, 16:21, 1988.

<sup>32</sup> The figures in this column are taken from "Staff Shortages Hurting Nursing Homes the Most" (non-authored news item) *American Journal of Nursing*, 91:85 and 90, 1991.

<sup>33</sup> The figures in this column are taken from Halbur, B.T., *Turnover in Nursing Personnel in Nursing Homes*, Ann Arbor, Michigan, UMI Research Press, 1982.

<sup>34</sup> The figures in this column are taken from George, L. K. "Nursing Turnover in Long-Term Care Institutions," pp. 125-148 in *Research in the Sociology of Work: Peripheral Workers*, (ed. by Simpson, I.H. and Simpson, R.L.), Vol 2, 1983. Greenwich, CT.: Jai Press.

**Table 6. Demand for Nursing Services: 1991 to 2020**

	Short Term Hospitals*	Long Term / Psych / Other Hospitals*	Nursing Homes*	Home Health Agencies*	Other Setting*	All Settings	% Needed for Nursing Homes
<b>RNs</b>							
1991	936,300	174,400	111,000	85,900	340,300	1,647,900	6.7%
1995	979,600	176,500	117,700	145,700	367,800	1,787,300	6.6%
2000	1,028,300	173,900	127,900	221,200	392,600	1,943,900	6.6%
2005	1,085,800	190,200	137,500	240,100	417,300	2,070,900	6.6%
2010	1,146,100	206,200	152,100	256,500	441,900	2,203,100	6.9%
2015	1,222,200	221,600	168,500	280,900	463,500	2,356,700	7.1%
2020	1,316,000	237,800	184,400	318,100	483,100	2,539,400	7.3%
% Change: 1991-2020	40.6%	36.4%	66.1%	270.3%	42.0%	54.1%	
<b>LP/VNs</b>							
1991	174,400	20,100	197,400	20,300	NA	412,300	47.9%
1995	179,200	19,600	209,600	33,500	NA	441,900	47.4%
2000	186,300	18,600	228,900	48,500	NA	482,300	47.5%
2005	194,400	20,300	247,800	52,300	NA	514,800	48.1%
2010	204,000	22,000	274,400	56,900	NA	557,300	49.2%
2015	216,000	23,600	306,300	63,900	NA	609,800	50.2%
2020	230,800	25,300	338,500	74,600	NA	669,300	50.6%
% Change: 1991-2020	32.3%	25.9%	71.5%	267.5%		62.3%	
<b>Aides</b>							
1991	290,100	84,200	663,500	28,600	NA	1,066,400	62.2%
1995	300,600	81,600	703,300	46,900	NA	1,132,300	62.1%
2000	313,900	76,900	764,900	70,000	NA	1,225,700	62.4%
2005	328,900	83,600	825,200	75,600	NA	1,313,300	62.8%
2010	346,100	90,300	911,100	81,600	NA	1,429,100	63.8%
2015	367,300	96,600	1,015,600	90,600	NA	1,570,200	64.7%
2020	393,200	103,300	1,121,700	103,800	NA	1,722,100	65.1%
% Change: 1991-2020	35.5%	22.7%	69.1%	262.9%		61.5%	

\*Estimates may not add to totals because of rounding in estimates within categories of settings.  
 Source: Projections prepared by Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," December 1996, updated demand forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Department of Commerce), NTIS Order Number PB97-501415GEI).

With the increased demand for nursing staff in nursing homes, given even present staffing levels, will a sufficient supply of individuals seeking employment exist in the future?

**Labor Force Attrition and Per Capita Projections.** The problem of labor supply is revealed in the attrition of the RN labor force that is shown in projections of full-time equivalent (FTE) RNs per capita in the labor force. Buerhaus et al. in a recent study projected that the full-time equivalent RNs per capita in the labor force would peak around the year 2007 and drop thereafter as many current RNs retire. These researchers projected that the supply of RNs by 2020 will be the same as the current supply.<sup>35</sup>

The conclusions by Buerhaus et al. are similar to the implications revealed by the projection of the RN FTE supply from the supply model developed by the Health Resources and Services Administration (HRSA) at the Department of Health and Human Services (DHHS). The number of RN FTEs in the year 2000 was estimated at 727.4 per 100,000 individuals nationwide. By the year 2010, the number of RN FTEs per 100,000 population drops to 724.4. And by 2020 the RN FTEs per 100,000 population is projected to be 669.5, which represents a substantial decrease from the 2000 ratio (Table 7). The difference between 2000 and 2020 represents an 8.0% decline in the RN supply per individual in the country.

The decrease in RN FTEs per 100,000 population varies by region (see footnote 36 for the states within each region)<sup>36</sup>. In New England, the decrease between 2000 and 2020 is 23.2%, and in the Pacific region the decline is 21.0%. In only three out of the nine regions (South Atlantic, East North Central, and West North Central) is the RN FTEs per individual slightly greater in 2020 than in 2000. But even in these three regions, the RN FTEs per 100,000 in 2020 are less than those in 2015 and, thus, represent the beginning of a decline and potential shortage as well in those regions (Table 7). This decrease is shown clearly in Figure 4.

**Demand versus Supply.** The projections of the supply of RNs, alone, do not indicate whether the supply will be adequate to meet demand. As discussed earlier, the demand is projected to increase dramatically (Table 6). Given this substantial increase in demand, even the increases in RN FTEs per 100,000 population projected in some regions may not be sufficient to meet the growing demand in future years. Keeping this in mind, it is instructive to look at the differences in the projections in the demand and

<sup>35</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

<sup>36</sup> The states within each region are:

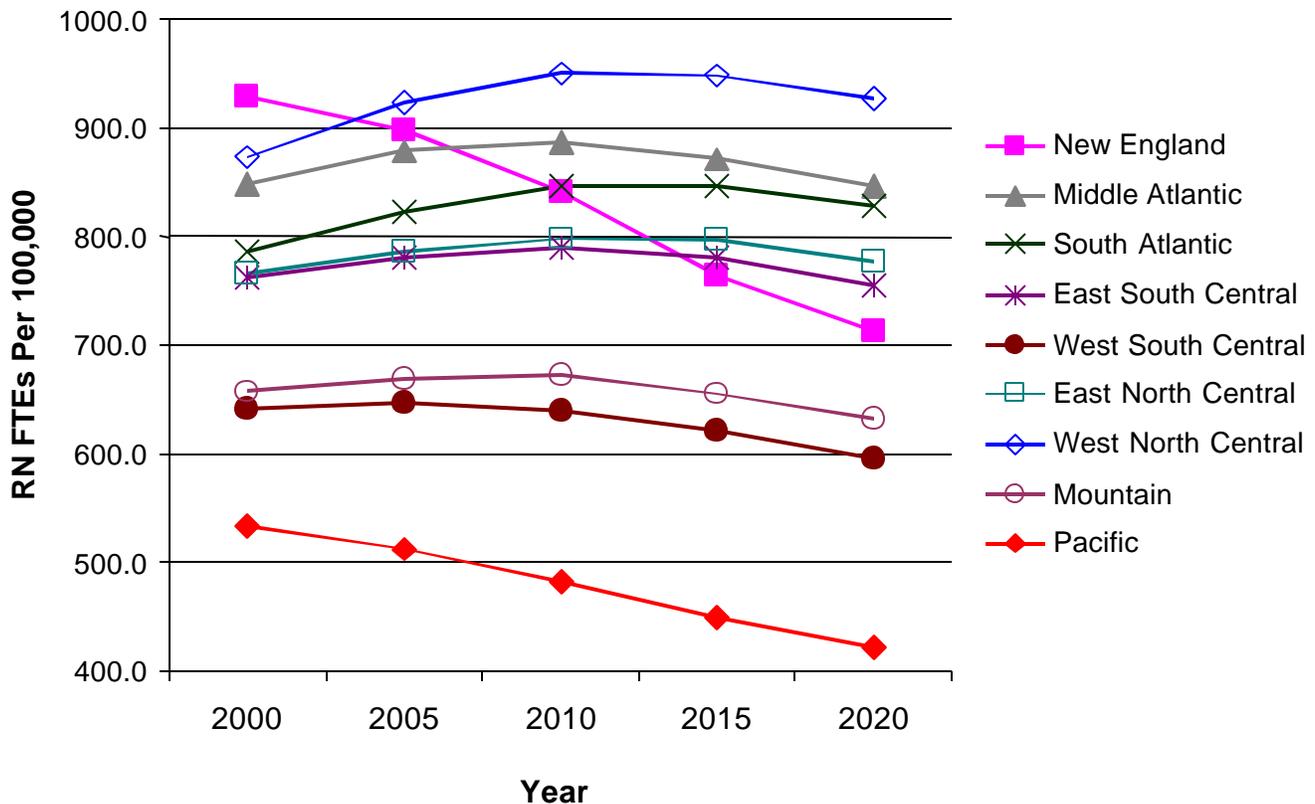
New England	CT	ME	MA	NH	RI	VT				
Middle Atlantic	NJ	NY	PA							
South Atlantic	DE	DC	FL	GA	MD	NC	SC	VA	WV	
East South Central	AL	KY	MS	TN						
West South Central	AR	LA	OK	TX						
East North Central	IL	IN	MI	OH	WI					
West North Central	IA	KS	MN	MO	NE	ND	SD			
Mountain	AZ	CO	ID	MT	NV	NM	UT	WY		
Pacific	AK	CA	HI	OR	WA					

