

Results of the  
2002 AHCA Survey of Nursing Staff  
Vacancy and Turnover in Nursing Homes

Health Services Research and Evaluation  
American Health Care Association

Staff

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## Abstract

The American Health Care Association undertook a survey to examine vacancy and turnover rates at nursing homes and to assess their ability to recruit new staff. Analysis of the survey data indicates that nearly 96,000 full-time equivalent health care professionals were needed to fill vacant nursing positions at nursing homes across the United States in 2002. The majority of the vacancies (nearly 52,000) were for Certified Nurse Assistant positions. An additional 13,900 Staff RN and 25,100 LPN positions were also estimated to be vacant. Coupled with the large number of vacancies, vacancy rates among Staff RNs and LPNs were also high, averaging 15.0 percent and 13.2 percent, respectively. With the exception of CNAs, annual turnover was about 50 percent across job categories. The large number of vacancies and the high level of turnover among CNAs (71 percent overall) has been of particular concern to nursing homes as CNAs are responsible for the majority of direct, hands-on nursing home resident care. Recruitment of Staff RNs and LPNs remained a challenge in 2002. Recruitment of CNAs became somewhat easier.

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## **Executive Summary**

Nursing homes, the public, and government have all expressed concern about the ability of nursing homes to recruit and retain nursing staff. In order to measure the extent of the difficulty nursing homes are having in recruiting and retaining nursing staff, the American Health Care Association undertook a survey to examine vacancy and turnover rates at nursing homes and to assess their ability to recruit new staff.

### **Survey Design**

The 2002 AHCA vacancy and turnover survey was sent out to all 16,317 eligible nursing homes in the United States. Overall, 6,155 nursing homes (37.7 percent) completed and returned the questionnaire. The survey instrument collected information across six nursing staff positions on the number of established and vacant positions as of June 30, 2002, the number of employees who left these facilities over the six month period from January 1 through June 30, 2002, and on the relative difficulty the nursing home experienced in recruiting key nursing staff. Data was collected in terms of full-time equivalent (FTE) positions for six nursing staff categories: Directors of Nursing (DONs), RNs with Administrative responsibilities, Staff RNs, Licensed Practical and Vocational Nurses (LPNs), Certified Nurse Assistants (CNAs), and non-certified nursing aides. Data for the first five main nursing staff categories are reported. Data on non-certified aides were insufficient for meaningful analysis.

### **Vacancies and Vacancy Rates**

In 2002, nursing homes had numerous nursing staff related vacancies. Overall, nearly 96,000 full-time equivalent health care professional were needed to fill vacant nursing positions at nursing homes across the United States. The majority of the vacancies were for Certified Nurse Assistant positions. Overall, nearly 52,000 CNA positions were estimated to be vacant. In addition, about 13,900 Staff RN and 25,100 LPN positions were estimated to be vacant.

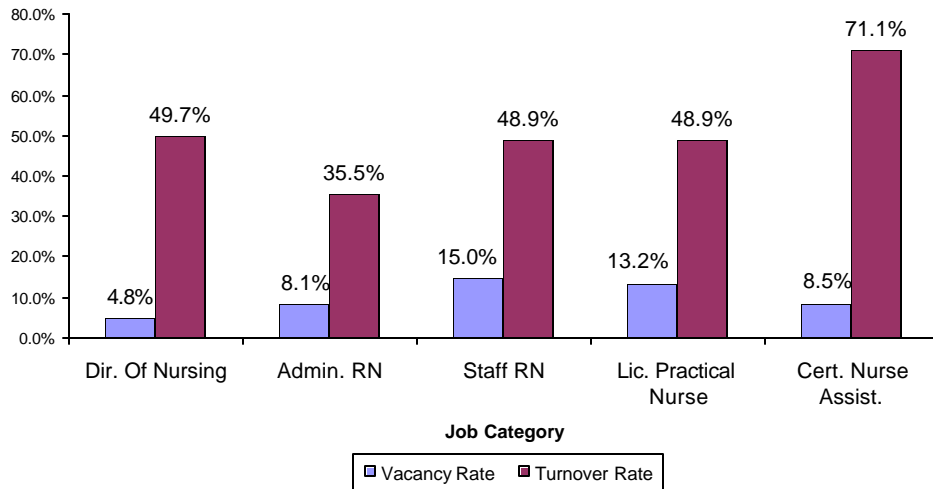
Nationally, vacancy rates exhibited a high degree of variability across nursing positions. As shown in Figure 1, vacancy rates in nursing homes were particularly high among Staff RNs (15.0 percent) and among LPNs (13.2 percent). Vacancy rates for CNAs and Administrative RNs stood at about 8 percent, and just under 5 percent among DONs.

A comparison of hospital-based and freestanding nursing facilities in urban and rural locations shows that with the exception of CNAs, rural hospital-based facilities have the lowest vacancy rate across the five major nursing position job categories. Conversely, urban freestanding facilities generally had the highest vacancy rates. Vacancy rates for Staff RNs ranged from a relative low of 9.6 percent at rural hospital-based facilities to a relative high of 16.2 percent at urban freestanding facilities, a difference of 6.6 percentage points. CNA vacancy rates were much more stable across facility types, generally lying within a range of 8 to 9 percent.

State level analysis shows that vacancy rates among Staff RNs and LPNs are high across the majority of states. Average state vacancy rates for Staff RNs were over 15 % in 49 percent of

states and over 10 % in 92 percent of states. State level vacancy rates for LPNs were nearly as high, with about 24 percent of states reporting average facility vacancy rates above 15 %, and 84 percent reporting vacancy rates above 10 %. The range of vacancy rates for CNAs, Administrative RNs, and DONs were considerably lower, with 76 percent, 80 percent, and 96 percent of states having average vacancy rates of less than 10 % for each position, respectively.

**Figure 1: National Vacancy and Turnover Rates in Nursing Homes, 2002**



## Turnover Rates

Staff turnover continued to be high in 2002. Annual turnover for Staff RNs, LPNs, and DONs stood at about 50 percent across all three positions. Although turnover among Administrative RNs was only about 36 percent, turnover among CNAs remained very high. Nationally, CNA turnover was estimated at over 71 percent in 2002. The turnover rate was consistently high across the country. Average annual CNA turnover rates were below 40 % in only 4 percent of states, and 60 % or less in only 35 percent of states. CNA turnover rates exceed 60 % in 65 percent of states, exceeded 80 % in 37 percent of states, and were above 100 % in 20 percent of states. The large number of vacancies and the high level of turnover among CNAs has been of particular concern to nursing homes as CNAs are responsible for the majority of direct, hands-on nursing home resident care.

## Difficulty in Recruiting Nursing Staff

Recruiting new direct care staff remains a challenge for nursing facilities. Overall, about two-thirds of facilities indicated that it was harder to recruit Staff RNs and LPNs in 2002 than during the previous year. This was a slight improvement over 2001, when about three-quarters of facilities found it harder to recruit Staff RNs and LPNs. Recruitment of CNAs appears to have been somewhat easier in 2002. Overall, about 30 percent of facilities found it harder to recruit new CNAs in 2002, a dramatic improvement over the nearly 60 percent that found it more difficult in 2001. Similarly, about 21 percent of facilities found it easier to recruit CNAs in 2002 compared to the 12 percent in 2001.

## 1.0 Introduction

Nursing homes, the public, and the government have expressed concern about the ability of nursing homes to recruit and retain nursing staff. Government reports express concern about the availability of nurses and nurse aide in the current and future workforce<sup>1</sup> at the same time that studies suggest that increases in nurse staffing levels can further the improvement in quality of care.<sup>2</sup> Many complex factors contribute to the problems faced by nursing home administrators in staffing nursing services, including competition for staff with other health care providers and the challenge of enabling a rewarding and satisfying work environment.<sup>3</sup> Given its complexity, it is beyond the scope of this study to examine the numerous facets of nursing services staffing issues. Rather we focus on the extent of turnover and vacancies in nursing homes, the results of which highlight the need for continued action by government in the form of new policies and programs, and by nursing homes to better recruit and maintain the personnel who provide quality care.

Although turnover rates, and the accompanying vacancies, among nursing staff in nursing homes has long been recognized as a major issue, most studies on the subject have focused on turnover and vacancies within a specific state or metropolitan area only.<sup>3</sup> Recognizing the need for national information, the research staff at the American Health Care Association (AHCA) conducted their first national study of vacancies and turnover in nursing homes in 2001.<sup>4</sup>

In this report, we present the results of the second national study on vacancy and turnover conducted by AHCA in 2002. As in the 2001 study, the extent of vacancies and turnover in nursing homes in 2002 is reported for five staff categories (Directors of Nursing, Registered Nurses with Administrative Duties, Staff Registered Nurses, Licensed Practical Nurses, and Certified Nursing Assistants). In the next section (Section 2.0), we provide a brief overview of the survey design and methods, with a more detailed overview contained in Appendix D. Then we present national results (Section 3). A comparison of national vacancy and turnover rates for rural and urban freestanding facilities, as well as rural and urban hospital-based facilities, is provided in Section 4 with additional reference tables in Appendix A. We outline regional and state-level results in Sections 5 and 6, respectively, with additional reference tables in Appendices B and C. We offer concluding remarks at the end (Section 7).

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<sup>1</sup> GAO (United States General Accounting Office), *Nursing Workforce: Recruitment and Retention of Nurses and Nurse Aides Is a Growing Concern*, GAO-01-750T, May 17, 2001; Health Resources and Services Administration, U.S. Department of Health and Human Services, *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2002*, July 2002.

<sup>2</sup> Centers for Medicare and Medicaid Services (CMS), U.S. Department of Health and Human Services, *Appropriateness of Minimum Staffing Ratios in Nursing Homes: Phase II Final Report*, December 2001.

<sup>3</sup> See Decker, F.H., K.J. Dollard, and K.R. Kraditor, "Staffing of Nursing Services in Nursing Homes: Present Issues and Prospects for the Future," *Seniors Housing & Care Journal*, 2001, 9(1):3-26.

<sup>4</sup> See the report of the 2001 study, Health Services Research and Evaluation, American Health Care Association, *Results of the 2001 AHCA Nursing Position Vacancy and Turnover Survey*, February 7, 2002 available at [http://www.ahca.org/research/vacancysurvey\\_020207.htm](http://www.ahca.org/research/vacancysurvey_020207.htm)

## 2.0 Overview of Survey Design and Methodology

In this section, we provide a brief overview of the design of the survey and the survey methodology. A more detailed description of the content of the survey, the editing procedures used to help ensure the reliability of the data, categories used in the analysis, and the computation of vacancy and turnover rates can be found in Appendix D.

As with the 2001 study, the 2002 vacancy and turnover survey sample included all nursing homes in the United States—a census sample. Of the 16,317 nursing homes eligible to participate in the survey and sent a questionnaire, 6,155 returned usable questionnaires included in the analysis—a 37.7 percent response rate.

**Content of Survey.** Across six nursing staff positions, the survey instrument collected information on the number of established and vacant positions as of June 30, 2002, and the number of employees who left these facilities over the six-month period from January 1 through June 30, 2002. This information was collected in terms of Full Time Equivalents (FTEs). The staff categories included Directors of Nursing (DONs), Registered Nurses with Administrative Duties (Administrative RNs), Staff Registered Nurses (Staff RNs), Licensed Practical and Licensed Vocational Nurses (LPNs), Certified Nurse Assistants (CNAs), and other non-certified nursing aides. Results for the first five main nursing staff categories are presented in the report. Data on non-certified aides were insufficient for meaningful analysis.

Respondents were also asked to rate the relative difficulty their nursing home experienced in recruiting new Staff RNs, LPNs, and CNAs at the time of the survey in 2002 compared to one year ago. Respondents could indicate that recruitment was easier, about the same, or more difficult than a year ago, or that they did not know.

**Data Edits.** Traditional editing procedures were applied to the data to ensure reliability of the information. These edits included examining frequency distributions for relevant variables and omitting data from the analysis where individual and/or derived responses were at the extremes of the distribution, such as the 1<sup>st</sup> and 99<sup>th</sup> percentile of the distribution for some edits. The numerous edits used are listed in Appendix D along with the criteria for each edit.

**Categories of Analysis.** As mentioned in the introduction, we present vacancy and turnover results 1) in the aggregate at the national level, 2) in a comparison of national vacancy and turnover rates for rural and urban freestanding and hospital-based facilities, 3) by region in the United States<sup>5</sup>, and 4) for each state. Results on the question about the relative difficulty of

<sup>5</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				

recruiting are reported for the nation, by rural and urban freestanding and hospital-based facilities, and by region. Given sample sizes, reporting answers to the perceived difficulty of recruitment is not meaningful or reliable at the state level.

**Deriving National Vacancy and Turnover Rates.** National vacancy and turnover rates were estimated by applying population adjustments to the relevant subgroups of nursing homes to weight the results so that the estimates accounted for, proportionally, the representation of each subgroup in the universe of nursing facilities. National estimates were adjusted by four subgroups: 1) rural freestanding facilities; 2) urban freestanding nursing homes; 3) rural hospital-based facilities; and 4) urban hospital-based facilities.

**Region and State Analysis.** Region and state vacancy and turnover rates are not population adjusted like the national estimates because the decrease in sample size at the region and state level makes such weighted estimation unreliable.

**Calculation of Vacancy Rates.** All vacancy rates are presented as percentages. Vacancy rates were calculated for each job category by dividing the sum of vacant positions for the job category by the sum of established positions. For national estimates, the total sum of established and vacant positions are derived using the population adjustment to represent all 16,317 nursing facilities included in the study. For region and state rates, the established and vacant positions used in calculating the rate were the positions reported in the sample of facilities with usable data only. The estimate of the total number of vacancies for a region or state were imputed by dividing the number of vacancies for each staff category in the sample of responding facilities by the response rate for that category. Given the small sample sizes entailed in the regional and state estimates, the results are less reliable and should be interpreted with caution and perspective of these limitations.