**Table 7. Number of RN FTEs per 100,000 Population by Region\* through 2020**

Year	2000	2005	2010	2015	2020	% Change: 2000 - 2020
United States	727.4	733.0	724.4	700.4	669.5	-8.0%
New England	928.1	898.9	840.8	764.9	713.2	-23.2%
Middle Atlantic	847.5	878.6	886.8	870.6	845.7	-0.2%
South Atlantic	785.8	822.6	845.6	846.7	828.9	5.5%
East South Central	761.8	780.5	789.6	779.5	755.3	-0.9%
West South Central	641.8	647.1	639.7	621.3	597.2	-7.0%
East North Central	765.9	785.6	799.1	796.3	777.5	1.5%
West North Central	873.4	923.9	950.8	948.8	925.9	6.0%
Mountain	656.7	668.9	672.6	655.6	631.6	-3.8%
Pacific	534.0	512.2	482.2	450.3	421.6	-21.0%

\*Weighted average based on projected supply of total FTE RNs and FTE RNs per capita within each state. See footnote 36 for the states within each region.  
 Source: Health Resources and Services Administration (HRSA), Bureau of Health Professions (BHP), Division of Nursing (U.S. Department of Health and Human Services). "Supply Model (Based on 1996 Survey)," provided to AHCA by the HRSA, BHP, Division of Nursing (U.S. Department of Health and Human Services).

**Figure 4. Projected RN FTEs per 100,000 Population by Region 2000 - 2020**

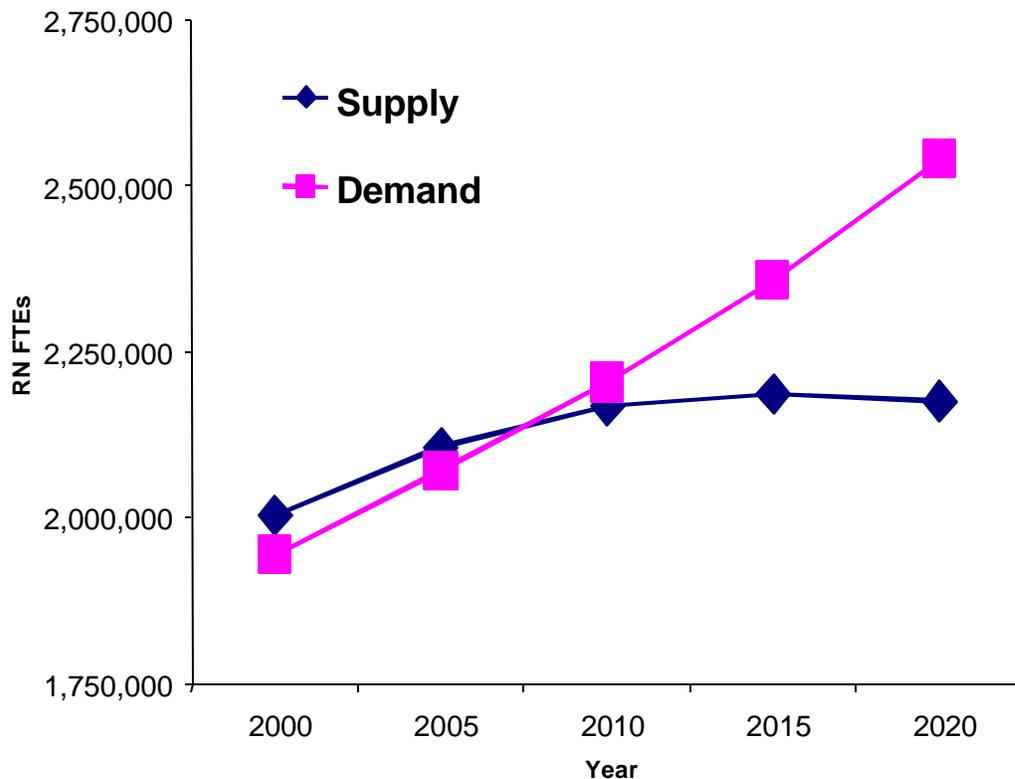


Source: Table 7

supply of RNs in the models developed by the Health Resources and Services Administration (HRSA) at the Department of Health and Human Services (DHHS). As illustrated in Figure 5, gross supply (i.e., not standardized in terms of a per capita rate) increases until around the year 2015 and then declines while demand grows, so that by the year 2020 there is at least a 14% shortage of RNs nationwide. Other researchers indicate a similar shortage. Projections from the model developed by Buerhaus et al. suggest that by 2020 there will be a shortage of RNs about 20% below projected future requirements.<sup>37</sup>

Table 8 shows that the extent of the shortage varies by geographical area. In fact, a shortage currently exists according to these projections in many regions today. New England, the Middle Atlantic, and the Pacific regions are all areas in which shortages were projected to exist today. By 2020, shortages exist in regions throughout the United States.

**Figure 5. Supply and Demand for RN FTEs:  
2000 - 2020**



Sources: Health Resources and Services Administration (U.S. Department of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," December 1996, updated demand forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Department of Commerce), NTIS Order Number PB97-501415GEI); and "Supply Model" based upon the 1996 National Sample Survey of Registered Nurses provided to AHCA by the Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Department of Health and Human Services). Analysis of surplus/shortage by AHCA Health Services Research and Evaluation.

<sup>37</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. "Implications of an Aging Registered Nurse Workforce." *Journal of the American Medical Association*, 283:2948-2954, June 14, 2000.

**Table 8. Projected Supply/Demand of RN FTEs and Surplus/Shortage through 2020**

	Projected RN FTE Supply	Projected RN FTE Demand	Surplus or Shortage	Surplus/Shortage as % of Demand
<b><u>United States</u></b>				
2000	2,003,234	1,943,900	59,334	3.1%
2005	2,106,570	2,070,900	35,670	1.7%
2010	2,169,529	2,203,100	-33,571	-1.5%
2015	2,186,188	2,356,700	-170,512	-7.2%
2020	2,175,551	2,539,400	-363,849	-14.3%
<b><u>New England</u></b>				
2000	122,845	126,100	-3,255	-2.6%
2005	120,078	130,300	-10,222	-7.8%
2010	114,939	136,600	-21,661	-15.9%
2015	107,434	145,100	-37,666	-26.0%
2020	102,955	155,100	-52,145	-33.6%
<b><u>Middle Atlantic</u></b>				
2000	321,871	326,300	-4,429	-1.4%
2005	332,665	336,800	-4,135	-1.2%
2010	336,217	348,200	-11,983	-3.4%
2015	331,690	363,300	-31,610	-8.7%
2020	325,635	381,200	-55,565	-14.6%
<b><u>South Atlantic</u></b>				
2000	387,623	359,600	28,023	7.8%
2005	426,092	389,900	36,192	9.3%
2010	456,893	421,200	35,693	8.5%
2015	476,512	457,100	19,412	4.2%
2020	485,515	500,400	-14,885	-3.0%
<b><u>East South Central</u></b>				
2000	127,423	115,100	12,323	10.7%
2005	135,022	122,700	12,322	10.0%
2010	140,620	129,500	11,120	8.6%
2015	142,885	137,200	5,685	4.1%
2020	142,191	145,900	-3,709	-2.5%
<b><u>West South Central</u></b>				
2000	195,577	158,400	37,177	23.5%
2005	207,925	172,700	35,225	20.4%
2010	216,399	187,500	28,899	15.4%
2015	220,685	203,300	17,385	8.6%
2020	222,119	221,600	519	0.2%
<b><u>East North Central</u></b>				
2000	340,818	327,900	12,918	3.9%
2005	355,783	339,100	16,683	4.9%
2010	366,764	348,200	18,564	5.3%
2015	371,131	360,200	10,931	3.0%
2020	368,341	376,800	-8,459	-2.2%
<b><u>West North Central</u></b>				
2000	164,972	155,100	9,872	6.4%
2005	178,460	162,700	15,760	9.7%
2010	186,939	170,200	16,739	9.8%
2015	189,951	178,600	11,351	6.4%
2020	189,134	189,300	-166	-0.1%
<b><u>Mountain</u></b>				
2000	111,964	109,100	2,864	2.6%
2005	121,384	120,100	1,284	1.1%
2010	127,923	130,900	-2,977	-2.3%
2015	130,464	143,000	-12,536	-8.8%
2020	131,293	157,200	-25,907	-16.5%
<b><u>Pacific</u></b>				
2000	230,143	266,200	-36,057	-13.5%
2005	229,165	296,500	-67,335	-22.7%
2010	222,832	330,800	-107,968	-32.6%
2015	215,436	368,900	-153,464	-41.6%
2020	208,367	411,900	-203,533	-49.4%

Sources: Health Resources and Services Administration (U.S. Dept. of Health and Human Services), "Nursing Demand Based Requirements Forecasting Model," Dec. 1996, updated forecast using data collected in 1991-1992 (available from National Technical Information Service (U.S. Dept. of Commerce), NTIS Order Number PB97-501415GEI); and "Supply Model" based upon the 1996 National Sample Survey of Registered Nurses provided to AHCA from the Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (U.S. Dept. of Health and Human Services). Analysis of surplus/shortage by AHCA Health Services Research and Evaluation.

Projections from different studies show clearly that the labor force for nursing services is declining at the same time that the demand or need for nursing services is increasing. The shortage is substantial and dramatic in a number of regions of the nation. Buerhaus et al. stated the issue well when, referring to the supply of RNs, they wrote:

(T)he impending decline in the supply of RNs will come at a time when the first of 78 million baby boomers begin to retire and enroll in the Medicare program in 2010. Because RNs are vital in ensuring access to and quality of health care, it is critical that policymakers understand, and develop appropriate responses to, the implications of a rapidly aging RN workforce.<sup>38</sup>

The same implication applies to a declining supply of CNAs and LPNs.

Attention by policymakers and consumers has focused more on the staffing levels in nursing homes than on the question of supply and demand of nursing staff. Many call for an increase in the staffing levels. The projections of the supply and demand of nursing personnel also point to another issue that faces the nation in the care of its elderly citizens. If the circumstances do not change, there will not be a sufficient workforce available in the coming years to maintain even the current staffing levels in nursing homes. This staffing shortage can, in turn, lead to a declining availability of services and introduce a problem of access to care for those, particularly the elderly, requiring long term health care.

### **Staffing Ratios for Direct Care Staff in Long Term Care Settings**

**Current Staffing Mandates and Ratios.** Currently, nursing facilities in the United States licensed to accept Medicare and Medicaid patients must adhere to mandated guidelines for sufficient nursing staff. These guidelines are published in the *Guidance to Surveyors for Long-term Care Facilities* and the *Code of Federal Regulations: Public Health*. Failure to meet the minimum guidelines will result in a citation to the facility, installation of a plan of correction, as well as the potential for the imposition of money penalties.

The current staffing guidelines are §483.30 Nursing Services:

“The nursing facility must have sufficient nursing staff to provide nursing and related services to attain or maintain the highest practicable physical, mental, and psychosocial wellbeing of each resident, as determined by resident assessments and individual plans of care.

(a) Sufficient staff: (1) The facility must provide services by sufficient numbers of each of the following types of personnel on a 24-

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<sup>38</sup> Buerhaus, P.L., Staiger, D.O., and Auerbach, D.I. “Implications of an Aging Registered Nurse Workforce.” *Journal of the American Medical Association*, 283:2953, June 14, 2000.

hour basis to provide nursing care to all residents in accordance with resident care plans:

(i) Except when waived under paragraph (c) of this section, licensed nurses; and

(ii) Other nursing personnel.

(2) Except when waived under paragraph (c) of this section, the facility must designate a licensed nurse to serve as a charge nurse on each tour of duty.

(b) Registered nurse. (1) Except when waived under paragraph (c) or (d) of this section, the facility must use the services of a registered nurse for at least 8 consecutive hours a day, 7 days a week.

(2) Except when waived under paragraph (c) or (d) of this section, the facility must designate a registered nurse to serve as the director of nursing on a full-time basis.

(3) The director of nursing may serve as a charge nurse only when the facility has an average daily occupancy of 60 or fewer residents.”

[Paragraphs (c) and (d) not included.]<sup>39</sup>

The National Citizen’s Coalition for Nursing Home Reform (NCCNHR) reviewed existing state minimum staffing requirements and found that, as of October 1999, 13 states and the District of Columbia had not enacted staffing standards beyond those mandated federally. Thirty-seven states had additional staffing requirements in state mandates. Of these 37 states, 15 had in place staffing mandates defined as more demanding in terms of staffing levels required than the 22 other states with mandates for staffing ratios (see Table 9).<sup>40</sup>

**Table 9. State Minimum Staffing Requirements for Nursing Homes**

No State Regulation/Law	Less Demanding State Standards*	More Demanding State Standards**
AL, AZ, DC, KY, MO, NE, NH, NM, NY, ND, SD, VT, VA, UT	AK, CO, CT, DE, HI, IN, IA, KS, LA, MD, MN, MT, NC, OH, OK, OR, RI, TN, TX, WA, WV, WY	AR, CA, FL, GA, ID, IL, ME, MA, MI, MS, NV, NJ, PA, SC, WI

\*States in this column have nurse staffing requirements specified through law and/or regulation, in addition to the Federal requirement, but the requirements are less demanding than those in the states in the third column of the table.

\*\* States in this column “require more than 2.25 hours per resident day or more than one staff member to nine residents in the day shift, 13 residents in the evening shift, and 22 residents in the night shift” (see footnote 40 for reference).

Source: National Citizens’ Coalition for Nursing Home Reform, *Federal and State Minimum Staffing Requirements for Nursing Homes*, draft, October 1999, Chapter 2, p. 2-20. Prepared in conjunction with the National Committee to Preserve Social Security & Medicare and with support of the Service Employees International Union, Washington, D.C. Printed in the appendix of HCFA’s *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>39</sup> Office of the Federal Register, National Archives and Records Administration, *Code of Federal Regulations: Public Health*, 1998, 384-385.

<sup>40</sup> National Citizens’ Coalition for Nursing Home Reform (NCCNHR) “Federal & State Minimum Staffing Requirements, October 1999”, draft as presented in HCFA’s *Report To Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, Chapter 2, p. 2-20.

Analysis of September 2000 HCFA survey data for nursing facilities reveals that on average, the nation's nursing facilities are staffing at a level of 3.24 total direct care hours per patient day. Currently, the average nursing facility employs 35.4 full-time equivalent nurse aids, 12.0 full-time equivalent licensed practical nurses, and 6.7 full-time equivalent registered nurses, for an average of 54.2 total direct care staff FTEs. This analysis is based on current survey data from 15,327 facilities, which is 90.0% of all HCFA certified facilities. Facilities were eliminated from the analysis if they did not meet the decision rules used by HCFA for acceptable data on staffing in the current survey. These decision rules are delineated later in this section.

Nationally, nursing facilities provide an average of 2.00 hours (120 minutes) of nurse aide staff time per patient per day, 0.73 hours (44 minutes) licensed practical nurse time per patient per day, and 0.51 hours (31 minutes) of registered nurse time per patient per day. Table 10 shows the same information for each state.

## Proposals and Research Regarding Staffing Ratios

**1. Expert Panel at the John A. Hartford Institute: Proposed Standards Building Upon the NCCNHR Proposal.** Groups such as NCCNHR contend that current staffing levels impair quality of care and seek greater ratios of staff to patients. In 1998, an "expert panel" convened at the John A. Hartford Institute for Geriatric Nursing to review the issues of staffing ratios and quality of care in nursing facilities. The majority of the panel concluded that the current HCFA standard is too vague and that the literature of the day supported establishing minimum ratios of staff to patients with additional staffing time for more acute nursing facility residents.

**Direct Care Standard.** The panel proposed the following standards for direct care nursing staff—a proposal that built upon the minimum standards proposed by NCCNHR.

Direct caregiver (licensed or unlicensed: RN, LP/VN, or CNA) to resident ratios:

Day Shift 1:5 residents  
Evening Shift 1:10 residents  
Night Shift 1:15 residents

Minimum licensed nurses (RN and LVN/LPN) for direct care, treatments and medications, planning coordination, and supervision at the unit level:

Day Shift 1:15 residents  
Evening Shift 1:20 residents  
Night Shift 1:30 residents

This recommended standard would equate to 4.13 hours per patient day for direct care staff (licensed plus unlicensed staff).<sup>41</sup>

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<sup>41</sup> Harrington, et al. "Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States", *The Gerontologist*, 40:5-16, 2000; National Citizens' Coalition for Nursing Home Reform (NCCNHR) "Federal & State Minimum

**Nursing Administration Standard.** The panel that convened at the John A. Hartford Institute also agreed to endorse the NCCNHR recommended minimum standard for administrative nursing staff entailing the following requirements:<sup>42</sup>

Nursing Administration:

A full-time RN Director of Nursing

A part-time RN Assistant Director of Nursing (full-time in facilities of 100 beds or more)

A part-time RN Director of In-service Education (full-time in facilities of 100 beds or more)

An RN nursing supervisor on duty at all times (24 hours, 7 days per week)

For the typical 100-bed facility, this minimum standard for nursing administrative staff represents 0.42 RN nurse administration hours per patient day.