**Calculation of Turnover Rates.** All turnover rates are presented as percentages. Turnover rates were calculated for each job category by dividing the sum of terminations reported for the six months by the sum of established positions. This resulting six-month rate was multiplied by two to derive an annualized turnover rate estimate. For national turnover estimates, the sum of established positions and terminations are those derived by the population adjustment. For region and state turnover rates, the established positions and terminations used in calculating the rate were the positions and terminations reported by the sample of facilities with usable data only.

As mentioned previously, a more detailed description of the survey design and methodology is provided in Appendix D.

### 3.0 National Results

#### 3.1 Vacancies and Vacancy Rates in 2002

In 2002, nursing homes continued to have substantial openings for nursing-related staff (Table 1). Overall, nearly 96,000 full-time-equivalent (FTE) health care professionals were needed to fill vacant nursing positions at nursing homes across the United States. Vacancy rates were highest among Staff RNs (15.0 percent) and LPNs (13.2 percent), which corresponded to about 13,900 and 25,100 vacant FTE positions, respectively.

In terms of the overall total, the greatest need for nursing staff in nursing homes was for CNAs. Although the vacancy rate was a relatively low 8.6 percent, nearly 52,000 FTE CNA positions were estimated to be vacant. Lastly, there were about 800 DON and 4,000 Administrative RN FTE positions estimated to be vacant in the United States in 2002, which corresponded to vacancy rates of 4.8 and 8.1 percent, respectively.

#### 3.2 Turnover and Turnover Rates in 2002

Staff turnover continues to be high in America’s nursing homes (Table 2). Turnover rates were highest among CNAs (71.1 percent). The high level of turnover among CNAs is of particular concern to nursing homes as CNAs are responsible for the majority of direct, hands-on nursing home resident care. Turnover rates were also high for DONs, Staff RNs, and LPNs—averaging about 50 percent per annum? while the turnover rate for Administrative RNs was 35.5 percent.

Table 1: Population Adjusted National Vacancy Rate Estimates, as of June 30, 2002

Job Category	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Vacant Positions	Population Adjusted Vacancy Rate	Lower Limit of 95% Confidence Interval <sup>6</sup>	Upper Limit of 95% Confidence Interval
DON	5,488	33.6%	16,452	797	4.8%	4.5%	5.2%
Admin RN	4,771	29.2%	49,380	3,998	8.1%	7.8%	8.4%
Staff RN	4,709	28.9%	92,922	13,922	15.0%	14.6%	15.3%
LPN	5,255	32.2%	189,653	25,118	13.2%	13.0%	13.5%
CNA	5,499	33.7%	612,017	51,959	8.5%	8.3%	8.6%

Table 2: Population Adjusted National Annualized Turnover Rate (based on six months ending June 30, 2002)

Job Category	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Turnover	Population Adjusted Turnover Rate	Lower Limit of 95% Confidence Interval	Upper Limit of 95% Confidence Interval
DON	5,442	33.4%	16,454	8,179	49.7%	46.4%	53.0%
Admin RN	4,709	28.9%	49,343	17,499	35.5%	34.1%	36.8%
Staff RN	4,664	28.6%	93,298	45,603	48.9%	47.5%	50.2%
LPN	5,196	31.8%	189,857	92,785	48.9%	47.9%	49.9%
CNA	5,394	33.1%	612,932	436,066	71.1%	70.0%	72.3%

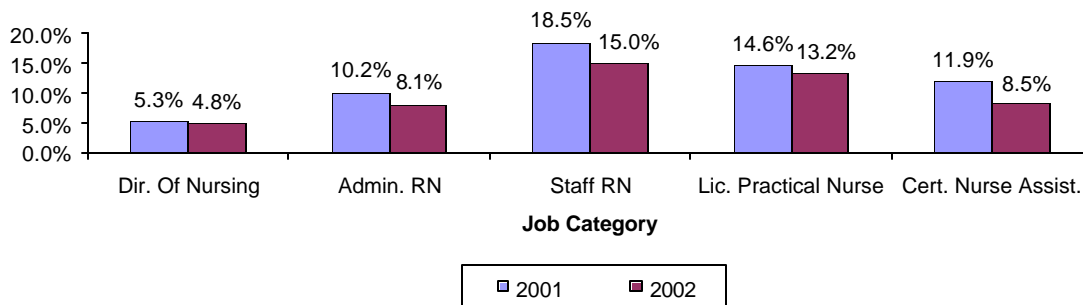
<sup>6</sup> There is a 95 percent certainty, statistically, that the true population mean lies within the range of the lower and upper limits of 95 percent confidence interval. Appendix D describes the methods used to compute the confidence interval.



### 3.3 Comparison of National Vacancy and Turnover Rates from 2001 Survey<sup>7</sup> and 2002 Survey

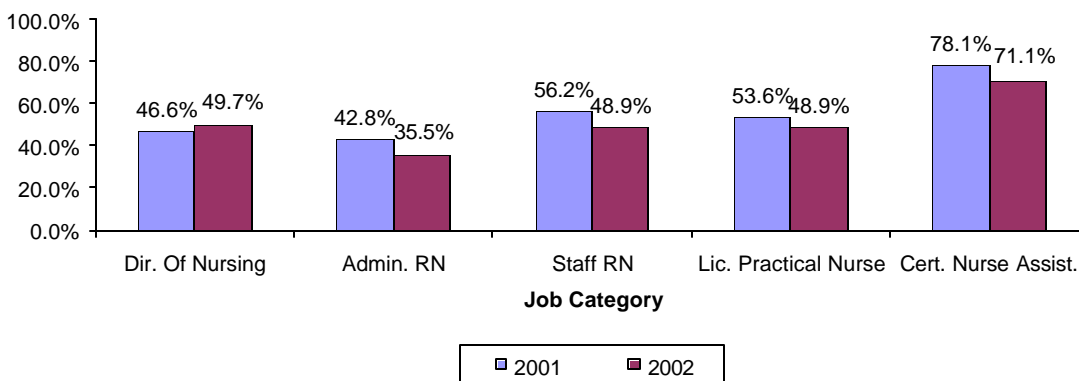
**2001 and 2002 Vacancy Rates.** Vacancy rates decreased slightly from 2001 to 2002, resulting in an estimated decline in vacant nursing positions in nursing homes, from about 114,000 vacancies in 2001 to about 96,000 in 2002—a 15.9 percent decrease. Vacancies for CNAs dropped about 15,000 accounting for most of the decrease in vacancies from 2001 to 2002. The vacancy rate for CNAs dropped 3.4 percentage points from 11.9 percent in 2001 to 8.5 percent in 2002. The vacancy rates for other positions also dropped from 2001 to 2002—0.5 percentage points for DONs, 2.1 percentage points for Administrative RNs, 3.5 points for Staff RNs, and 1.4 points for LPNs.

**Figure 2: National Vacancy Rates: 2001 and 2002**



**2001 and 2002 Turnover Rates.** Nursing home staff turnover rates fell slightly between 2001 and 2002 for all positions except DONs. Turnover decreased 7.3 percentage points between 2001 and 2002 for, respectively, Administrative RNs and Staff RNs. The decrease for LPNs was 4.7 percentage points and 7.0 points for CNAs. DON turnover increased by 3.1 percentage points between 2001 and 2002.

**Figure 3: National Turnover Rates: 2001 and 2002**



<sup>7</sup> Percents for 2001 were abstracted from Health Services Research and Evaluation, American Health Care Association, *Results of the 2001 AHCA Nursing Position Vacancy and Turnover Survey*, February 7, 2002 available at [http://www.ahca.org/research/vacancysurvey\\_020207.htm](http://www.ahca.org/research/vacancysurvey_020207.htm).

### 3.4 *Difficulty in Recruiting Staff*

Recruiting new direct care staff remains a challenge for nursing facilities. Overall, about two-thirds of facilities indicated that it was harder to recruit RNs and LPNs in 2002 at the time of the survey than a year earlier (Table 3). This was a slight improvement over 2001, when about three-quarters of the facilities in the sample found it harder to recruit RNs and LPNs than the previous year (Table 4). While few facilities found it easier to recruit RNs and LPNs, a larger proportion (29.0 percent and 33.0 percent, respectively) found the extent of difficult to be the same in 2002 than a year ago.

Unlike for licensed nurses, nursing facilities found it somewhat easier to recruit nurse assistants in 2002 than the year before. About 30 percent of the facilities found it more difficult to recruit CNAs in 2002, which is a marked improvement over the 2001 survey results when nearly 60 percent of facilities found it more difficult to recruit nursing assistants. This change between 2001 and 2002 is reflected in the fact that 20.7 percent of the facilities found it easier to recruit CNAs in 2002 than the previous year when about 11.8 percent of facilities perceived it to be easier to recruit CNAs than at the time of the 2001 survey. The nearly twofold increase in the percentage of facilities finding recruitment of nursing assistants easier between the 2001 survey and the 2002 survey is the most noteworthy result on changes in facilities perceived difficulty in the recruitment process.

Table 3: Difficulty in Recruiting Staff in 2002 Relative to One Year Ago in 2001

Job Category	Facilities Responding	Percent of Facilities		
		Easier	Same	More Difficult
RN	5,770	3.1	29.0	67.9
LPN	5,770	4.0	33.0	63.1
CNA	5,770	20.7	49.8	29.6

Table 4: Difficulty in Recruiting Staff in 2001 Relative to One Year Ago in 2000<sup>7</sup>

Job Category	Facilities Responding	Percent of Facilities		
		Easier	Same	More Difficult
RN	6,568	2.9	22.0	75.1
LPN	6,568	3.8	20.4	75.8
CNA	6,568	11.8	30.0	58.2

## **4.0 National Rural/Urban & Freestanding/Hospital-Based Results**

### ***4.1 Vacancy Rates in 2002***

Across most nursing positions, the rural hospital-based facilities had the lowest vacancy rate (Table 5). The vacancy rate for Administrative RNs ranged from 5.6% at rural hospital-based facilities to 8.7% at urban freestanding facilities. The rate for Staff RNs ranged from 9.6% at rural hospital-based facilities to 16.2% at urban freestanding facilities. For every position except CNAs, urban freestanding facilities had the greatest vacancy rate on June 30, 2002.

### ***4.2 Turnover Rates in 2002***

Similar to the pattern for vacancy rates, urban freestanding nursing facilities experienced the highest turnover rate in every job category except CNAs in 2002. For CNAs, rural freestanding facilities had the greatest turnover rate. The CNA turnover rate at rural freestanding facilities was 76.4%, while that for urban freestanding facilities was 72.4%. Hospital-based facilities, whether rural or urban, experienced the lowest turnover rates across all job categories, at or below 30% for all positions except CNAs where the rate was about 40%.

### ***4.3 Comparison of National Vacancy and Turnover Rates from 2001 Survey and 2002 Survey***

As discussed above, vacancy and turnover rates declined between 2001 and 2002 according to the AHCA survey results. For the DON position, urban hospital-based facilities had a substantial decrease in turnover between 2001 and 2002 while other facilities experienced substantial increases (Table 5). This result is reflected in the fact the urban hospital-based facilities also experienced a greater reduction in the vacancy rate for DONs than other facilities. For all other nursing positions, both vacancy and turnover rates dropped between 2001 for 2002 across rural and urban hospital-based and freestanding facilities. However, the decrease in turnover for Administrative RNs was minimal at rural hospital-based facilities, changing from 20.7% in 2001 to 20.3% in 2002.

### ***4.4 Difficulty in Recruiting Staff***

For Staff RNs, LPNs, and CNAs, a greater percent of urban hospital-based facilities, compared to other facilities, reported that recruitment was easier in 2002 compared to a year ago (Table 6). Clearly, a greater proportion of urban facilities than rural facilities perceived that recruitment for CNAs was easier at the time of the 2002 survey than a year ago. Nearly a quarter (24.2%) of the urban freestanding facilities and 22.0% of urban hospital-based facilities thought recruitment of CNAs was easier compared to 15.0% of rural freestanding and 18.1% of rural hospital-based facilities.

Table 5: Estimates of Vacancy and Annualized Turnover Rates for 2001 and 2002 by Rural/Urban Status and Hospital Affiliation

Job Category		Vacancy Rates		Turnover Rates	
		2001 <sup>8</sup>	2002	2001 <sup>8</sup>	2002
DON	<i>Rural/Urban Status - Hospital Affiliation</i>				
	Rural, Freestanding	4.8%	4.6%	45.2%	50.1%
	Urban Freestanding	5.7%	5.4%	50.8%	53.9%
	Rural, Hospital-Based	3.7%	3.2%	19.9%	27.8%
Admin RN	<i>Rural/Urban Status - Hospital Affiliation</i>				
	Rural, Freestanding	8.2%	7.4%	38.7%	33.0%
	Urban Freestanding	11.1%	8.7%	46.7%	37.7%
	Rural, Hospital-Based	6.0%	5.6%	20.7%	20.3%
Staff RN	<i>Rural/Urban Status - Hospital Affiliation</i>				
	Rural, Freestanding	17.9%	13.7%	54.6%	47.0%
	Urban Freestanding	19.9%	16.2%	61.9%	54.2%
	Rural, Hospital-Based	12.2%	9.6%	31.8%	24.9%
LPN	<i>Rural/Urban Status - Hospital Affiliation</i>				
	Rural, Freestanding	13.2%	11.4%	50.3%	45.8%
	Urban Freestanding	15.4%	14.0%	57.4%	52.5%
	Rural, Hospital-Based	12.0%	10.0%	37.4%	29.2%
CNA	<i>Rural/Urban Status - Hospital Affiliation</i>				
	Rural, Freestanding	11.2%	8.3%	81.8%	76.4%
	Urban Freestanding	12.3%	8.6%	80.3%	72.4%
	Rural, Hospital-Based	9.0%	8.3%	47.5%	41.1%
	Urban, Hospital-Based	12.0%	8.9%	45.1%	38.1%

Table 6: Difficulty in Recruiting Staff in 2002 Relative to One Year Ago by Job Category, Rural/Urban Status and Hospital Affiliation

Job Category	Urban/Rural Status and Hospital Affiliation	Facilities Responding	Percent of Facilities		
			Easier	Same	More Difficult
Staff RN	Rural, Freestanding	1,977	3.0	32.5	64.5
	Urban Freestanding	3,282	2.9	26.2	71.0
	Rural, Hospital-Based	288	3.1	36.5	60.4
	Urban, Hospital-Based	223	6.3	30.5	63.2
LPN	Rural, Freestanding	1,977	3.7	34.3	62.0
	Urban Freestanding	3,282	4.1	30.2	65.7
	Rural, Hospital-Based	288	1.7	43.1	55.2
	Urban, Hospital-Based	223	7.6	48.0	44.4
CNA	Rural, Freestanding	1,977	15.0	49.8	35.3
	Urban Freestanding	3,282	24.2	49.0	26.8
	Rural, Hospital-Based	288	18.1	53.8	28.1
	Urban, Hospital-Based	223	22.0	57.0	21.1

<sup>8</sup>Percents for 2001 were abstracted from Health Services Research and Evaluation, American Health Care Association, *Results of the 2001 AHCA Nursing Position Vacancy and Turnover Survey*, February 7, 2002 available at [http://www.ahca.org/research/vacancysurvey\\_020207.htm](http://www.ahca.org/research/vacancysurvey_020207.htm).

## **5.0 Regional Results**

### **5.1 *Vacancy Rates in 2002***

Vacancy rates differed considerably across regions and job categories in 2002, particularly it appears in the case of DONs and Administrative RNs (Table 7). Vacancy rates for DONs were, compared to other job categories, more consistent across regions. The DON vacancy rates ranged from 3.6% in the Mountain region to 7.6% in West South Central, a 4.0% difference. The vacancy rates for Administrative RNs were somewhat higher ranging from 5.7% in West North Central to 13.4% in West South Central, while the rates for Staff RNs went from a low of 12.3% in West North Central to a high of 17.7% in Mountain states. Regional vacancy rates for LPNs ranged from 11.2% in West North Central to 15.8% in the Middle Atlantic. By contrast, CNA vacancy rates only went from 7.2% in Pacific states to 9.6% in Mountain states, a 2.4% range.

### **5.2 *Turnover Rates in 2002***

CNA turnover rates in 2002 were highest and exhibited the most volatility across regions among the five staff categories, ranging from 45.7% in Middle Atlantic to 111.1% in West South Central (Table 7). Despite the wide range of CNA turnover rates, however, CNA vacancy rates were quite similar across regions. Turnover rates were the greatest in West South Central in four of the five staffing categories? DONs, Administrative RNs, LPNs and CNAs? and among the highest for Staff RNs. The Mountain region experienced the greatest turnover rate among Staff RNs.

DON turnover rates ranged from 35.2% in New England to 76.6% in West South Central while the rates for Administrative RNs went from a low of 25.0% in Middle Atlantic to a high of 50.7% in West South Central. Among Staff RNs, West North Central experienced the lowest turnover (38.6%), while Mountain states experienced the greatest turnover (69.1%). LPNs turned over ranged from a low of 35.1% in Middle Atlantic to a high of 64.7% in West North Central.

### **5.3 *Recruitment Difficulties***

Perceived recruitment difficulties for RNs and LPNs were relatively high across regions (Table 8). Overall, between 63.8 percent of the nursing homes in West South Central to 74.4% in New England found it more difficult to recruit RNs in 2002 than one year ago in 2001. Difficulty was slightly less for LPNs, ranging from a low of 55.9% for facilities in West North Central to a high of 72.5% in East South Central.

Clearly, the greatest difference among regions is in perceived difficulty of recruiting CNAs. In New England, 33.9% of the respondents found recruitment for CNAs easier at the time of the 2002 survey than one year ago, while in East South Central only 9.7% found it easier. Overall, regions found it much easier to recruit CNAs than LPNs or Staff RNs.

Table 7: Vacancy Rate, Estimated Vacancies, and Annualized Turnover Rate on June 30, 2002 by Job Category and Region

		<i>2002 Vacancy Results</i>				<i>2002 Turnover Results</i>	
Job Category	Region	Total Facilities in Region	Percent Facilities in Sample with		Estimated Total Vacancies*	Percent Facilities in Sample with	
			Vacancy Data	Vacancy Rate		Turnover Data	Turnover Rate
DON	New England	1,081	31.0%	4.7%	52	30.0%	35.2%
	Middle Atlantic	1,763	30.8%	4.0%	71	30.1%	35.8%
	South Atlantic	2,353	41.1%	3.9%	92	41.0%	58.5%
	East South Central	1,051	43.1%	4.6%	49	43.1%	51.7%
	West South Central	2,049	24.2%	7.6%	157	24.1%	76.6%
	East North Central	3,205	32.0%	5.7%	184	31.7%	44.0%
	West North Central	2,228	39.6%	4.2%	95	39.2%	39.2%
	Mountain	795	38.6%	3.6%	29	38.9%	51.1%
	Pacific	1,792	26.7%	5.6%	101	26.7%	63.5%
Admin RN	New England	1,081	27.9%	9.2%	422	27.7%	29.6%
	Middle Atlantic	1,763	28.1%	6.9%	563	27.3%	25.0%
	South Atlantic	2,353	38.2%	8.8%	674	37.7%	42.8%
	East South Central	1,051	38.9%	8.4%	244	38.5%	47.8%
	West South Central	2,049	16.9%	13.4%	447	16.8%	50.7%
	East North Central	3,205	28.0%	7.3%	689	27.5%	32.1%
	West North Central	2,228	33.5%	5.7%	298	32.9%	27.9%
	Mountain	795	34.3%	9.1%	177	34.6%	44.4%
	Pacific	1,792	22.5%	10.1%	469	22.3%	39.3%
Staff RN	New England	1,081	25.8%	17.4%	1,535	25.7%	47.9%
	Middle Atlantic	1,763	26.3%	16.9%	2,542	25.8%	44.9%
	South Atlantic	2,353	35.0%	14.4%	1,812	35.1%	53.2%
	East South Central	1,051	36.0%	13.1%	567	35.5%	66.9%
	West South Central	2,049	16.0%	14.8%	741	15.8%	60.1%
	East North Central	3,205	28.4%	14.8%	2,760	28.1%	44.4%
	West North Central	2,228	36.7%	12.3%	1,182	36.4%	38.6%
	Mountain	795	37.2%	17.7%	832	36.1%	69.1%
	Pacific	1,792	23.0%	13.8%	1,470	22.8%	45.1%
LPN	New England	1,081	25.9%	15.7%	1,791	25.8%	41.5%
	Middle Atlantic	1,763	27.9%	15.8%	4,245	27.6%	35.1%
	South Atlantic	2,353	39.5%	14.0%	4,684	39.5%	50.5%
	East South Central	1,051	41.8%	11.6%	1,715	41.3%	57.3%
	West South Central	2,049	25.0%	12.0%	2,774	24.4%	64.7%
	East North Central	3,205	30.5%	12.5%	4,275	30.3%	47.1%
	West North Central	2,228	39.1%	11.2%	1,897	38.1%	43.8%
	Mountain	795	38.7%	12.8%	1,018	38.1%	59.9%
	Pacific	1,792	24.9%	12.0%	2,133	24.9%	45.5%
CNA	New England	1,081	30.3%	8.2%	3,754	30.0%	53.4%
	Middle Atlantic	1,763	29.9%	9.5%	8,168	29.7%	45.7%
	South Atlantic	2,353	41.6%	8.5%	8,457	40.8%	68.0%
	East South Central	1,051	42.2%	8.1%	3,364	41.6%	89.8%
	West South Central	2,049	24.3%	8.6%	5,579	22.9%	111.1%
	East North Central	3,205	32.5%	8.2%	9,402	32.0%	75.2%
	West North Central	2,228	40.2%	8.4%	5,559	39.4%	74.3%
	Mountain	795	40.3%	9.6%	2,540	39.5%	94.1%
	Pacific	1,792	26.0%	7.2%	4,574	25.9%	56.6%

\*Regional estimated vacancies do not equal national total since region-level estimates are not derived using a population adjustment weight as was applicable in the national estimate.

Table 8: Difficulty in Recruiting Staff by Job Category and Region in 2002 Relative to One Year Ago in 2001

Job Category	Region	Facilities			
		Responding	Easier	Same	Harder
Staff RN	New England	360	3.1	22.5	74.4
	Middle Atlantic	584	2.2	25.0	72.8
	South Atlantic	1,019	4.2	31.1	64.7
	East South Central	466	3.9	28.8	67.4
	West South Central	497	1.8	34.4	63.8
	East North Central	1,094	2.9	26.3	70.8
	West North Central	915	3.0	31.3	65.8
	Mountain	321	3.4	26.8	69.8
	Pacific	514	2.5	32.1	65.4
LPN	New England	360	4.4	30.3	65.3
	Middle Atlantic	584	2.9	30.0	67.1
	South Atlantic	1,019	3.9	30.5	65.6
	East South Central	466	2.8	24.7	72.5
	West South Central	497	2.4	26.2	71.4
	East North Central	1,094	4.7	37.1	58.2
	West North Central	915	5.1	39.0	55.9
	Mountain	321	4.4	37.7	57.9
	Pacific	514	3.9	34.6	61.5
CNA	New England	360	33.9	45.6	20.6
	Middle Atlantic	584	18.2	55.8	26.0
	South Atlantic	1,019	19.8	50.1	30.1
	East South Central	466	9.7	50.6	39.7
	West South Central	497	11.7	43.5	44.9
	East North Central	1,094	26.4	50.9	22.7
	West North Central	915	20.8	50.2	29.1
	Mountain	321	18.7	49.2	32.1
	Pacific	514	23.4	48.1	28.6

## 6.0 State Results

### 6.1 Vacancy Rates in 2002

Vacancy rates vary somewhat across job categories and across states<sup>9</sup>. As shown in Table 9, average vacancy rates for DONs were relatively low (5 % or less) in over 60 percent of states and 10 % or less in 96 percent of states. Vacancy rate for Administrative RNs were somewhat higher, with 65 percent of states reporting average vacancy rates of between 5 % and 10 %.

By contrast, vacancy rates for Staff RNs and LPNs were considerably higher. Average state vacancy rates for Staff RNs were over 15 % in 49 percent of states and over 10 % in 92 percent of states. State level vacancy rates for LPNs were nearly as high, with about 24 percent of states reporting average facility vacancy rates above 15 %, and 84 percent reporting vacancy rates above 10 %.

Average state vacancy rates for CNAs were more modest. Over 76% of the states had CNA vacancy rates between 5 percent and 10 percent only. The states with the lowest reported CNA vacancy rates were Hawaii (3.6%) and North Dakota (4.6%), while Delaware and the District of Columbia reported the highest, 16.1% and 16.7% respectively (Table 11).

A summary of vacancy rates and vacancies for each job category by state is provided in Table 11, with more detail provided in the reference tables in Appendix C.

Table 9: Distribution of State Vacancy Rates on June 30, 2002 by Job Categories

Vacancy Rate:	Number of States Within Rate Ranges				
	5% or less	>5% to 10%	>10% to 15%	>15% to 20%	>20%
DON	31	18	1	0	1
Admin. RN	8	33	5	3	2
Staff RN	0	4	22	22	3
LPN	1	7	31	11	1
CNA	2	39	8	2	0

<sup>9</sup> Care should be taken when interpreting the estimated total number of vacancies and vacancy and turnover rates as the sample size for many individual states are quite small.



## 6.2 Turnover Rates in 2002

As with vacancy rates, within each job category turnover rates vary across states<sup>9</sup> (Tables 10). As noted previously, turnover rates are by far the highest among CNAs. Average annual CNA turnover rates were below 40 % in only 4 percent of states, and 60 % or less in only 35 percent of states. CNA turnover rates exceeded 60 % in 65 percent of states, exceeded 80 % in 37 percent of states, and were above 100 % in 20 percent of states.

Fortunately, turnover among RN and LPN positions were substantially lower. Average Staff RN and LPN turnover rates exceeded 60 % in 20 percent of states and 22 percent of states, respectively. Average turnover rates for DONs were similar, with 22 percent of states reporting rates above 60 percent. Turnover rates for Administrative RNs were the lowest, with only 2 percent of states reporting average turnover above 60 % and 31 percent reporting turnover rates above 40 %.

A summary of turnover rates for each job category by state is provided in Table 12, with more detail provided in the reference tables in Appendix C.