In sum, the expert panel endorsed a full 4.55 hours per patient day minimum standard which involves 0.42 hours generally per patient day for the administrative standard, 2.93 hours per patient day for the direct care staffing standard (unlicensed or licensed staff) and 1.2 hours per patient day for direct care by licensed nurses. Additional recommendations were suggested by the panel for mealtime staffing, staff education and training, and the need for geriatric nurse practitioners to be present on staff at nursing facilities.<sup>43</sup> In addition to the minimum staffing standards, the panel agreed that adjusting direct care nursing time for patient case-mix is also an important factor for quality care in nursing facilities.

**2. HCFA Staffing Study.** In August of 2000, the Health Care Financing Administration (HCFA) submitted a report to the U.S. Congress entitled *Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*. In the report, the authors stated that the research they conducted supported a minimum staffing level of 2.75 hours of direct care nursing staff per patient day and a “preferred minimum” level of 3.0 hours of direct care nursing staff per patient day. The minimum ratio was comprised of 2.0 nurse aide hours per patient day and 0.75 LPN+RN combined hours per patient day in which RNs comprised at least 0.20 hours per patient day. The preferred minimum ratio included 2.0 nurse aide hours per patient day and 1.0 LPN+RN combined hours per patient day in which RNs comprised at least 0.45 hours per patient day. One study suggested, in addition, an optimal ratio for nurse aides of 2.9 hours per patient day.<sup>44</sup> There are two caveats regarding the meaning and strength of the conclusions reached in this HCFA report.

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Staffing Requirements”, October 1999 Draft. NCCNHR report printed in the appendix of *HCFA’s Report To Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>42</sup> Harrington, et al, “Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States”, *The Gerontologist*, 40:5-16, 2000; National Citizens’ Coalition for Nursing Home Reform (NCCNHR) “Federal & State Minimum Staffing Requirements”, October 1999 Draft. NCCNHR report printed in the appendix of *HCFA’s Report To Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>43</sup> Harrington, et al, “Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States”, *The Gerontologist*, 40 (1):5-16, 2000.

<sup>44</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

**Table 10. Average Facility Direct Care Nursing Hours Per Patient Day by Position by State, 1999-2000**

State	Number of Facilities*	Average Number of Residents per Facility**	Average Total Nursing Hours per Patient Day**	Average CNA Hours per Patient Day**	Average LPN Hours per Patient Day**	Average RN Hours per Patient Day**
US	15,327	90.3	3.24	2.00	0.73	0.51
AK	15	39.5	5.57	3.47	0.67	1.43
AL	200	107.1	3.60	2.37	0.94	0.29
AR	231	76.9	3.04	1.92	0.87	0.25
AZ	135	97.1	3.28	1.98	0.73	0.57
CA	1,149	78.8	3.47	2.16	0.76	0.56
CO	221	75.3	3.33	1.89	0.73	0.71
CT	240	115.8	3.18	2.13	0.53	0.52
DC	19	146.3	4.02	2.68	0.74	0.60
DE	40	92.2	4.00	2.49	0.65	0.85
FL	678	97.3	3.48	2.10	0.86	0.53
GA	308	103.8	3.12	1.99	0.88	0.25
HI	33	93.6	4.57	2.80	0.68	1.08
IA	437	63.7	2.75	1.72	0.51	0.51
ID	67	57.0	4.06	2.64	0.78	0.64
IL	810	99.7	2.99	1.86	0.53	0.60
IN	546	76.4	2.90	1.58	0.87	0.45
KS	352	58.0	2.76	1.68	0.56	0.51
KY	244	80.0	3.43	2.01	0.90	0.52
LA	301	94.5	2.99	1.79	0.90	0.31
MA	500	95.7	3.48	2.20	0.59	0.69
MD	231	103.4	3.36	2.06	0.67	0.63
ME	109	60.3	3.66	2.53	0.50	0.63
MI	394	100.8	3.22	2.16	0.65	0.42
MN	368	91.6	2.92	1.88	0.69	0.35
MO	512	72.4	3.18	1.88	0.81	0.49
MS	152	86.3	3.52	2.04	0.93	0.55
MT	97	59.5	3.49	2.31	0.59	0.59
NC	369	92.9	3.50	2.25	0.78	0.47
ND	78	73.6	3.47	2.24	0.75	0.48
NE	223	64.0	2.99	1.85	0.67	0.47
NH	75	89.7	3.44	2.22	0.54	0.68
NJ	336	132.5	3.27	2.07	0.61	0.60
NM	73	85.3	3.04	2.05	0.52	0.47
NV	44	76.9	4.23	2.15	0.80	1.27
NY	593	175.7	3.07	2.04	0.65	0.37
OH	953	82.7	3.47	2.08	0.83	0.56
OK	368	62.0	2.48	1.51	0.75	0.22
OR	146	67.8	2.97	2.04	0.41	0.52
PA	740	110.8	3.55	2.08	0.76	0.71
RI	88	94.3	2.88	1.93	0.33	0.62
SC	144	93.2	3.76	2.31	0.88	0.58
SD	108	62.6	2.75	1.91	0.33	0.51
TN	308	103.9	3.05	1.78	0.87	0.41
TX	1,122	73.7	3.09	1.82	0.91	0.36
UT	86	63.8	3.62	2.12	0.72	0.77
VA	254	102.2	3.31	2.03	0.87	0.41
VT	36	81.1	3.35	2.21	0.68	0.45
WA	256	78.5	3.53	2.31	0.61	0.61
WI	394	95.6	3.11	2.09	0.45	0.57
WV	111	76.9	3.67	2.20	0.91	0.56
WY	33	71.8	3.56	1.98	0.69	0.88

Source: HCFA Online Survey Certification and Reporting Data, September 2000.

\*Of 17,023 facilities, 1,696 were omitted because staffing data did not pass the data edits, resulting in 15,327 facilities.

\*\*Unweighted Facility Averages: Calculated by summing ratio/number at each facility and dividing by number of facilities.

First, the authors state that “(h)igher or lower thresholds were identified for different case mix categories”<sup>45</sup>, hence the stated ratios should not be interpreted as universal or appropriate or even necessary across all nursing facilities. Indeed, the authors further state that “refinement of methods for taking case mix into consideration will be required to establish national critical staffing levels.”<sup>46</sup>

Second, the minimum ratios outlined in the HCFA report were not consistent findings across all the studies in the report. For example, the conclusion that the minimum staffing ratio is 2.75 depends on the finding that the minimum for nurse aides (NA) is 2.0 hours per patient day and that for registered nurses (RNs) and licensed practical nurses (LPNs) combined is 0.75 hours. In only one of the studies in the report, the study of the hospital transfers of Medicare admissions (Chapter 9), did the results have consistent significant findings at the threshold of 2.0 NA hours per patient day and 0.75 LPN+RN hours per patient day. And these significant findings were apparently only consistent and strong for the sample from New York. As written in the report, “(t)he relationship between staffing and high hospital transfer rates was strongest and most consistent in the state of New York”.<sup>47</sup>

In the study on quality measures from resident assessments in the minimum data set (MDS) (Chapter 10), only one result presented for nurse aide hours was significant and the threshold in that finding was 1.08 NA hours per resident day, not 2.0, and in one state only, Ohio. In the same study, only one result out of six was significant for LPN+RN hours and, although the threshold was 1.0 hours, the result was in one state only, Ohio.

Perhaps due to the variation in the results from one study to the next, particularly the variation across the state samples, the authors state that the “report does not include any specific recommendations” noting that the “potential establishment of a regulatory minimum ratio requirement will require further research on more states in order to identify alternative minimum thresholds and optimal case-mix adjusters, and to assess relative costs and benefits of such thresholds.”<sup>48</sup> The “relative costs” of mandated standards for staffing ratios is obviously an important consideration.

## **The Estimated Cost of Proposed Staffing Ratios**

The expert panel that convened at Hartford also was not blind to the fact that a mandated requirement of minimum staffing standards would have a significant cost impact to the nation’s health care finances.<sup>49</sup> Currently, over 75% of patients in the

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<sup>45</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

<sup>46</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p. E.S.-5.