Table 10: Distribution of State Annualized Turnover Rates by Job Categories (based upon six months ending June 30, 2002)

Vacancy Rate:	Number of States Within Rate Ranges				
	20% or less	>20% to 40%	>40% to 60%	>60% to 80%	>80%
DON	2	23	15	7	4
Admin. RN	3	32	15	0	1
Staff RN	0	12	29	7	3
LPN	0	18	22	11	0
CNA	0	2	16	14	19

Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes

Table 11: Vacancy Rate and Estimated Vacancies on June 30, 2002 by Job Category and State\*

Job Category:	<i>DON</i>		<i>Admin. RN</i>		<i>Staff RN</i>		<i>LPN</i>		<i>CNA</i>	
State	Vac. Rate	Estimated Vacant Positions	Vac. Rate	Estimated Vacant Positions	Vac. Rate	Estimated Vacant Positions	Vac. Rate	Estimated Vacant Positions	Vac. Rate	Estimated Vacant Positions
Alaska	0.0%	0	0.0%	0	11.4%	10	3.0%	2	8.3%	31
Alabama	1.8%	4	10.5%	71	10.9%	98	11.9%	479	8.1%	856
Arkansas	3.5%	8	6.0%	22	13.9%	66	11.3%	299	6.7%	601
Arizona	1.8%	3	7.1%	29	17.1%	165	12.1%	257	10.0%	588
California	7.2%	95	13.0%	379	14.6%	1,039	12.7%	1,744	7.5%	3,516
Colorado	4.3%	10	8.1%	39	15.2%	211	9.8%	229	7.7%	507
Connecticut	7.5%	19	9.7%	116	18.1%	391	16.0%	531	6.2%	742
District of Columbia	22.2%	5	22.6%	27	24.0%	48	16.1%	69	16.7%	222
Delaware	0.0%	0	16.7%	25	19.1%	66	20.8%	121	16.1%	276
Florida	4.1%	29	8.6%	217	13.9%	622	14.3%	1,603	8.1%	2,701
Georgia	5.4%	19	9.5%	86	15.3%	164	15.0%	816	8.5%	1,216
Hawaii	3.6%	2	2.1%	3	8.2%	34	8.9%	47	3.6%	70
Iowa	2.9%	14	5.8%	57	13.0%	258	9.9%	269	7.6%	889
Idaho	2.7%	2	9.8%	21	20.0%	77	11.8%	79	8.5%	201
Illinois	9.4%	80	9.0%	191	13.4%	675	12.0%	878	8.0%	2,151
Indiana	5.6%	31	6.1%	92	14.7%	328	13.8%	939	9.6%	1,525
Kansas	2.7%	10	4.5%	28	11.8%	141	10.3%	202	7.8%	662
Kentucky	3.6%	11	9.5%	78	12.6%	142	11.9%	369	10.0%	998
Louisiana	3.3%	10	8.0%	42	8.7%	80	12.0%	533	8.5%	1,023
Massachusetts	5.6%	28	8.8%	207	17.7%	755	17.4%	1,017	7.6%	1,666
Maryland	1.3%	3	4.3%	42	13.2%	215	13.4%	417	8.8%	912
Maine	0.0%	0	7.4%	21	14.1%	86	7.3%	40	7.0%	232
Michigan	1.4%	6	5.0%	78	13.5%	411	11.6%	604	8.3%	1,548
Minnesota	3.7%	16	6.0%	89	10.8%	249	11.4%	528	8.3%	1,260
Missouri	5.3%	29	8.9%	96	17.2%	285	14.2%	680	11.3%	1,901
Mississippi	5.3%	10	7.6%	32	15.6%	109	15.1%	351	5.7%	382
Montana	3.5%	4	22.9%	56	18.4%	108	17.0%	124	13.0%	376
North Carolina	1.2%	5	7.6%	99	10.8%	269	14.0%	681	7.8%	1,283
North Dakota	3.7%	3	1.4%	4	8.0%	38	7.0%	53	4.6%	183
Nebraska	6.0%	14	6.3%	30	13.6%	146	10.5%	172	8.8%	549
New Hampshire	3.1%	3	11.1%	40	17.2%	126	12.6%	85	9.1%	340
New Jersey	5.1%	18	7.8%	120	19.0%	508	15.8%	748	11.4%	1,718
New Mexico	4.7%	4	10.5%	19	24.9%	97	18.1%	117	12.2%	362
Nevada	0.0%	0	10.0%	11	19.6%	55	12.2%	54	12.1%	189
New York	3.5%	24	7.0%	291	16.6%	1,010	16.2%	2,092	8.7%	3,710
Ohio	3.5%	35	8.7%	270	16.9%	908	12.7%	1,508	8.6%	3,016
Oklahoma	5.9%	22	16.2%	78	13.0%	97	10.3%	292	8.5%	797
Oregon	4.9%	7	7.7%	34	17.9%	133	15.1%	115	9.0%	382
Pennsylvania	4.0%	30	6.2%	167	16.6%	1,038	15.4%	1,452	9.8%	2,864
Rhode Island	2.7%	3	9.2%	31	18.9%	161	15.7%	113	14.4%	545
South Carolina	3.4%	6	8.5%	41	15.3%	112	13.6%	347	5.9%	413
South Dakota	7.3%	8	1.3%	3	9.7%	66	8.1%	40	7.8%	240
Tennessee	7.0%	24	6.1%	58	13.9%	217	9.9%	492	8.1%	1,090
Texas	10.8%	123	16.4%	325	17.0%	507	12.7%	1,721	9.4%	3,250
Utah	8.6%	8	3.2%	6	15.5%	81	14.5%	105	6.1%	154
Virginia	5.8%	16	11.3%	100	15.8%	171	11.5%	428	8.2%	908
Vermont	5.6%	2	9.6%	16	14.3%	46	13.0%	65	10.5%	166
Washington	2.0%	5	8.3%	71	13.2%	239	10.3%	277	6.8%	671
Wisconsin	9.0%	36	5.7%	60	14.1%	397	11.4%	336	6.9%	1,098
West Virginia	5.4%	8	8.6%	34	24.1%	155	12.0%	180	11.6%	529
Wyoming	0.0%	0	5.9%	5	13.6%	30	12.6%	29	7.6%	80

\*State estimated vacancies do not equal national total since state-level estimates are not derived using a population adjustment weight as was applicable in the national estimate.

Table 12: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

State	<i>DON</i> Turnover Rate	<i>Admin. RN</i> Turnover Rate	<i>Staff RN</i> Turnover Rate	<i>LPN</i> Turnover Rate	<i>CNA</i> Turnover Rate
Alaska	28.6%	0.0%	33.7%	36.4%	69.5%
Alabama	54.1%	41.8%	58.3%	48.3%	80.6%
Arkansas	60.7%	48.1%	62.4%	61.6%	114.0%
Arizona	68.6%	52.2%	94.6%	74.3%	104.3%
California	51.0%	45.5%	48.3%	48.2%	54.1%
Colorado	47.7%	48.5%	49.1%	48.4%	66.1%
Connecticut	34.9%	33.2%	43.5%	35.2%	49.2%
District of Columbia	44.4%	35.7%	27.8%	28.2%	44.5%
Delaware	25.0%	40.0%	43.8%	32.6%	58.5%
Florida	57.1%	45.2%	55.1%	51.8%	61.0%
Georgia	66.7%	43.5%	48.8%	52.7%	75.7%
Hawaii	14.8%	21.7%	38.9%	25.1%	20.7%
Iowa	30.9%	32.4%	39.9%	42.0%	60.7%
Idaho	36.8%	36.8%	71.9%	54.4%	110.8%
Illinois	53.2%	32.7%	41.0%	51.6%	75.5%
Indiana	54.5%	30.6%	54.0%	63.2%	90.9%
Kansas	48.6%	29.0%	55.0%	61.6%	95.6%
Kentucky	53.6%	45.2%	68.3%	64.5%	107.6%
Louisiana	32.2%	36.7%	59.9%	49.6%	100.6%
Massachusetts	40.9%	30.2%	50.4%	49.3%	51.3%
Maryland	33.8%	32.4%	46.0%	42.7%	52.3%
Maine	26.8%	40.5%	41.6%	34.9%	50.9%
Michigan	27.6%	24.1%	43.7%	37.5%	65.6%
Minnesota	16.8%	24.2%	30.5%	30.8%	51.1%
Missouri	60.8%	42.7%	56.1%	64.2%	123.1%
Mississippi	69.3%	95.3%	97.0%	70.7%	77.8%
Montana	35.3%	36.8%	46.5%	48.3%	80.5%
North Carolina	36.1%	42.7%	54.1%	52.3%	83.8%
North Dakota	27.3%	8.6%	27.9%	24.7%	43.9%
Nebraska	39.3%	22.8%	29.3%	28.5%	58.7%
New Hampshire	25.8%	21.8%	40.5%	32.3%	39.1%
New Jersey	29.5%	23.0%	43.7%	37.4%	45.7%
New Mexico	46.5%	45.5%	79.0%	61.9%	109.1%
Nevada	26.7%	40.0%	85.2%	72.7%	78.7%
New York	34.2%	25.0%	44.4%	33.3%	41.7%
Ohio	41.7%	40.0%	51.7%	46.4%	85.2%
Oklahoma	81.8%	37.8%	57.7%	71.1%	135.5%
Oregon	48.8%	37.4%	52.6%	46.7%	68.2%
Pennsylvania	39.6%	25.9%	45.5%	36.3%	50.7%
Rhode Island	34.2%	26.2%	58.9%	41.8%	82.7%
South Carolina	26.7%	35.1%	52.3%	49.4%	70.3%
South Dakota	42.9%	26.4%	28.3%	27.4%	51.1%
Tennessee	40.3%	39.4%	59.0%	56.2%	91.9%
Texas	91.3%	58.1%	60.3%	68.4%	105.2%
Utah	64.9%	44.3%	67.1%	52.8%	110.8%
Virginia	142.7%	54.5%	56.0%	57.3%	73.2%
Vermont	27.8%	4.3%	38.9%	21.2%	67.8%
Washington	122.8%	34.7%	38.7%	43.2%	71.1%
Wisconsin	39.7%	24.1%	32.7%	29.7%	54.7%
West Virginia	28.6%	29.5%	65.8%	37.3%	57.8%
Wyoming	62.5%	24.2%	38.7%	41.6%	86.5%

## 7.0 Conclusions

Nursing homes, according to the findings of this study, experienced lower vacancy rates among nursing positions in June 2002 than in June 2001. The volume of vacant nursing positions, however, remained substantial—about 96,000 in 2002. Further, the vacancy rates in 2002 for Staff RNs and LPNs remained high in comparison to other nursing positions pointing to the continued need for government policy and educational initiatives to encourage nursing careers in long term care.

Problems in retaining nursing staff at nursing homes also remains as reflected in persist high rates of turnover in 2002. Turnover remains at 50 percent for the positions of Director of Nursing, Staff RNs, and LPNS. And turnover remains over 70 percent for CNAs. Clearly, it is troubling that the turnover rate for Directors of Nursing increased between 2001 and 2002 to where half of the Directors of Nursing left their positions in 2002. These findings do not indicate a marked improvement in the stability of nursing staff in nursing homes.

Even though recruitment may not have improved substantially across all nursing positions, the findings do suggest that recruitment of CNAs, nationally, was less of a problem in 2002 compared to 2001. Not only was there a twofold increase in the percentage of facilities finding recruitment of CNAs easier between the 2001 survey and the 2002 survey, but the national vacancy rate for CNAs decreased the greatest—in terms of percentage points—between 2001 and 2002. Any number of factors, separately and in combination, could have contributed to this change. The status of the economy changed between 2001 and 2002, becoming less robust and heading into a recession by June 2002. The U.S. Department of Labor also implemented in March 2002 a job bank of openings in nursing homes across the nation, though its affect by June 2002 was likely not substantial. Nursing homes also received a payment increase for Medicare patients in the second quarter of 2001 that may have affected staffing in nursing homes by 2002.<sup>10</sup>

Whatever the changes in vacancies and turnover between 2001 and 2002, marked differences in vacancy and turnover rates remained in 2002 across regions and states with some regions and states having relatively greater rates—some substantially greater. More research on the determinants of the variation in rates of vacancies and turnover revealed by this study is warranted. This variation indicates that, despite the decreases in vacancy and turnover rates nationally between 2001 and 2002, many facilities continue to experience difficulties in recruitment and retention of nursing staff.

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<sup>10</sup> A 16.66 percent increase in the nursing component of the rate under the Medicare Skilled Nursing Facility Prospective Payment System was implemented in April 2001. The 2001 vacancy and turnover survey was conducted in June 2001, too short of a period from April to reasonably expect the payment increase to be reflected in, or have an affect on, nursing home operations. But by June 2002, the period of the second vacancy and turnover survey, this payment addition may have affected operations and staffing—at least up to the expiration of the payment addition in October 2002.

## **Appendix A**

### **National Vacancy and Turnover Results by Rural/Urban Status and Hospital Affiliation**

Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes

Table A1: Population Adjusted Estimates of Vacancies and Vacancy Rates by Rural/Urban Status and Hospital Affiliation, as of June 30, 2002

Job Category	Facility Characteristics	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Vacancies	Vacancy Rate
DON	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,889	39.4%	4,817	219	4.6%
	Urban Freestanding	9,688	3,108	32.1%	9,782	527	5.4%
	Rural, Hospital-Based	815	275	33.7%	821	27	3.2%
	Urban, Hospital-Based	1,022	216	21.1%	1,031	24	2.3%
	<i>Rural/Urban Status</i>						
	Rural	5,607	2,164	38.6%	5,638	246	4.4%
	Urban	10,710	3,324	31.0%	10,813	551	5.1%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,997	34.5%	14,599	747	5.1%
Hospital-Based	1,837	491	26.7%	1,852	50	2.7%	
<i>Overall</i>		16,317	5,488	33.6%	16,452	797	4.8%
Admin RN	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,581	33.0%	11,439	847	7.4%
	Urban Freestanding	9,688	2,769	28.6%	33,304	2,885	8.7%
	Rural, Hospital-Based	815	221	27.1%	1,644	93	5.6%
	Urban, Hospital-Based	1,022	200	19.6%	2,993	173	5.8%
	<i>Rural/Urban Status</i>						
	Rural	5,607	1,802	32.1%	13,083	940	7.2%
	Urban	10,710	2,969	27.7%	36,297	3,058	8.4%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,350	30.0%	44,742	3,732	8.3%
Hospital-Based	1,837	421	22.9%	4,637	266	5.7%	
<i>Overall</i>		16,317	4,771	29.2%	49,380	3,998	8.1%
Staff RN	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,633	34.1%	19,624	2,697	13.7%
	Urban Freestanding	9,688	2,600	26.8%	59,718	9,685	16.2%
	Rural, Hospital-Based	815	261	32.0%	4,325	417	9.6%
	Urban, Hospital-Based	1,022	215	21.0%	9,254	1,123	12.1%
	<i>Rural/Urban Status</i>						
	Rural	5,607	1,894	33.8%	23,949	3,115	13.0%
	Urban	10,710	2,815	26.3%	68,972	10,808	15.7%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,233	29.2%	79,342	12,382	15.6%
Hospital-Based	1,837	476	25.9%	13,579	1,541	11.3%	
<i>Overall</i>		16,317	4,709	28.9%	92,922	13,922	15.0%

Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes

Table A1: Population Adjusted Estimates of Vacancies and Vacancy Rates by Rural/Urban Status and Hospital Affiliation, as of June 30, 2002

Job Category	Facility Characteristics	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Vacancies	Vacancy Rate
LPN	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,878	39.2%	45,624	5,183	11.4%
	Urban Freestanding	9,688	2,908	30.0%	127,103	17,826	14.0%
	Rural, Hospital-Based	815	271	33.3%	6,359	638	10.0%
	Urban, Hospital-Based	1,022	198	19.4%	10,567	1,472	13.9%
	<i>Rural/Urban Status</i>						
	Rural	5,607	2,149	38.3%	51,984	5,821	11.2%
	Urban	10,710	3,106	29.0%	137,669	19,298	14.0%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,786	33.1%	172,727	23,009	13.3%
	Hospital-Based	1,837	469	25.5%	16,926	2,110	12.5%
	<i>Overall</i>	16,317	5,255	32.2%	189,653	25,118	13.2%
	CNA	<i>Rural/Urban Status - Hospital Affiliation</i>					
Rural, Freestanding		4,792	1,917	40.0%	155,361	12,825	8.3%
Urban Freestanding		9,688	3,073	31.7%	413,494	35,404	8.6%
Rural, Hospital-Based		815	290	35.6%	18,682	1,550	8.3%
Urban, Hospital-Based		1,022	219	21.4%	24,479	2,180	8.9%
<i>Rural/Urban Status</i>							
Rural		5,607	2,207	39.4%	174,044	14,376	8.3%
Urban		10,710	3,292	30.7%	437,973	37,584	8.6%
<i>Hospital Affiliation</i>							
Freestanding		14,480	4,990	34.5%	568,856	48,229	8.5%
Hospital-Based		1,837	509	27.7%	43,161	3,730	8.6%
<i>Overall</i>		16,317	5,499	33.7%	612,017	51,960	8.5%

Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes

Table A2: Population Adjusted Estimates of Annualized Terminations and Turnover Rates by Rural/Urban Status and Hospital Affiliation (based on six months ending June 30, 2002)

Job Category	Facility Characteristics	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Terminations	Turnover Rate
DON	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,884	39.3%	4,817	2,414	50.1%
	Urban Freestanding	9,688	3,076	31.8%	9,783	5,275	53.9%
	Rural, Hospital-Based	815	271	33.3%	822	229	27.8%
	Urban, Hospital-Based	1,022	211	20.6%	1,032	262	25.4%
	<i>Rural/Urban Status</i>						
	Rural	5,607	2,155	38.4%	5,639	2,643	46.9%
	Urban	10,710	3,287	30.7%	10,815	5,536	51.2%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,960	34.3%	14,600	7,689	52.7%
Hospital-Based	1,837	482	26.2%	1,853	490	26.4%	
<i>Overall</i>		16,317	5,442	33.4%	16,454	8,179	49.7%
Admin RN	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,582	33.0%	11,427	3,774	33.0%
	Urban Freestanding	9,688	2,714	28.0%	33,332	12,565	37.7%
	Rural, Hospital-Based	815	217	26.6%	1,661	338	20.3%
	Urban, Hospital-Based	1,022	196	19.2%	2,922	822	28.1%
	<i>Rural/Urban Status</i>						
	Rural	5,607	1,799	32.1%	13,088	4,112	31.4%
	Urban	10,710	2,910	27.2%	36,255	13,387	36.9%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,296	29.7%	44,759	16,339	36.5%
Hospital-Based	1,837	413	22.5%	4,584	1,160	25.3%	
<i>Overall</i>		16,317	4,709	28.9%	49,343	17,499	35.5%
Staff RN	<i>Rural/Urban Status - Hospital Affiliation</i>						
	Rural, Freestanding	4,792	1,628	34.0%	19,665	9,252	47.0%
	Urban Freestanding	9,688	2,572	26.5%	60,264	32,636	54.2%
	Rural, Hospital-Based	815	255	31.3%	4,334	1,079	24.9%
	Urban, Hospital-Based	1,022	209	20.5%	9,034	2,635	29.2%
	<i>Rural/Urban Status</i>						
	Rural	5,607	1,883	33.6%	24,000	10,332	43.0%
	Urban	10,710	2,781	26.0%	69,299	35,271	50.9%
	<i>Hospital Affiliation</i>						
	Freestanding	14,480	4,200	29.0%	79,930	41,888	52.4%
Hospital-Based	1,837	464	25.3%	13,369	3,714	27.8%	
<i>Overall</i>		16,317	4,664	28.6%	93,298	45,603	48.9%



Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes

Table A2: Population Adjusted Estimates of Annualized Terminations and Turnover Rates by Rural/Urban Status and Hospital Affiliation (based on six months ending June 30, 2002)

Job Category	Facility Characteristics	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Estimated Total Established Positions	Estimated Total Terminations	Turnover Rate	
LPN	<i>Rural/Urban Status - Hospital Affiliation</i>							
	Rural, Freestanding	4,792	1,868	39.0%	45,729	20,922	45.8%	
	Urban Freestanding	9,688	2,868	29.6%	127,313	66,805	52.5%	
	Rural, Hospital-Based	815	264	32.4%	6,294	1,837	29.2%	
	Urban, Hospital-Based	1,022	196	19.2%	10,521	3,222	30.6%	
	<i>Rural/Urban Status</i>							
	Rural	5,607	2,132	38.0%	52,023	22,759	43.7%	
	Urban	10,710	3,064	28.6%	137,834	70,027	50.8%	
	<i>Hospital Affiliation</i>							
	Freestanding	14,480	4,736	32.7%	173,042	87,726	50.7%	
	Hospital-Based	1,837	460	25.0%	16,815	5,059	30.1%	
	<i>Overall</i>	16,317	5,196	31.8%	189,857	92,785	48.9%	
	CNA	<i>Rural/Urban Status - Hospital Affiliation</i>						
		Rural, Freestanding	4,792	1,886	39.4%	155,447	118,726	76.4%
Urban Freestanding		9,688	3,006	31.0%	414,841	300,539	72.4%	
Rural, Hospital-Based		815	286	35.1%	18,709	7,681	41.1%	
Urban, Hospital-Based		1,022	216	21.1%	23,934	9,120	38.1%	
<i>Rural/Urban Status</i>								
Rural		5,607	2,172	38.7%	174,156	126,407	72.6%	
Urban		10,710	3,222	30.1%	438,775	309,659	70.6%	
<i>Hospital Affiliation</i>								
Freestanding		14,480	4,892	33.8%	570,289	419,265	73.5%	
Hospital-Based		1,837	502	27.3%	42,643	16,801	39.4%	
<i>Overall</i>		16,317	5,394	33.1%	612,932	436,066	71.1%	

## **Appendix B**

### **Regional Vacancy and Turnover Tables**

Table B1: Vacancy Rate Estimates by Job Category and Region, as of June 30, 2002

Job Category	Region	Total Facilities	Facilities in Sample	Percent of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies*
DON	New England	1,081	335	31.0%	337	16	4.7%	52
	Middle Atlantic	1,763	543	30.8%	548	22	4.0%	71
	South Atlantic	2,353	967	41.1%	970	38	3.9%	92
	East South Central	1,051	453	43.1%	457	21	4.6%	49
	West South Central	2,049	495	24.2%	500	38	7.6%	157
	East North Central	3,205	1,026	32.0%	1,039	59	5.7%	184
	West North Central	2,228	883	39.6%	887	38	4.2%	95
	Mountain	795	307	38.6%	312	11	3.6%	29
	Pacific	1,792	479	26.7%	482	27	5.6%	101
Admin RN	New England	1,081	302	27.9%	1,288	118	9.2%	422
	Middle Atlantic	1,763	495	28.1%	2,304	158	6.9%	563
	South Atlantic	2,353	900	38.2%	2,920	258	8.8%	674
	East South Central	1,051	409	38.9%	1,130	95	8.4%	244
	West South Central	2,049	346	16.9%	563	75	13.4%	447
	East North Central	3,205	896	28.0%	2,657	193	7.3%	689
	West North Central	2,228	746	33.5%	1,749	100	5.7%	298
	Mountain	795	273	34.3%	667	61	9.1%	177
	Pacific	1,792	404	22.5%	1,047	106	10.1%	469
Staff RN	New England	1,081	279	25.8%	2,278	396	17.4%	1,535
	Middle Atlantic	1,763	464	26.3%	3,951	669	16.9%	2,542
	South Atlantic	2,353	824	35.0%	4,424	635	14.4%	1,812
	East South Central	1,051	378	36.0%	1,553	204	13.1%	567
	West South Central	2,049	328	16.0%	804	119	14.8%	741
	East North Central	3,205	911	28.4%	5,316	784	14.8%	2,760
	West North Central	2,228	817	36.7%	3,516	434	12.3%	1,182
	Mountain	795	296	37.2%	1,754	310	17.7%	832
	Pacific	1,792	412	23.0%	2,450	338	13.8%	1,470
LPN	New England	1,081	280	25.9%	2,954	464	15.7%	1,791
	Middle Atlantic	1,763	492	27.9%	7,485	1,185	15.8%	4,245
	South Atlantic	2,353	929	39.5%	13,203	1,849	14.0%	4,684
	East South Central	1,051	439	41.8%	6,178	716	11.6%	1,715
	West South Central	2,049	512	25.0%	5,765	693	12.0%	2,774
	East North Central	3,205	977	30.5%	10,458	1,303	12.5%	4,275
	West North Central	2,228	872	39.1%	6,627	743	11.2%	1,897
	Mountain	795	308	38.7%	3,080	395	12.8%	1,018
	Pacific	1,792	446	24.9%	4,443	531	12.0%	2,133
CNA	New England	1,081	328	30.3%	13,937	1,139	8.2%	3,754
	Middle Atlantic	1,763	528	29.9%	25,731	2,446	9.5%	8,168
	South Atlantic	2,353	979	41.6%	41,428	3,519	8.5%	8,457
	East South Central	1,051	444	42.2%	17,469	1,421	8.1%	3,364
	West South Central	2,049	497	24.3%	15,821	1,353	8.6%	5,579
	East North Central	3,205	1,041	32.5%	37,108	3,054	8.2%	9,402
	West North Central	2,228	896	40.2%	26,480	2,235	8.4%	5,559
	Mountain	795	320	40.3%	10,647	1,022	9.6%	2,540
	Pacific	1,792	466	26.0%	16,581	1,190	7.2%	4,574

\*Regional estimated vacancies do not equal national total since region-level estimates are not derived using a population adjustment weight as was applicable in the national estimate.

Table B2: Annualized Turnover Rate Estimates by Job Category and Region, (based on six months ending June 30, 2002)

Job Category	Region	Total Facilities	Facilities in Sample	Percent of Total Facilities	Established Positions in Sample Facilities	Turnover in Sample Facilities	Turnover Rate
DON	New England	1,081	324	30.0%	326	115	35.2%
	Middle Atlantic	1,763	531	30.1%	536	192	35.8%
	South Atlantic	2,353	964	41.0%	967	566	58.5%
	East South Central	1,051	453	43.1%	457	236	51.7%
	West South Central	2,049	494	24.1%	499	382	76.6%
	East North Central	3,205	1,015	31.7%	1,028	452	44.0%
	West North Central	2,228	873	39.2%	877	344	39.2%
	Mountain Pacific	795	309	38.9%	314	161	51.1%
		1,792	479	26.7%	482	306	63.5%
Admin RN	New England	1,081	299	27.7%	1,276	378	29.6%
	Middle Atlantic	1,763	482	27.3%	2,226	556	25.0%
	South Atlantic	2,353	888	37.7%	2,869	1,227	42.8%
	East South Central	1,051	405	38.5%	1,125	538	47.8%
	West South Central	2,049	344	16.8%	560	284	50.7%
	East North Central	3,205	882	27.5%	2,636	847	32.1%
	West North Central	2,228	734	32.9%	1,716	479	27.9%
	Mountain Pacific	795	275	34.6%	675	300	44.4%
		1,792	400	22.3%	1,030	404	39.3%
Staff RN	New England	1,081	278	25.7%	2,318	1,110	47.9%
	Middle Atlantic	1,763	455	25.8%	3,878	1,740	44.9%
	South Atlantic	2,353	826	35.1%	4,462	2,373	53.2%
	East South Central	1,051	373	35.5%	1,530	1,024	66.9%
	West South Central	2,049	323	15.8%	782	470	60.1%
	East North Central	3,205	901	28.1%	5,317	2,362	44.4%
	West North Central	2,228	812	36.4%	3,489	1,348	38.6%
	Mountain Pacific	795	287	36.1%	1,698	1,174	69.1%
		1,792	409	22.8%	2,410	1,086	45.1%
LPN	New England	1,081	279	25.8%	2,871	1,192	41.5%
	Middle Atlantic	1,763	486	27.6%	7,466	2,620	35.1%
	South Atlantic	2,353	930	39.5%	13,231	6,676	50.5%
	East South Central	1,051	434	41.3%	6,059	3,470	57.3%
	West South Central	2,049	500	24.4%	5,607	3,625	64.7%
	East North Central	3,205	970	30.3%	10,425	4,908	47.1%
	West North Central	2,228	848	38.1%	6,442	2,824	43.8%
	Mountain Pacific	795	303	38.1%	3,014	1,804	59.9%
		1,792	446	24.9%	4,457	2,026	45.5%
CNA	New England	1,081	324	30.0%	13,580	7,253	53.4%
	Middle Atlantic	1,763	524	29.7%	25,846	11,816	45.7%
	South Atlantic	2,353	960	40.8%	40,450	27,520	68.0%
	East South Central	1,051	437	41.6%	17,434	15,660	89.8%
	West South Central	2,049	470	22.9%	15,031	16,705	111.1%
	East North Central	3,205	1,024	32.0%	36,438	27,390	75.2%
	West North Central	2,228	877	39.4%	25,880	19,229	74.3%
	Mountain Pacific	795	314	39.5%	10,222	9,614	94.1%
		1,792	464	25.9%	16,641	9,413	56.6%