<sup>47</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, Chapter 9, p. 9-11.

<sup>48</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, p E.S.-7.

<sup>49</sup> Harrington, et al, “Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States”, *The Gerontologist*, 40:1, 5-16, 2000.

nation's nursing facilities are beneficiaries of government health care financing programs: Medicare and Medicaid.<sup>50</sup> At the same time that some consumer advocates and policymakers call for increased staffing ratios, payment levels in government financing programs have been decreased. The Medicare prospective payment system (PPS) was instituted in 1998 as mandated in the Balanced Budget Act of 1997 with a reduction in Medicare expenditures to nursing homes totaling over \$12 billion between 1998 and 2002.<sup>51</sup>

Add to this change in Medicare, some states changed Medicaid reimbursement from a retrospective cost-based system to a prospective case-mix based system in conjunction with the repeal of the Boren amendment; a combination that in some states apparently lowered the Medicaid reimbursement rates paid to nursing facilities relative to what they otherwise would have been.<sup>52</sup> Research supports findings that Medicaid reimbursement rates have an impact on staffing levels. Zinn found a positive correlation between Medicaid reimbursement rates and the staffing level for RNs and LPNs.<sup>53</sup> This positive correlation means that lower Medicaid payments were associated with lower nursing staff levels. Cohen and Spector found a positive correlation between Medicaid rates and LPN staffing levels.<sup>54</sup> A third study by Aaronson et al. found that as the Medicaid reimbursement decreased the level of direct care staff decreased.<sup>55</sup>

The call for greater staffing levels suggests that the present-day reduction in government funding of long term care would have to be reversed, and funding increased, to enable long term care providers to meet proposed staffing levels in a manner that maintains the fiscal soundness and viability of long term care services. To illustrate the additional funds involved, we estimated the costs of the additional staff that would be required for different staffing ratios being proposed or suggested.

**Staffing Data.** Current Online Survey Certification and Reporting (OSCAR) data from HCFA were used to determine the present levels of nursing staff. The additional staff required to meet greater staffing ratios were calculated from the present levels of staff. Edits were applied to the data and cases eliminated if they did not pass the edits. These edits were used by HCFA in their staffing report for current survey data.<sup>56</sup>

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<sup>50</sup> HCFA, *Online Survey Certification and Reporting Data*, September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>51</sup> Department of Health and Human Services (U.S.). "Medicare Program: Prospective Payment System and Consolidated Billing for Skilled Nursing Facilities," 42 C.F.R. § 409-413, 424, 483, and 489 in *Federal Register*, 63 at 26252, May 12, 1998. (See Table IX.1-Savings to the Medicare Program at 26304).

<sup>52</sup> See Chapter 2 in Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>53</sup> Zinn, J.S., "The Influence of Nurse Wage Differentials on Nursing Home Staffing and Resident Care Decisions". *The Gerontologist*, 33:721-729, 1993.

<sup>54</sup> Cohen, J.W., and Spector, W.D., "The Effect of Medicaid Reimbursement on Quality of Care in Nursing Homes", *Journal of Health Economics*, 15:23-28, 1996.

<sup>55</sup> Aaronson, W.E., Zinn, J.S., and Rosko, M.D. "Do For-Profit and Not-for-Profit Nursing Homes Behave Differently?" *The Gerontologist*, 34:775-786, 1994.

<sup>56</sup> Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000, Volume I: 3.4.1 Data Sources, page 3-13. Edits used by HCFA on current survey data were applied. Edits based upon a comparison of current survey data with past survey data for a facility were not used in the analysis in this paper.

Facilities were excluded if:

- their OSCAR data did not have the number of patients, i.e., if the number of patients was not greater than zero;
- if their total direct care staff hours per patient day were less than 0.5 hours or greater than 12 hours;
- if their total beds were less than total patients; or
- if they had 60 or more beds but zero RN hours/staff.

Applying these edits to the current survey data available in OSCAR data as of September 2000 resulted in the elimination of 1,696 facilities out of 17,023 for a total of 15,327 facilities used in the analysis. Additional data edits were used for the cost estimate of the proposed standard for nursing administration supported by the Hartford Panel and NCCNHR. These additional edits are discussed below with the cost estimates for the nursing administration standard.

**Method for Cost Estimation for Direct Care Staffing Ratios.** The method for calculating the estimated costs for each proposed ratio first entailed determining and selecting the facilities with staffing ratios below the proposed staffing ratio. The cost estimates were based upon those facilities below the proposed ratio to determine what additional FTEs would be required for the relevant position in order to increase staffing at those facilities to the proposed standard. The number of patients as recorded in the OSCAR data at the facilities below the proposed ratio was the assumed daily census. Since OSCAR data report FTEs and not hours, FTEs required by the proposed ratio had to be calculated. The total FTEs required by the proposed ratio was calculated from the number of patients at these facilities (see footnote 57).<sup>57</sup> The actual FTEs in the position at these facilities was then subtracted from the total FTEs required by the proposed ratio to get the additional FTEs needed to staff at the proposed ratio. The additional FTEs were then converted into total annual additional hours required with an FTE being 35 hours as used by HCFA in the OSCAR data (see footnote 58).<sup>58</sup> The wage rates were then multiplied by the additional required annual hours. The estimates for direct care positions based upon wages were also increased by 37% based upon data from the Bureau of Labor Statistics to account for the costs associated with benefits, the employers share of employee social security taxes, and paid leave (see footnote 59).<sup>59</sup> If paid leave (e.g., vacation, sick days, personal days) was excluded, the benefit increase would have been 26%, however, paid leave was included to account for the cost incurred (e.g., overtime, contract staff, or additional FTEs) to fill or cover vacancies when staff are on leave in order to maintain staffing at the proposed staffing

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<sup>57</sup> The number of patients from the OSCAR data in facilities below the proposed ratio were considered to be the average daily census. This daily census was multiplied by the proposed ratio and this result was multiplied by 7 days to get the total staff hours needed in the 7-day week to provide care at the proposed ratio. The total weekly staff hours was then divided by 35 hours to put the total weekly hours in terms of FTEs. The formula for total required FTEs is: (Average census X proposed ratio X 7)/35.

<sup>58</sup> The formula for annual required additional hours is ((Additional FTEs X 35)/7) X 365.

<sup>59</sup> Data from the Bureau of Labor Statistics (BLS) (U.S. Department of Labor) indicates that benefits, which includes paid leave and employer-paid taxes, for nurses in health services as of March 2000 were 36.7% of wages. If paid leave was excluded, the percent would be 25.7%, but paid leave needs to be included in the estimate because the cost estimation needs to account for the fact that costs are incurred (e.g., overtime and contract staff) to maintain the staffing levels when staff are on paid leave. See Table 15 in the BLS release on employer costs for employee compensation for health services ("Table 15. Employer costs per hour worked for employee compensation and costs as a percent of total compensation: Private industry health services workers, by industry and occupational group, March 2000") at <http://stats.bls.gov/news.release/ecec.t15.htm>.

ratio. Finally, the cost estimates calculated using the data for the 15,327 facilities were extrapolated to the 17,023 facilities to arrive at an estimate for the total provider community. This extrapolation assumes that, among the facilities with missing data, the facilities below the proposed ratio would require the same proportional increase in FTEs to meet the proposed ratio. The cost estimation for the standard for nursing administration followed the basic method above with some modification discussed later.

**Wage Data.** The hourly wages for CNAs, LPNs, and RNs used in the analysis were those reported by the Bureau of Labor Statistics (BLS) from their 1998 Occupational Employment Survey. An important ingredient in recruiting staff is the ability to offer wages that are competitive with other health providers. It seems apparent that any mandated staffing ratio that calls for a substantial increase in staff can only be accomplished, if at all, when there is wage parity between nursing homes and their major competitors for labor such as acute care hospitals. An hourly wage that approximated the current market and prevailing wage also requires inflating the 1998 wages to 2001 by a reasonable inflation factor. We used the hourly wages for four nursing positions reported for the Standard Industry Code (SIC) 805, Nursing/Personal Care Facilities (which includes skilled nursing care facilities, intermediate care facilities, and nursing and personal care facilities not elsewhere classified), and the SIC 806,

**Table 11. Calculation of Hourly Wages for Cost Estimates.**

	1998*	1999	2000	2001
<b>SIC 805, Nursing/Personal Care Facilities</b>				
CNA Hourly Wage	\$7.93	\$8.31	\$8.62	\$8.95
LPN Hourly Wage	\$13.42	\$14.06	\$14.58	\$15.15
RN Hourly Wage	\$18.62	\$19.51	\$20.24	\$21.02
Health Services Managers Wage	\$23.25	\$24.37	\$25.27	\$26.25
SNF Annual Percent Change in Wages at 4 <sup>th</sup> Quarter of Year**		4.8%	3.7%	3.9%
<b>SIC 806, Hospitals</b>				
CNA Hourly Wage	\$8.67	\$8.96	\$9.30	\$9.65
LPN Hourly Wage	\$13.39	\$13.85	\$14.36	\$14.90
RN Hourly Wage	\$21.12	\$21.84	\$22.65	\$23.51
Health Services Managers Wage	\$27.38	\$28.31	\$29.36	\$30.47
Hospital Annual Percent Change in Wages at 4 <sup>th</sup> Quarter of Year**		3.4%	3.7%	3.8%

\*Wages from Bureau of Labor Statistics Occupational Employment Survey, 1998

\*\* *Health Care Cost Review, Second Quarter 2000*—Standard & Poor's DRI. McGraw-Hill: Lexington, MA. For SNFs, used Table 7.6, "HCFA Nursing Home without Capital Market Basket – Quarterly History," at line "%CHYA" under "Wage & Salary." For Hospitals, used Table 7.1, "HCFA Hospital Prospective Reimbursement Market Basket (PPS) – Quarterly Forecasts" (Calendar Year), at line "%CHYA" under "Wage & Salary."