## **Appendix C**

### **State Vacancy and Turnover Tables**

Table C1: Vacancy Rate Estimates by Job Category and State as of June 30, 2002

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies
DON	Alaska	15	7	46.7%	7	0	0.0%	0
	Alabama	222	112	50.5%	112	2	1.8%	4
	Arkansas	240	85	35.4%	87	3	3.5%	8
	Arizona	139	63	45.3%	65	1	1.8%	3
	California	1321	305	23.1%	306	22	7.2%	95
	Colorado	222	70	31.5%	70	3	4.3%	10
	Connecticut	253	67	26.5%	67	5	7.5%	19
	District of Columbia	21	9	42.9%	9	2	22.2%	5
	Delaware	42	18	42.9%	18	0	0.0%	0
	Florida	714	292	40.9%	292	12	4.1%	29
	Georgia	356	183	51.4%	184	10	5.4%	19
	Hawaii	45	28	62.2%	28	1	3.6%	2
	Iowa	465	169	36.3%	170	5	2.9%	14
	Idaho	83	37	44.6%	37	1	2.7%	2
	Illinois	836	230	27.5%	234	22	9.4%	80
	Indiana	549	160	29.1%	161	9	5.6%	31
	Kansas	367	148	40.3%	148	4	2.7%	10
	Kentucky	298	112	37.6%	112	4	3.6%	11
	Louisiana	320	61	19.1%	61	2	3.3%	10
	Massachusetts	496	143	28.8%	144	8	5.6%	28
	Maryland	235	78	33.2%	79	1	1.3%	3
	Maine	111	39	35.1%	39	0	0.0%	0
	Michigan	433	145	33.5%	147	2	1.4%	6
	Minnesota	424	160	37.7%	161	6	3.7%	16
	Missouri	547	181	33.1%	181	10	5.3%	29
	Mississippi	191	74	38.7%	75	4	5.3%	10
	Montana	101	28	27.7%	29	1	3.5%	4
	North Carolina	407	169	41.5%	169	2	1.2%	5
	North Dakota	86	54	62.8%	54	2	3.7%	3
	Nebraska	228	117	51.3%	117	7	6.0%	14
	New Hampshire	82	32	39.0%	32	1	3.1%	3
	New Jersey	352	97	27.6%	98	5	5.1%	18
	New Mexico	77	41	53.2%	43	2	4.7%	4
	Nevada	44	15	34.1%	15	0	0.0%	0
	New York	662	196	29.6%	199	7	3.5%	24
	Ohio	988	337	34.1%	341	12	3.5%	35
	Oklahoma	362	101	27.9%	102	6	5.9%	22
	Oregon	144	41	28.5%	41	2	4.9%	7
	Pennsylvania	749	250	33.4%	251	10	4.0%	30
	Rhode Island	96	36	37.5%	37	1	2.7%	3
	South Carolina	171	59	34.5%	59	2	3.4%	6
	South Dakota	111	54	48.6%	55	4	7.3%	8
	Tennessee	340	155	45.6%	158	11	7.0%	24
	Texas	1127	248	22.0%	250	27	10.8%	123
	Utah	91	35	38.5%	35	3	8.6%	8
	Virginia	267	103	38.6%	104	6	5.8%	16
	Vermont	43	18	41.9%	18	1	5.6%	2
	Washington	267	98	36.7%	100	2	2.0%	5
	Wisconsin	399	154	38.6%	156	14	9.0%	36
	West Virginia	140	56	40.0%	56	3	5.4%	8
	Wyoming	38	18	47.4%	18	0	0.0%	0

Table C1: Vacancy Rate Estimates by Job Category and State as of June 30, 2002

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies
Admin RN	Alaska	15	7	46.7%	11	0	0.0%	0
	Alabama	222	106	47.7%	324	34	10.5%	71
	Arkansas	240	66	27.5%	101	6	6.0%	22
	Arizona	139	58	41.7%	169	12	7.1%	29
	California	1321	243	18.4%	536	70	13.0%	379
	Colorado	222	65	29.3%	141	11	8.1%	39
	Connecticut	253	63	24.9%	297	29	9.7%	116
	District of Columbia	21	8	38.1%	46	10	22.6%	27
	Delaware	42	17	40.5%	60	10	16.7%	25
	Florida	714	270	37.8%	951	82	8.6%	217
	Georgia	356	164	46.1%	418	40	9.5%	86
	Hawaii	45	21	46.7%	75	2	2.1%	3
	Iowa	465	148	31.8%	313	18	5.8%	57
	Idaho	83	36	43.4%	92	9	9.8%	21
	Illinois	836	186	22.2%	474	43	9.0%	191
	Indiana	549	137	25.0%	378	23	6.1%	92
	Kansas	367	117	31.9%	199	9	4.5%	28
	Kentucky	298	105	35.2%	291	28	9.5%	78
	Louisiana	320	46	14.4%	75	6	8.0%	42
	Massachusetts	496	127	25.6%	604	53	8.8%	207
	Maryland	235	68	28.9%	279	12	4.3%	42
	Maine	111	37	33.3%	95	7	7.4%	21
	Michigan	433	143	33.0%	521	26	5.0%	78
	Minnesota	424	151	35.6%	526	32	6.0%	89
	Missouri	547	142	26.0%	279	25	8.9%	96
	Mississippi	191	60	31.4%	131	10	7.6%	32
	Montana	101	22	21.8%	53	12	22.9%	56
	North Carolina	407	162	39.8%	521	39	7.6%	99
	North Dakota	86	48	55.8%	146	2	1.4%	4
	Nebraska	228	100	43.9%	210	13	6.3%	30
	New Hampshire	82	27	32.9%	119	13	11.1%	40
	New Jersey	352	90	25.6%	393	31	7.8%	120
	New Mexico	77	37	48.1%	86	9	10.5%	19
	Nevada	44	12	27.3%	30	3	10.0%	11
	New York	662	172	26.0%	1,077	76	7.0%	291
	Ohio	988	298	30.2%	935	81	8.7%	270
	Oklahoma	362	56	15.5%	74	12	16.2%	78
	Oregon	144	38	26.4%	118	9	7.7%	34
	Pennsylvania	749	233	31.1%	835	52	6.2%	167
	Rhode Island	96	37	38.5%	130	12	9.2%	31
	South Carolina	171	54	31.6%	153	13	8.5%	41
	South Dakota	111	40	36.0%	75	1	1.3%	3
	Tennessee	340	138	40.6%	384	24	6.1%	58
	Texas	1127	178	15.8%	313	51	16.4%	325
	Utah	91	29	31.9%	62	2	3.2%	6
	Virginia	267	99	37.1%	329	37	11.3%	100
	Vermont	43	11	25.6%	42	4	9.6%	16
	Washington	267	95	35.6%	307	25	8.3%	71
	Wisconsin	399	132	33.1%	349	20	5.7%	60
	West Virginia	140	58	41.4%	163	14	8.6%	34
	Wyoming	38	14	36.8%	34	2	5.9%	5

Table C1: Vacancy Rate Estimates by Job Category and State as of June 30, 2002

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies
Staff RN	Alaska	15	7	46.7%	42	5	11.4%	10
	Alabama	222	90	40.5%	366	40	10.9%	98
	Arkansas	240	56	23.3%	112	16	13.9%	66
	Arizona	139	62	44.6%	430	74	17.1%	165
	California	1321	250	18.9%	1,348	197	14.6%	1,039
	Colorado	222	64	28.8%	400	61	15.2%	211
	Connecticut	253	56	22.1%	479	86	18.1%	391
	District of Columbia	21	6	28.6%	58	14	24.0%	48
	Delaware	42	16	38.1%	132	25	19.1%	66
	Florida	714	260	36.4%	1,625	227	13.9%	622
	Georgia	356	133	37.4%	400	61	15.3%	164
	Hawaii	45	27	60.0%	252	21	8.2%	34
	Iowa	465	158	34.0%	678	88	13.0%	258
	Idaho	83	33	39.8%	152	30	20.0%	77
	Illinois	836	206	24.6%	1,240	166	13.4%	675
	Indiana	549	138	25.1%	561	83	14.7%	328
	Kansas	367	144	39.2%	471	55	11.8%	141
	Kentucky	298	96	32.2%	363	46	12.6%	142
	Louisiana	320	38	11.9%	110	10	8.7%	80
	Massachusetts	496	113	22.8%	973	172	17.7%	755
	Maryland	235	65	27.7%	451	59	13.2%	215
	Maine	111	39	35.1%	214	30	14.1%	86
	Michigan	433	130	30.0%	916	123	13.5%	411
	Minnesota	424	138	32.5%	752	81	10.8%	249
	Missouri	547	168	30.7%	510	88	17.2%	285
	Mississippi	191	63	33.0%	231	36	15.6%	109
	Montana	101	29	28.7%	169	31	18.4%	108
	North Carolina	407	155	38.1%	952	102	10.8%	269
	North Dakota	86	50	58.1%	275	22	8.0%	38
	Nebraska	228	106	46.5%	502	68	13.6%	146
	New Hampshire	82	25	30.5%	223	38	17.2%	126
	New Jersey	352	75	21.3%	569	108	19.0%	508
	New Mexico	77	39	50.6%	197	49	24.9%	97
	Nevada	44	15	34.1%	96	19	19.6%	55
	New York	662	155	23.4%	1,421	236	16.6%	1,010
	Ohio	988	297	30.1%	1,614	273	16.9%	908
	Oklahoma	362	64	17.7%	132	17	13.0%	97
	Oregon	144	39	27.1%	201	36	17.9%	133
	Pennsylvania	749	234	31.2%	1,960	324	16.6%	1,038
	Rhode Island	96	33	34.4%	292	55	18.9%	161
	South Carolina	171	53	31.0%	228	35	15.3%	112
	South Dakota	111	53	47.7%	329	32	9.7%	66
	Tennessee	340	129	37.9%	593	82	13.9%	217
	Texas	1127	170	15.1%	451	77	17.0%	507
	Utah	91	36	39.6%	206	32	15.5%	81
	Virginia	267	84	31.5%	339	54	15.8%	171
	Vermont	43	13	30.2%	98	14	14.3%	46
	Washington	267	89	33.3%	606	80	13.2%	239
	Wisconsin	399	140	35.1%	985	139	14.1%	397
	West Virginia	140	52	37.1%	239	57	24.1%	155
	Wyoming	38	18	47.4%	105	14	13.6%	30



Table C1: Vacancy Rate Estimates by Job Category and State as of June 30, 2002

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies
LPN	Alaska	15	7	46.7%	33	1	3.0%	2
	Alabama	222	107	48.2%	1,941	231	11.9%	479
	Arkansas	240	87	36.3%	962	108	11.3%	299
	Arizona	139	64	46.0%	975	118	12.1%	257
	California	1321	289	21.9%	3,003	382	12.7%	1,744
	Colorado	222	66	29.7%	695	68	9.8%	229
	Connecticut	253	59	23.3%	775	124	16.0%	531
	District of Columbia	21	9	42.9%	183	30	16.1%	69
	Delaware	42	18	42.9%	249	52	20.8%	121
	Florida	714	265	37.1%	4,167	595	14.3%	1,603
	Georgia	356	177	49.7%	2,708	406	15.0%	816
	Hawaii	45	27	60.0%	319	28	8.9%	47
	Iowa	465	169	36.3%	987	98	9.9%	269
	Idaho	83	36	43.4%	289	34	11.8%	79
	Illinois	836	214	25.6%	1,873	225	12.0%	878
	Indiana	549	155	28.2%	1,915	265	13.8%	939
	Kansas	367	149	40.6%	801	82	10.3%	202
	Kentucky	298	107	35.9%	1,111	132	11.9%	369
	Louisiana	320	64	20.0%	886	107	12.0%	533
	Massachusetts	496	120	24.2%	1,417	246	17.4%	1,017
	Maryland	235	71	30.2%	939	126	13.4%	417
	Maine	111	33	29.7%	165	12	7.3%	40
	Michigan	433	136	31.4%	1,636	190	11.6%	604
	Minnesota	424	156	36.8%	1,714	194	11.4%	528
	Missouri	547	190	34.7%	1,665	236	14.2%	680
	Mississippi	191	70	36.6%	854	129	15.1%	351
	Montana	101	32	31.7%	230	39	17.0%	124
	North Carolina	407	171	42.0%	2,044	286	14.0%	681
	North Dakota	86	54	62.8%	471	33	7.0%	53
	Nebraska	228	109	47.8%	788	82	10.5%	172
	New Hampshire	82	25	30.5%	206	26	12.6%	85
	New Jersey	352	86	24.4%	1,159	183	15.8%	748
	New Mexico	77	39	50.6%	329	59	18.1%	117
	Nevada	44	16	36.4%	160	20	12.2%	54
	New York	662	176	26.6%	3,435	556	16.2%	2,092
	Ohio	988	331	33.5%	3,991	505	12.7%	1,508
	Oklahoma	362	101	27.9%	794	81	10.3%	292
	Oregon	144	32	22.2%	170	26	15.1%	115
	Pennsylvania	749	230	30.7%	2,890	446	15.4%	1,452
	Rhode Island	96	26	27.1%	195	31	15.7%	113
	South Carolina	171	57	33.3%	849	116	13.6%	347
	South Dakota	111	45	40.5%	201	16	8.1%	40
	Tennessee	340	155	45.6%	2,271	224	9.9%	492
	Texas	1127	260	23.1%	3,124	397	12.7%	1,721
	Utah	91	37	40.7%	295	43	14.5%	105
	Virginia	267	103	38.6%	1,443	165	11.5%	428
	Vermont	43	17	39.5%	196	26	13.0%	65
	Washington	267	91	34.1%	918	94	10.3%	277
	Wisconsin	399	141	35.3%	1,044	119	11.4%	336
	West Virginia	140	58	41.4%	621	75	12.0%	180
Wyoming	38	18	47.4%	108	14	12.6%	29	