Hospitals. Each wage was inflated to 2001 by the respective wage component in the relevant market basket of price inputs in the Standard and Poor's DRI. For nursing homes, the inflation index is the wage component of the "HCFA Nursing Home without Capital Market Basket" and for hospitals the index is the wage component of the "HCFA Hospital Prospective Reimbursement Market Basket (Calendar Year)."<sup>60</sup> Table 11 shows the base hourly wages for 1998 from the BLS, the inflation factors for each year thereafter, and the resulting wages adjusted for inflation for 1999, 2000, and 2001. For each proposed staffing ratio, two estimates were calculated. One estimate was calculated using the 2001 wages for nursing homes reported in Table 11. The other estimate, to reflect wage parity, used the greater hourly wage in 2001 across long term care and acute care settings for each position.<sup>61</sup> The hourly wage used for CNAs to reflect wage parity for new recruits was \$9.65. For LPNs the hourly wage was \$15.15, for RNs, \$23.51, and for nursing administration, \$30.47, as an estimate of wage parity.

The estimates of cost we discuss below concern new recruits only. The estimates that assume parity in wages between long term care and acute care providers do not include the additional funds that would be required to increase the wages of current nursing staff in nursing homes to a level that represents parity with the wages paid similar positions in acute care hospitals. Thus, the estimates reported here are conservative in terms of the actual dollars required to offer wages that help facilitate the retention of current staff in order to maintain staffing at the proposed levels. The estimates are also conservative in that underlying this method is the assumption that the patient census remains at the 2000 level. As the population of the United States ages, the number of citizens requiring long term care services in nursing homes will increase. Clearly, as the number of patients in nursing homes increases, the cost of maintaining the staffing ratios being proposed will increase beyond the estimates provided in this report. Further, as demand for nursing personnel increases well beyond the available supply, wage inflation is a real possibility. So as demand exceeds supply, costs for additional staff may be much greater than modeled here. Ironically, if staffing ratios are mandated at levels being proposed, the demand will increase much faster than presently predicted due to the growth in the elderly population. That is, mandated staffing ratios at levels being proposed could cause wage inflation among nursing staff at rates greater than the rates presently modeled in projections.

## **Estimate of Cost to Meet the Proposed Hartford Panel/NCCNHR Standards**

### **Estimate of Cost to Meet the Proposed Hartford Panel/NCCNHR Direct Care Staffing Ratio:<sup>62</sup>**

Among the nursing facilities nationwide, 86.5% (13,265 with a daily census of 1,287,998 patients) would have to increase their nursing staff to obtain a level of 4.13 hours of direct care staff per patient day. This increase translates into an additional 337,279

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<sup>60</sup> *Health Care Cost Review, Second Quarter 2000* Standard & Poor's DRI. McGraw-Hill: Lexington, MA.

<sup>61</sup> In the November 2000 edition of this paper, we provided the cost estimates based upon wage parity only. For comparison we provide in this paper the estimates based upon nonparity wages as well.

<sup>62</sup> Numbers for additional FTEs and staff hours needed to meet ratios that are presented in the text do not include the decimal points or fractions of whole numbers used in the calculations but are stated for convenience as the rounded whole numbers.

FTEs of direct care staff (CNAs, LPNs, and RNs) or 615,534,810 additional hours annually to meet the proposed staffing ratio among the facilities currently below that ratio.<sup>63</sup> These additional hours were multiplied by composite hourly wages. A composite of \$12.00<sup>64</sup> was used to estimate costs based upon current wage structures (nonparity) and \$12.78<sup>64</sup> to obtain an estimate representing wage parity. The results were then multiplied by a factor of 1.37 to include benefits and employer paid taxes. Each estimate was then finally multiplied by 1.11065 to account for the facilities excluded due to missing data (17,023 divided by 15,327) to adjust the estimate to account for all facilities. This adjustment assumes that, among the facilities with missing data, the facilities below the proposed ratio would require the same proportional increase in FTEs to meet the proposed ratio. This assumption holds for all estimates extrapolated to include facilities excluded due to missing data. **The calculation for this proposed staffing ratio yields a total estimate ranging in Year 2001 alone from \$11.239 billion based upon nonparity wage rates to \$11.970 billion based upon the estimated parity rates (Table 12).** The estimated costs in years after 2001 would be greater than the costs for 2001 due to projected increases in patient volume and ordinary wage inflation.

### **Estimate of Cost to Meet the Ratio for Administrative Nursing Staff Supported by the Hartford Panel and NCCNHR.<sup>65</sup>**

As discussed above, the panel that convened at the John A. Hartford Institute for Geriatric Nursing to review the issues of staffing ratios endorsed the NCCNHR recommended minimum staffing standard with the inclusion of 0.42 RN nurse administration hours per patient day for the typical facility.<sup>66</sup> The exact ratio required in practice would vary according to bed size, since the standard for an assistant director of nursing and director of in-service education varies by bed size.

**Proposed Administration Standards and Method of Cost Estimation.** Facilities with less than 100 beds only need a part-time staff member in the positions of assistant nursing director and director of in-service education according to the standard proposed by the Hartford Panel and NCCNHR, with the exact hours adjusted proportionately by size or volume. Although the proportional adjustments are not explicitly stated with the recommended standard, it seems reasonable to apply the standard of 0.42 hours of nursing administration staff per patient day to facilities with a bed size below 100 to estimate the costs of the standard. This method may slightly underestimate the costs for facilities with a bed size under 100 since they would, according to the proposed standard, need 4.8 FTEs<sup>67</sup> (35-hour FTE) for nursing facility supervisors as well as one

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<sup>63</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>64</sup> The composite wages were calculated by multiplying the hourly wage for each position by its proportion of total direct care staff and adding the results. This procedure weighted the respective position wages. RNs represented .1352356 of direct care staff among the 15,327 facilities in the analysis. LPNs accounted for a proportion of .2290962 and CNAs, .6356682.  $(\$21.02 \times .1352356) + (\$15.15 \times .2290962) + (\$8.95 \times .6356682) = \$12.00$ .  $(\$23.51 \times .1352356) + (\$15.15 \times .2290962) + (\$9.65 \times .6356682) = \$12.78$ .

<sup>65</sup> Numbers for additional FTEs and staff hours needed to meet ratios that are presented in the text do not include the decimal points or fractions of whole numbers used in the calculations but are stated for convenience as the rounded whole numbers.

<sup>66</sup> Harrington, et al. "Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the United States", *The Gerontologist*, 40:1, 5-16, 2000.

<sup>67</sup> The nursing facility supervisors cover 24 hours per day for 7 days a week which is 168 hours per week. Dividing 168 hours by 35 hours equals 4.8 FTEs. OSCAR data contains FTEs using the definition of 35 hours per FTE.

FTE for the director of nursing. However, for estimation purposes we used 0.42 hours per patient day for nursing administration for facilities with less than 100 beds.

For facilities with the number of beds 100 or more, the proposed standard translates into a firm number of FTEs. For facilities with a bed size of 100 or more, the proposal requires one FTE for the nursing director, one for the assistant director, one for the director of education, and 4.8 FTEs (see footnote 67) for the nursing facility supervisors yielding a total of 7.8 FTEs for directors and nurses with administrative duties. For the cost estimation we used 7.8 FTEs for nursing administration as the standard for facilities with 100 or more beds.<sup>68</sup>

The current FTEs for nursing administration at facilities was calculated using the fields "RN Director of Nurses" and "Nurses with Admin. Duties." All other position categories recorded in OSCAR refer to direct caregivers.<sup>69</sup>

Cost estimations, given the different standards, were performed separately for facilities with less than 100 beds and for facilities with 100 or more beds and then summed together. Among the 15,327 facilities passing earlier edits, 7,281 had less than 100 beds and 8,046 had 100 or more beds. For this estimation, aside from the edits noted earlier, facilities were excluded if the number of FTEs in nursing administration was less than one FTE. This exclusion resulted in 7,044 facilities with less than 100 beds and 7,991 facilities with 100 or more beds.