Table C1: Vacancy Rate Estimates by Job Category and State as of June 30, 2002

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Vacancies in Sample Facilities	Vacancy Rate	Estimated Total Vacancies
CNA	Alaska	15	7	46.7%	173	14	8.3%	31
	Alabama	222	109	49.1%	5,215	420	8.1%	856
	Arkansas	240	85	35.4%	3,205	213	6.7%	601
	Arizona	139	66	47.5%	2,797	279	10.0%	588
	California	1321	294	22.3%	10,460	783	7.5%	3,516
	Colorado	222	71	32.0%	2,122	162	7.7%	507
	Connecticut	253	65	25.7%	3,077	191	6.2%	742
	District of Columbia	21	9	42.9%	569	95	16.7%	222
	Delaware	42	18	42.9%	733	118	16.1%	276
	Florida	714	286	40.1%	13,367	1,082	8.1%	2,701
	Georgia	356	178	50.0%	7,123	608	8.5%	1,216
	Hawaii	45	29	64.4%	1,247	45	3.6%	70
	Iowa	465	176	37.8%	4,431	336	7.6%	889
	Idaho	83	37	44.6%	1,057	90	8.5%	201
	Illinois	836	229	27.4%	7,361	589	8.0%	2,151
	Indiana	549	160	29.1%	4,643	444	9.6%	1,525
	Kansas	367	151	41.1%	3,510	272	7.8%	662
	Kentucky	298	111	37.2%	3,711	372	10.0%	998
	Louisiana	320	63	19.7%	2,384	201	8.5%	1,023
	Massachusetts	496	146	29.4%	6,454	490	7.6%	1,666
	Maryland	235	77	32.8%	3,393	299	8.8%	912
	Maine	111	36	32.4%	1,080	75	7.0%	232
	Michigan	433	149	34.4%	6,432	533	8.3%	1,548
	Minnesota	424	161	38.0%	5,775	478	8.3%	1,260
	Missouri	547	182	33.3%	5,582	632	11.3%	1,901
	Mississippi	191	74	38.7%	2,578	148	5.7%	382
	Montana	101	32	31.7%	919	119	13.0%	376
	North Carolina	407	182	44.7%	7,323	574	7.8%	1,283
	North Dakota	86	51	59.3%	2,350	108	4.6%	183
	Nebraska	228	119	52.2%	3,271	287	8.8%	549
	New Hampshire	82	30	36.6%	1,362	124	9.1%	340
	New Jersey	352	96	27.3%	4,126	469	11.4%	1,718
	New Mexico	77	45	58.4%	1,738	211	12.2%	362
	Nevada	44	14	31.8%	497	60	12.1%	189
	New York	662	183	27.6%	11,856	1,026	8.7%	3,710
	Ohio	988	344	34.8%	12,281	1,050	8.6%	3,016
	Oklahoma	362	99	27.3%	2,573	218	8.5%	797
	Oregon	144	42	29.2%	1,238	111	9.0%	382
	Pennsylvania	749	249	33.2%	9,749	952	9.8%	2,864
	Rhode Island	96	34	35.4%	1,340	193	14.4%	545
	South Carolina	171	60	35.1%	2,469	145	5.9%	413
	South Dakota	111	56	50.5%	1,560	121	7.8%	240
	Tennessee	340	150	44.1%	5,966	481	8.1%	1,090
	Texas	1127	250	22.2%	7,660	721	9.4%	3,250
	Utah	91	38	41.8%	1,049	64	6.1%	154
	Virginia	267	109	40.8%	4,501	371	8.2%	908
	Vermont	43	17	39.5%	624	66	10.5%	166
	Washington	267	94	35.2%	3,464	236	6.8%	671
	Wisconsin	399	159	39.8%	6,391	437	6.9%	1,098
	West Virginia	140	60	42.9%	1,950	227	11.6%	529
Wyoming	38	17	44.7%	469	36	7.6%	80	

\*State estimated vacancies do not equal national total since state-level estimates are not derived using a population adjustment weight as was applicable in the national estimate.

Table C2: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Turnover in Sample Facilities	Turnover Rate
DON	Alaska	15	7	46.7%	7	2	28.6%
	Alabama	222	111	50.0%	111	60	54.1%
	Arkansas	240	87	36.3%	89	54	60.7%
	Arizona	139	62	44.6%	64	44	68.6%
	California	1321	305	23.1%	306	156	51.0%
	Colorado	222	71	32.0%	71	34	47.7%
	Connecticut	253	63	24.9%	63	22	34.9%
	District of Columbia	21	9	42.9%	9	4	44.4%
	Delaware	42	16	38.1%	16	4	25.0%
	Florida	714	298	41.7%	298	170	57.1%
	Georgia	356	179	50.3%	180	120	66.7%
	Hawaii	45	27	60.0%	27	4	14.8%
	Iowa	465	167	35.9%	168	52	30.9%
	Idaho	83	38	45.8%	38	14	36.8%
	Illinois	836	229	27.4%	233	124	53.2%
	Indiana	549	157	28.6%	158	86	54.5%
	Kansas	367	148	40.3%	148	72	48.6%
	Kentucky	298	112	37.6%	112	60	53.6%
	Louisiana	320	62	19.4%	62	20	32.2%
	Massachusetts	496	141	28.4%	142	58	40.9%
	Maryland	235	76	32.3%	77	26	33.8%
	Maine	111	37	33.3%	37	10	26.8%
	Michigan	433	143	33.0%	145	40	27.6%
	Minnesota	424	154	36.3%	155	26	16.8%
	Missouri	547	181	33.1%	181	110	60.8%
	Mississippi	191	74	38.7%	75	52	69.3%
	Montana	101	29	28.7%	30	11	35.3%
	North Carolina	407	166	40.8%	166	60	36.1%
	North Dakota	86	51	59.3%	51	14	27.3%
	Nebraska	228	117	51.3%	117	46	39.3%
	New Hampshire	82	31	37.8%	31	8	25.8%
	New Jersey	352	94	26.7%	95	28	29.5%
	New Mexico	77	41	53.2%	43	20	46.5%
	Nevada	44	15	34.1%	15	4	26.7%
	New York	662	196	29.6%	199	68	34.2%
	Ohio	988	332	33.6%	336	140	41.7%
	Oklahoma	362	97	26.8%	98	80	81.8%
	Oregon	144	41	28.5%	41	20	48.8%
	Pennsylvania	749	241	32.2%	242	96	39.6%
	Rhode Island	96	34	35.4%	35	12	34.2%
	South Carolina	171	60	35.1%	60	16	26.7%
	South Dakota	111	55	49.5%	56	24	42.9%
	Tennessee	340	156	45.9%	159	64	40.3%
	Texas	1127	248	22.0%	250	228	91.3%
	Utah	91	37	40.7%	37	24	64.9%
	Virginia	267	104	39.0%	105	150	142.7%
	Vermont	43	18	41.9%	18	5	27.8%
	Washington	267	99	37.1%	101	124	122.8%
	Wisconsin	399	154	38.6%	156	62	39.7%
	West Virginia	140	56	40.0%	56	16	28.6%
Wyoming	38	16	42.1%	16	10	62.5%	

Table C2: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Turnover in Sample Facilities	Turnover Rate
Admin RN	Alaska	15	7	46.7%	11	0	0.0%
	Alabama	222	103	46.4%	319	133	41.8%
	Arkansas	240	65	27.1%	100	48	48.1%
	Arizona	139	57	41.0%	168	88	52.2%
	California	1321	238	18.0%	526	239	45.5%
	Colorado	222	64	28.8%	138	67	48.5%
	Connecticut	253	62	24.5%	290	96	33.2%
	District of Columbia	21	8	38.1%	46	16	35.7%
	Delaware	42	16	38.1%	59	24	40.0%
	Florida	714	272	38.1%	955	432	45.2%
	Georgia	356	160	44.9%	408	177	43.5%
	Hawaii	45	21	46.7%	70	15	21.7%
	Iowa	465	144	31.0%	306	99	32.4%
	Idaho	83	37	44.6%	93	34	36.8%
	Illinois	836	186	22.2%	476	155	32.7%
	Indiana	549	130	23.7%	359	110	30.6%
	Kansas	367	114	31.1%	193	56	29.0%
	Kentucky	298	104	34.9%	292	132	45.2%
	Louisiana	320	47	14.7%	76	28	36.7%
	Massachusetts	496	130	26.2%	617	186	30.2%
	Maryland	235	65	27.7%	266	86	32.4%
	Maine	111	35	31.5%	86	35	40.5%
	Michigan	433	141	32.6%	518	125	24.1%
	Minnesota	424	149	35.1%	522	126	24.2%
	Missouri	547	142	26.0%	278	119	42.7%
	Mississippi	191	59	30.9%	125	119	95.3%
	Montana	101	23	22.8%	58	22	36.8%
	North Carolina	407	162	39.8%	517	221	42.7%
	North Dakota	86	44	51.2%	130	11	8.6%
	Nebraska	228	99	43.4%	209	48	22.8%
	New Hampshire	82	27	32.9%	119	26	21.8%
	New Jersey	352	84	23.9%	371	85	23.0%
	New Mexico	77	37	48.1%	88	40	45.5%
	Nevada	44	12	27.3%	30	12	40.0%
	New York	662	173	26.1%	1,057	265	25.0%
	Ohio	988	291	29.5%	925	370	40.0%
	Oklahoma	362	56	15.5%	74	28	37.8%
	Oregon	144	38	26.4%	118	44	37.4%
	Pennsylvania	749	225	30.0%	798	207	25.9%
	Rhode Island	96	35	36.5%	126	33	26.2%
	South Carolina	171	53	31.0%	142	50	35.1%
	South Dakota	111	42	37.8%	77	20	26.4%
	Tennessee	340	139	40.9%	389	154	39.4%
	Texas	1127	176	15.6%	310	180	58.1%
	Utah	91	32	35.2%	68	30	44.3%
	Virginia	267	96	36.0%	320	174	54.5%
	Vermont	43	10	23.3%	37	2	4.3%
	Washington	267	96	36.0%	306	106	34.7%
	Wisconsin	399	134	33.6%	358	86	24.1%
	West Virginia	140	56	40.0%	156	46	29.5%
Wyoming	38	13	34.2%	33	8	24.2%	

Table C2: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Turnover in Sample Facilities	Turnover Rate
Staff RN	Alaska	15	7	46.7%	42	14	33.7%
	Alabama	222	86	38.7%	350	204	58.3%
	Arkansas	240	56	23.3%	109	68	62.4%
	Arizona	139	60	43.2%	411	389	94.6%
	California	1321	247	18.7%	1,322	638	48.3%
	Colorado	222	62	27.9%	387	190	49.1%
	Connecticut	253	54	21.3%	483	210	43.5%
	District of Columbia	21	6	28.6%	58	16	27.8%
	Delaware	42	15	35.7%	127	56	43.8%
	Florida	714	264	37.0%	1,670	920	55.1%
	Georgia	356	132	37.1%	403	196	48.8%
	Hawaii	45	27	60.0%	238	93	38.9%
	Iowa	465	160	34.4%	688	274	39.9%
	Idaho	83	32	38.6%	146	105	71.9%
	Illinois	836	207	24.8%	1,265	518	41.0%
	Indiana	549	131	23.9%	514	278	54.0%
	Kansas	367	141	38.4%	462	254	55.0%
	Kentucky	298	93	31.2%	350	239	68.3%
	Louisiana	320	37	11.6%	104	62	59.9%
	Massachusetts	496	118	23.8%	1,042	525	50.4%
	Maryland	235	68	28.9%	466	214	46.0%
	Maine	111	40	36.0%	219	91	41.6%
	Michigan	433	132	30.5%	941	411	43.7%
	Minnesota	424	136	32.1%	749	228	30.5%
	Missouri	547	169	30.9%	494	277	56.1%
	Mississippi	191	65	34.0%	239	232	97.0%
	Montana	101	25	24.8%	148	69	46.5%
	North Carolina	407	153	37.6%	941	509	54.1%
	North Dakota	86	50	58.1%	279	78	27.9%
	Nebraska	228	103	45.2%	490	143	29.3%
	New Hampshire	82	22	26.8%	197	80	40.5%
	New Jersey	352	71	20.2%	543	237	43.7%
	New Mexico	77	39	50.6%	207	163	79.0%
	Nevada	44	15	34.1%	94	80	85.2%
	New York	662	158	23.9%	1,451	645	44.4%
	Ohio	988	292	29.6%	1,607	832	51.7%
	Oklahoma	362	62	17.1%	127	73	57.7%
	Oregon	144	40	27.8%	206	109	52.6%
	Pennsylvania	749	226	30.2%	1,883	858	45.5%
	Rhode Island	96	32	33.3%	286	168	58.9%
	South Carolina	171	52	30.4%	219	114	52.3%
	South Dakota	111	53	47.7%	329	93	28.3%
	Tennessee	340	129	37.9%	591	349	59.0%
	Texas	1127	168	14.9%	443	267	60.3%
	Utah	91	37	40.7%	208	139	67.1%
	Virginia	267	84	31.5%	340	190	56.0%
	Vermont	43	12	27.9%	91	35	38.9%
	Washington	267	88	33.0%	602	233	38.7%
	Wisconsin	399	139	34.8%	990	324	32.7%
	West Virginia	140	52	37.1%	239	157	65.8%
	Wyoming	38	17	44.7%	98	38	38.7%