The estimation method followed the same general method outlined earlier by first determining what facilities were below the proposed standard and then determining the additional annual hours required at these facilities to meet the standard with cost calculated for these additional annual hours. This method was followed for the group of facilities below 100 beds and the group with 100 or more beds using the relevant staffing standard for nursing administration in each group. The additional annual hours were multiplied by an hourly wage of \$26.56 in the nonparity estimate and an hourly rate of \$30.47 in the estimate representing wage parity across hospitals and nursing homes (Table 11). The resultant wage costs were multiplied by 1.37 to add in the benefits (which include paid leave) and employer paid taxes. To include an annual bonus that data show administrative staff receive, the wage costs were also multiplied by 1.425 to provide a separate estimate that encompassed a benefit and bonus structure together (see footnote 70).<sup>70</sup> Results were adjusted to extrapolate the final

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<sup>68</sup>In the November 2000 edition of this paper, the standard of 0.42 hours per patient day was used in the estimate of cost incurred among facilities with 100 or more beds, as well as among those with less than 100 beds, in order to staff to the proposed standard for nursing administration. This earlier method resulted in a slightly greater estimate of cost for facilities with 100 or more beds. However, given the distinction in the proposed standard defined by bed size, the use of the standard of 7.8 nursing administration FTEs for facilities with 100 or more beds is more appropriate. As noted in the text above, applying the standard of 0.42 hours per patient day to the facilities with less than 100 beds likely underestimates the cost slightly to these facilities.

<sup>69</sup>The staffing categories under nursing services of "Form HCFA-671" are: "RN Director of Nurses," "Nurses with Admin. Duties," "Registered Nurses," "Licensed Practical/Licensed Vocational Nurses," "Certified Nurse Aides," "Nurse Aides in Training," and "Medication Aides/Technicians."

<sup>70</sup>The research by the Hospital and Healthcare Compensation Service shows that directors of nurses in nursing homes typically receive an annual bonus of 5.52%. The estimated wage costs incurred to increase staff to meet the nursing administration standards proposed by the Hartford Panel and NCCNHR were increased by 5.5% in the estimate including a bonus structure. See Hospital and Healthcare Compensation Service (HHCS), *AAHSA Nursing Home Salary & Benefit Report, 1999-2000*, HHCS:Oakland, New Jersey.

estimate to the universe of 17,023 facilities of which 8,499 have less than 100 beds and 8,524 have 100 or more beds to account for the facilities with missing data.

**Estimation for Facilities with less than 100 beds.** Among the 7,044 facilities with less than 100 beds and usable data, 81.6% (5,750 facilities with a daily census of 327,828 patients) had less than 0.42 hours of nursing administration per patient day, requiring an additional 13,358 FTEs in nursing administration or 24,378,664 additional hours annually to meet the standard. The estimates below include a factor of 1.20656 (8,499 divided by 7,044) to extrapolate the estimates to all facilities below 100 beds.

Using the nonparity wage of \$26.56 per hour, the annual additional cost among facilities with less than 100 beds is \$1,070,303,683 with 37% benefits and \$1,113,272,079 with the benefits and a 5.5% bonus included. Using the parity wage of \$30.47, the annual additional cost is \$1,227,867,214 with 37% benefits and \$1,277,161,154 with benefits and a 5.5% bonus included.

**Estimation for Facilities with 100 beds or more.** Among the 7,991 facilities with 100 beds or more and usable data, 6,772 or 84.7% had less than 7.8 FTEs designated as nursing administration, requiring an additional 25,150 FTEs in nursing administration or 45,897,965 additional hours annually. The estimates below include a factor of 1.06670 (8,524 divided by 7,991) to extrapolate the estimates to all facilities with 100 beds or more.

Using the nonparity wage of \$26.56 per hour, the annual additional cost among facilities with 100 beds or more is \$1,781,494,070 with 37% benefits and \$1,853,013,905 with the benefits and a 5.5% bonus included. Using the parity wage of \$30.47, the annual additional cost is \$2,043,754,680 with 37% benefits and \$2,125,803,226 with benefits and a 5.5% bonus included.

**Total Estimation for Nursing Administration Standard.** Summing the results for facilities below 100 beds and facilities with 100 beds or more, indicates that, **in total, from \$2.852 billion to \$3.403 billion additional funds are required in 2001 depending on the wage rate and benefit structure to address the standard for staffing nursing administration supported by the Hartford Panel and NCCNHR (Table 12).** As mentioned above, the estimated costs in years after 2001 would be greater than the costs for 2001 due to projected increases in patient volume and ordinary wage inflation.

**Total Cost to Meet NCCNHR/Hartford Panel Proposed Standards for Nursing Direct Care and Administrative Staff:**

An additional **\$14.091 billion to \$15.373 billion in 2001 alone** would be required, according to the estimates above, to meet the combined ratios for direct care and administrative staff recommended by NCCNHR and subsequently modified and endorsed by the Hartford Panel (Table 12).

## Estimate of Costs to Meet Staffing Ratios Recommended in HCFA Report

### Cost Estimated to Meet HCFA's Minimum Staffing Ratios:<sup>71</sup>

As noted above, the minimum staffing ratios outlined in the HCFA report to Congress are 2.0 CNA hours per patient day, 0.55 LPN hours per patient day, and 0.20 RN hours per patient day.<sup>72</sup>

Slightly over half (54.5%) of nursing facilities (8,355 facilities with a daily census of 760,557 patients) would need to increase their CNA staff to obtain a ratio of 2.0 CNA hours per patient day, entailing in the aggregate among these facilities an additional 66,258 CNA FTEs or an additional 120,920,065 CNA hours annually.<sup>73</sup>

To meet the ratio for LPNs of 0.55 LPN hours per patient day, 36.6% of the facilities (5,605 facilities with a daily census of 515,410 patients) would need to increase their LPN staff. Across these facilities, 17,662 additional LPN FTEs will be needed for a total of 32,233,424 additional LPN hours annually based upon the present-day patient census.<sup>74</sup>

A staffing ratio of 0.20 RN hours per patient day would require 30.5% of the nursing facilities (4,681 facilities with a daily census of 422,825 patients) to increase their RN staff, totaling an additional 7,477 FTEs or 13,644,850 RN hours annually among these facilities to meet the ratio under current patient volume.<sup>75</sup>

The additional annual hours required for each position was multiplied by the relevant hourly wage and a factor of 1.37 to include benefits and employer paid taxes. Finally, the estimates were multiplied by 1.11065 (17,023 divided by 15,327) to adjust the estimate to account for all facilities (i.e., to account for facilities excluded in the analysis due to missing data).

The final estimates of added funds required for the additional staff are: 1) for additional CNA staff, from \$1,646,724,387 based upon the nonparity wage to \$1,775,518,473 based upon the parity wage; 2) \$743,050,925 for additional LPN staff (the nonparity and parity wage are the same for LPNs); and 3) from \$436,416,316 to \$488,113,586 for additional RN staff.

**The total added cost for all additional nursing staff needed to meet the minimum staffing ratio in the HCFA report is for 2001 from \$2.826 billion based upon nonparity wages to \$3.007 billion based upon parity wages assuming present-day patient volume (Table 12).** As with all the estimates, the costs in years after 2001

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<sup>71</sup>Numbers for additional FTEs and staff hours needed to meet ratios that are presented in the text do not include the decimal points or fractions of whole numbers used in the calculations but are stated for convenience as the rounded whole numbers.

<sup>72</sup>Health Care Financing Administration. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000.

<sup>73</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>74</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>75</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

would be greater than the costs for 2001 due to projected increases in patient volume and ordinary wage inflation.

### **Cost Estimated to Meet HCFA's "Preferred Minimum" Staffing Ratios:<sup>76</sup>**

The preferred minimum staffing ratios suggested in HCFA's report to Congress represent an increase in the ratio for RNs outlined under the minimum ratio. The ratio for RNs under the preferred scheme is 0.45 RN hours per patient day. The ratios for CNAs and LPNs in the preferred scheme are the same as those under the minimum ratios: 2.0 CNA hours per patient day and 0.55 LPN hours per patient day.<sup>77</sup> The costs to increase staff to meet these ratios for CNAs and LPNs were outlined above.

Slightly over two-thirds (68.2%) of the nursing facilities in the nation (10,450 facilities with a daily census of 1,003,970 patients) would have to increase their RN staff to reach a staffing ratio of 0.45 RN hours per patient day. An increase entailing an additional 44,446 RN FTEs or 81,113,640 RN hours annually among these facilities under current patient volume.<sup>78</sup>

The increases in annual hours to meet the preferred ratios involve an added cost of 1) from \$1,646,724,387 in nonparity wages to \$1,775,518,473 in parity wages for additional CNA staff; 2) \$743,050,925 for additional LPN staff (the nonparity and parity wage are the same for LPNs); and 3) from \$2,594,335,331 to \$2,901,656,691 for the additional RN staff.

**The total additional cost for staff to meet the preferred minimum staffing ratio in the HCFA report is from \$4.984 billion to \$5.420 billion in 2001 (Table 12).**

### **Cost Estimated to Meet HCFA's Optimal Staffing Ratios:<sup>79</sup>**

The staffing ratios used in the cost estimate of HCFA's suggested optimal ratios are 2.9 CNA hours per patient day, 0.55 LPN hours per patient day, and 0.45 RN hours per patient day. The optimal ratios represent an increase in the CNA ratio from the 2.0 hours in the minimum and preferred minimum ratios to 2.9 hours. The LPN hours used in our estimate of an optimal ratio are assumed the same as those suggested in the minimum and preferred minimum ratio. The 0.45 RN hours included in this estimate is the preferred minimum ratio for RNs outlined in HCFA's report.<sup>80</sup>

Among all nursing facilities nationally, 92.2% (14,131 patients with a daily census of 1,315,251 patients) would need to increase their CNA staff to obtain a ratio of 2.9 CNA hours per patient day. In the aggregate for these facilities, this entails an additional

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<sup>76</sup> Numbers for additional FTEs and staff hours needed to meet ratios that are presented in the text do not include the decimal points or fractions of whole numbers used in the calculations but are stated for convenience as the rounded whole numbers.

<sup>77</sup> See the executive summary in Health Care Financing Administration, *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000 where the minimum, preferred, and CNA optimal ratios are summarized.

<sup>78</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>79</sup> Numbers for additional FTEs and staff hours needed to meet ratios that are presented in the text do not include the decimal points or fractions of whole numbers used in the calculations but are stated for convenience as the rounded whole numbers.

<sup>80</sup> See the executive summary in Health Care Financing Administration, *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*, Summer 2000 where the minimum, preferred, and CNA optimal ratios are summarized.

**Table 12. Estimate of Costs in 2001 to Increase Nursing Staff to Meet Proposed Staffing Ratios in Nursing Homes**

Staffing Ratio (Hours of Staff Per Patient Day (PPD))	Additional Estimated Costs for the Year 2001 (Dollars in Billions)	
	Estimate Based Upon 2001 Nonparity Wages* (Billions)	Estimate Based Upon 2001 Parity Wages* (Billions)
	<b>Hartford Institute/NCCNHR Proposals</b>	
4.13 Hours of Direct Care Staff PPD	\$ 11.239	\$ 11.970
RN Nurse Administration Standard**	\$ 2.852 to \$ 2.966***	\$ 3.272 to \$ 3.403***
<b>Total</b>	<b>\$ 14.091 to \$ 14.205***</b>	<b>\$ 15.242 to \$ 15.373***</b>
<b>HCFA's Minimum Staffing Ratios</b>		
2.0 CNA Hours PPD	\$ 1.647	\$ 1.776
0.55 LPN Hours PPD	\$ .743	\$ .743
0.20 RN Hours PPD	\$ .436	\$ .488
<b>Total</b>	<b>\$ 2.826</b>	<b>\$ 3.007</b>
<b>HCFA's Preferred Minimum Staffing Ratios</b>		
2.0 CNA Hours PPD	\$ 1.647	\$ 1.776
0.55 LPN Hours PPD	\$ .743	\$ .743
0.45 RN Hours PPD	\$ 2.594	\$ 2.902
<b>Total</b>	<b>\$ 4.984</b>	<b>\$ 5.420****</b>
<b>HCFA's Optimal Staffing Ratios</b>		
2.9 CNA Hours PPD	\$ 6.696	\$ 7.220
0.55 LPN Hours PPD	\$ .743	\$ .743
0.45 RN Hours PPD	\$ 2.594	\$ 2.902
<b>Total</b>	<b>\$ 10.033</b>	<b>\$ 10.864****</b>

\* Nonparity wages are nursing home wages as projected for 2001 based upon historical wages in nursing homes. Parity wages are wages projected for 2001 based upon a rate that represents wage parity between nursing home and acute care hospitals.

\*\*The proposed RN administrative standard is 0.42 RN administrative hours per patient day for facilities with less than 100 beds and 7.8 nursing administration FTEs for facilities with 100 beds or more.

\*\*\*The lower estimate of cost for the standard for RN administrative staff includes a benefit structure of 37% of wages (which includes paid leave as part of the percent). The greater estimate includes the 37% benefits and an annual bonus of 5.5% that some compensation data show nursing managers receive.

\*\*\*\*Components do not sum exactly to total due to rounding.

269,417 CNA FTEs or an additional 491,685,423 CNA hours annually.<sup>81</sup> The ratio for LPNs, being the same in this estimate as that for the minimum and preferred minimum ratios above, requires an additional 17,662 LPN FTEs and a total of 32,233,424 additional LPN hours annually.<sup>82</sup> The ratio for RNs, which is identical to that in the preferred minimum ratio, entails an additional 44,446 RN FTEs or 81,113,640 RN hours annually.<sup>83</sup>

<sup>81</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>82</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

<sup>83</sup> HCFA *Online Survey Certification and Report Data*, available as of September 2000. Analysis by AHCA Health Services Research and Evaluation.

These increases in annual hours for the assumed optimal ratios involve an added cost of 1) from \$6,695,914,152 to \$7,219,616,935 for additional CNA staff; 2) \$743,050,925 for additional LPN staff (the nonparity and parity wages are the same for LPNs); and 3) from \$2,594,335,331 to \$2,901,656,691 for the additional RN staff.

**The total added cost for all additional nursing staff needed to meet the optimal ratios used here is from \$10.033 billion to \$10.864 billion in 2001 alone assuming no increase in present-day patient volume (Table 12).** To reiterate, the estimated costs in years after 2001 would be greater than the costs for 2001 due to projected increases in patient volume and ordinary wage inflation.

There is no doubt that any staffing ratio being suggested by consumer advocates or in government reports will require substantial increases in funding. Depending upon the ratios proposed, the added costs can range from approximately \$3 billion to over \$15 billion in 2001 alone. The estimates do not include the additional funds that would be required to increase the wages of current nursing staff in nursing homes to a level that represents parity with the wages paid similar positions in acute care hospitals. The estimates also assume no growth in, or hold constant, the patient volume in nursing homes. As the patient volume increases with the aging of the baby boomer generation, the additional costs will naturally be greater. And as demand increasingly surpasses supply, the rate of inflation in wages can be expected to spiral upward.

### Concluding Remarks

The demand for nursing staff in nursing homes is projected to increase dramatically during the first half of the twenty-first century. This dramatic increase will occur even if the staffing ratios in nursing services were kept at their present level. Greater staffing ratios, even increases in staffing justified by research to enhance quality, will only further increase the demand.

Clearly the challenge for today and the future is to develop and maintain a supply of nursing labor to adequately meet the demand. It is a challenge fiscally in terms of providing the additional funding to train and recruit more individuals into nursing services. Aside from the monetary resources required to meet the challenge, the issue is magnified by one simple fact: the pool of persons in the general work force relative to the aged population will continually decrease over the next 50 years. Researchers in one study concluded that the ratio of workers to retirees will be five workers per retiree in 2005 and thereafter decline to where in 2050 the ratio is only 2.75 workers per retiree.<sup>84</sup> While the demand grows in terms of the sheer numbers of persons—especially, the elderly—needing long term care, the ratio of workers in the population per aged persons decreases. So, even if the same proportion of total workers who work in nursing services today was maintained over the next 50 years, the fact that the ratio

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<sup>84</sup> Pizer, S.D., Frakt, A. B., and Kidder, D. E., "Development and Analyses of New Models for Financing Long-Term Care: Project Summary Report," September 27, 2000. Abt Associates Inc.: Cambridge, MA.

of workers to retirees will drop radically warns of a major crisis in the supply of available staff for nursing.

If the nation is going to meet this challenge, particularly one that includes increasing staffing ratios to further the quality of care provided, government has a crucial role in implementing and funding initiatives that develop a labor supply to meet the growing demand for nursing services. Long term care providers also have an important role to play by maintaining a work environment that is professionally satisfying and rewarding to the staff who provide the quality care that the elderly and non-elderly alike deserve.

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