Table C2: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Turnover in Sample Facilities	Turnover Rate
LPN	Alaska	15	7	46.7%	33	12	36.4%
	Alabama	222	103	46.4%	1,867	901	48.3%
	Arkansas	240	85	35.4%	943	581	61.6%
	Arizona	139	62	44.6%	942	700	74.3%
	California	1321	287	21.7%	3,008	1,449	48.2%
	Colorado	222	67	30.2%	689	334	48.4%
	Connecticut	253	57	22.5%	716	252	35.2%
	District of Columbia	21	9	42.9%	183	52	28.2%
	Delaware	42	17	40.5%	236	77	32.6%
	Florida	714	272	38.1%	4,297	2,228	51.8%
	Georgia	356	174	48.9%	2,654	1,397	52.7%
	Hawaii	45	26	57.8%	296	74	25.1%
	Iowa	465	164	35.3%	936	393	42.0%
	Idaho	83	36	43.4%	298	162	54.4%
	Illinois	836	216	25.8%	1,865	962	51.6%
	Indiana	549	150	27.3%	1,822	1,151	63.2%
	Kansas	367	144	39.2%	785	484	61.6%
	Kentucky	298	105	35.2%	1,074	692	64.5%
	Louisiana	320	65	20.3%	885	439	49.6%
	Massachusetts	496	120	24.2%	1,409	695	49.3%
	Maryland	235	75	31.9%	998	426	42.7%
	Maine	111	35	31.5%	175	61	34.9%
	Michigan	433	138	31.9%	1,676	628	37.5%
	Minnesota	424	150	35.4%	1,651	508	30.8%
	Missouri	547	186	34.0%	1,635	1,050	64.2%
	Mississippi	191	71	37.2%	856	606	70.7%
	Montana	101	32	31.7%	230	111	48.3%
	North Carolina	407	167	41.0%	1,980	1,035	52.3%
	North Dakota	86	53	61.6%	465	115	24.7%
	Nebraska	228	105	46.1%	756	215	28.5%
	New Hampshire	82	25	30.5%	190	61	32.3%
	New Jersey	352	84	23.9%	1,138	426	37.4%
	New Mexico	77	38	49.4%	313	194	61.9%
	Nevada	44	15	34.1%	146	106	72.7%
	New York	662	177	26.7%	3,454	1,151	33.3%
	Ohio	988	323	32.7%	3,982	1,847	46.4%
	Oklahoma	362	98	27.1%	783	556	71.1%
	Oregon	144	33	22.9%	177	82	46.7%
	Pennsylvania	749	225	30.0%	2,874	1,043	36.3%
	Rhode Island	96	26	27.1%	204	85	41.8%
	South Carolina	171	59	34.5%	850	420	49.4%
	South Dakota	111	46	41.4%	214	58	27.4%
	Tennessee	340	155	45.6%	2,261	1,271	56.2%
	Texas	1127	252	22.4%	2,996	2,049	68.4%
	Utah	91	36	39.6%	292	154	52.8%
	Virginia	267	100	37.5%	1,419	813	57.3%
	Vermont	43	16	37.2%	176	37	21.2%
	Washington	267	93	34.8%	944	408	43.2%
	Wisconsin	399	143	35.8%	1,081	321	29.7%
	West Virginia	140	57	40.7%	612	228	37.3%
	Wyoming	38	17	44.7%	103	43	41.6%

Table C2: Annualized Turnover Rate Estimates by Job Category and State (based upon six months ending June 30, 2002)

Job Category	State	Total Facilities	Facilities in Sample	Percentage of Total Facilities	Established Positions in Sample Facilities	Total Turnover in Sample Facilities	Turnover Rate
CNA	Alaska	15	7	46.7%	173	120	69.5%
	Alabama	222	104	46.8%	5,107	4,114	80.6%
	Arkansas	240	81	33.8%	3,048	3,474	114.0%
	Arizona	139	63	45.3%	2,691	2,806	104.3%
	California	1321	294	22.3%	10,544	5,708	54.1%
	Colorado	222	72	32.4%	2,132	1,410	66.1%
	Connecticut	253	64	25.3%	2,969	1,461	49.2%
	District of Columbia	21	9	42.9%	569	253	44.5%
	Delaware	42	17	40.5%	693	405	58.5%
	Florida	714	288	40.3%	13,370	8,160	61.0%
	Georgia	356	171	48.0%	6,880	5,210	75.7%
	Hawaii	45	27	60.0%	1,173	243	20.7%
	Iowa	465	173	37.2%	4,279	2,595	60.7%
	Idaho	83	37	44.6%	1,050	1,163	110.8%
	Illinois	836	229	27.4%	7,327	5,532	75.5%
	Indiana	549	151	27.5%	4,336	3,941	90.9%
	Kansas	367	147	40.1%	3,423	3,271	95.6%
	Kentucky	298	108	36.2%	3,686	3,967	107.6%
	Louisiana	320	61	19.1%	2,302	2,316	100.6%
	Massachusetts	496	145	29.2%	6,343	3,252	51.3%
	Maryland	235	78	33.2%	3,402	1,777	52.3%
	Maine	111	39	35.1%	1,189	605	50.9%
	Michigan	433	148	34.2%	6,409	4,207	65.6%
	Minnesota	424	157	37.0%	5,607	2,865	51.1%
	Missouri	547	182	33.3%	5,553	6,833	123.1%
	Mississippi	191	73	38.2%	2,574	2,003	77.8%
	Montana	101	33	32.7%	938	755	80.5%
	North Carolina	407	173	42.5%	6,851	5,739	83.8%
	North Dakota	86	49	57.0%	2,317	1,017	43.9%
	Nebraska	228	116	50.9%	3,217	1,889	58.7%
	New Hampshire	82	28	34.1%	1,207	472	39.1%
	New Jersey	352	94	26.7%	4,017	1,837	45.7%
	New Mexico	77	39	50.6%	1,422	1,552	109.1%
	Nevada	44	14	31.8%	470	370	78.7%
	New York	662	185	27.9%	12,076	5,040	41.7%
	Ohio	988	336	34.0%	11,994	10,223	85.2%
	Oklahoma	362	92	25.4%	2,417	3,276	135.5%
	Oregon	144	41	28.5%	1,188	810	68.2%
	Pennsylvania	749	245	32.7%	9,753	4,940	50.7%
	Rhode Island	96	32	33.3%	1,313	1,085	82.7%
	South Carolina	171	59	34.5%	2,346	1,649	70.3%
	South Dakota	111	53	47.7%	1,484	759	51.1%
	Tennessee	340	152	44.7%	6,066	5,576	91.9%
	Texas	1127	236	20.9%	7,264	7,640	105.2%
	Utah	91	38	41.8%	1,007	1,116	110.8%
	Virginia	267	104	39.0%	4,326	3,165	73.2%
	Vermont	43	16	37.2%	558	378	67.8%
	Washington	267	95	35.6%	3,564	2,533	71.1%
	Wisconsin	399	160	40.1%	6,372	3,488	54.7%
	West Virginia	140	61	43.6%	2,013	1,163	57.8%
	Wyoming	38	18	47.4%	513	444	86.5%

## **Appendix D**

### **Survey Description and Methodology**



## ***Survey Instrument***

The survey instrument was designed to collect information about the number of established positions and vacant positions as of June 30, 2002, and the number of employees who left each nursing facility (both voluntary and involuntary terminations) between January 1 and June 30, 2002. These data were collected in terms of Full Time Equivalents (FTEs) for the following six job categories:

- Director of Nursing (DON)
- Registered Nurses with Administrative Duties (Administrative RNs)
- Staff Registered Nurses (Staff RNs)
- Licensed Practical Nurses/Licensed Vocational Nurses (LPNs)
- Certified Nurse Assistants (CNAs)
- Non-certified Aides

In this report, we present results for the first five job categories. Data on non-certified aides were found to be insufficient for analysis.

The survey instrument also asked respondents to indicate whether it has become easier or more difficult for their facility to recruit Staff RNs, LPNs, and CNAs (three separate questions) relative to one year ago. Respondents could indicate that there was no real change in the last year with respect to recruiting for these positions, or that they did not know.

## ***Target Population and Response Rate***

In order to have data potentially representative of each state as well as the nation, a census sample was used. On June 28, 2002, surveys were mailed to facility administrators at all 16,592 nursing facilities on the March 2002 Online Survey Certification and Reporting (OSCAR) database, from the Centers for Medicare and Medicaid Services. A second mailing was made on July 22 to all facilities that had not responded as of July 15. A total of 275 surveys were found to be undeliverable; these surveys were returned to AHCA by the Post Office due to insufficient addresses or because the facility had closed. Thus, a total of 16,317 facilities were eligible to participate in this survey.

As of October 29<sup>th</sup>, 6,244 surveys were received. Eighty-nine duplicate records were deleted from the database (facilities that responded twice), resulting in 6,155 records available for analysis (overall response rate = 37.7 percent).

## ***Data Edits***

To ensure the reliability of the data, frequency distributions were examined and data were omitted from the analysis where individual responses were out of range or a combination of responses were deemed implausible (contingency checks). In cases where implausible or out of range data were detected, responses were omitted for the specific job category, except where noted otherwise. Data were omitted for the following reasons:

- For each staff category where the number of vacancies were greater than the number of established positions, the staff category data was omitted;
- Where the number of positions in two or more staff categories from the survey were two or more times greater than that reported in OSCAR, and the number of beds in the survey were two or more times greater than that reported in OSCAR, the facility was omitted;
- Established DON positions less than one or greater than two<sup>11</sup>, the staff category was dropped;
- Where the number of positions from the survey were two or more times greater than that reported in OSCAR, and the number of beds in the survey were two or more times greater than that reported in OSCAR, the staff category data was omitted;
- For each staff category other than DONs, when the number of established positions was outside the range of the 1<sup>st</sup> to 99<sup>th</sup> percentile of the distribution for the specific job category, the staff category data was omitted;
- For each staff category other than DONs, when the ratio of established positions to beds was outside the range of the 1<sup>st</sup> to 99<sup>th</sup> percentile of the distribution for the specific job category, the specific staff category data was dropped;
- For staff categories other than DONs, all data for a given category were omitted if: (a) the number of vacancies minus the number of terminations was greater than 1, (b) the ratio of the difference between the number of vacancies and terminations to the number of established positions for the job category was greater than 25 %, and (c) the number of positions was greater than one<sup>12</sup>, the staff category data was omitted; and
- For vacancy rates that were greater than 50% in 3 or more job categories, the facility was omitted.

### ***Population Adjustments to Derive National Estimates***

Results were adjusted to provide national estimates representing the universe of nursing facilities eligible to participate in the survey. Population weights were calculated and applied for subgroups or characteristics of nursing facilities related to response rates and vacancy/turnover rates. Five characteristics that were known for both the population of respondents as well as the universe of facilities eligible to participate in the survey were examined [hospital affiliation, Metropolitan Statistical Area (MSA) status<sup>13</sup>, for-profit status, multi-facility status, and number of beds]. Of these five characteristics, only hospital affiliation and MSA status were correlated both with response rates and the majority of the vacancy and turnover rates.

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<sup>11</sup> Review of the data showed that a small number of forms contained data that were unlikely to represent FTEs. Given that federal regulations stipulate that each facility must designate a registered nurse to serve as the DON on a full-time basis unless a waiver has been granted [§483.30(2) 42 CFR Ch. IV (10-1-00 Edition)], we decided to omit DON data from facilities that reported less than one, or more than two DON FTEs.

<sup>12</sup> Under normal circumstances, the number of terminations would be greater than or equal to the number of vacancies. One situation that would violate this rule would be if a facility expanded its capacity and created new positions. This screen is used as a proxy for the rate of expansion of a facility with more vacancies than terminations.

<sup>13</sup> Metropolitan Statistical Areas are defined as geographic areas that include at least: one city with 50,000 or more inhabitants, or a Census Bureau defined urbanized area (of at least 50,000 inhabitants) and a total metropolitan population of at least 100,000 (75,000 in New England).

For population adjustment purposes, all facilities were classified into one of the following four facility categories:

1. Freestanding, rural
2. Freestanding, urban
3. Hospital-based, rural
4. Hospital-based, urban

Population adjustment factors for each category above were calculated in each job-specific analysis of vacancies and turnover by dividing the number of facilities in the population within each category by the number of responding facilities in the category with usable data. The resulting factors were incorporated into the calculation of national vacancy and turnover rate estimates as described below.

### ***Calculation of Vacancy Rate Estimates***

Facilities were considered to have usable data for vacancy rates if their reported number of established positions was greater than zero and their reported number of vacant positions was greater than or equal to zero.

- For National Estimates: Population-adjusted vacancy rate estimates were calculated, for each specific job category, by first multiplying the number of vacant positions and established positions for all facilities with usable data within each of the four facility categories by the relevant population adjustment factor described earlier. Then the sum of the population-adjusted vacant positions for all facilities with usable data was divided by the sum of the population adjusted established positions for all facilities with usable data.
- For Regional and State Estimates: Vacancy rate estimates were calculated, for each specific job category without population adjustments, by dividing the sum of vacant positions for all facilities with usable data by the sum of established positions for all facilities with usable data.

All vacancy rate estimates are presented as percentages.

### ***Calculation of Turnover Rate Estimates***

Facilities were considered to have usable data for turnover rates if their reported number of established positions was greater than zero and their reported number of terminations was greater than or equal to zero.

- For National Estimates: Six-month population-adjusted turnover rate estimates were calculated, for each specific job category, by first multiplying the number of terminations and established positions for all facilities with usable data within each of the four facility categories by the relevant population adjustment factor described earlier. Then the sum of the population-adjusted terminations for all facilities with usable data was divided by the sum of the population-adjusted established positions for all facilities with usable data.

- For Regional and State Estimates: Six-month turnover rate estimates were calculated, for each specific job category without population adjustments, by dividing the sum of terminations for all facilities with usable data by the sum of established positions for all facilities with usable data.

Annualized turnover rate estimates were calculated by multiplying the six-month turnover rate estimates by a factor of two. All turnover rate estimates are presented as percentages.

### ***Confidence Intervals***

The upper and lower limits of the 95 percent confidence interval allow us to be 95 percent certain that the true population mean lies within the given range. The methods used to compute upper and lower limits of 95 percent confidence intervals for national population-adjusted vacancy/turnover rate estimates were as follows:

- For each job-specific vacancy and turnover analysis, the mean of the population-adjusted number of established positions was calculated. The formula for calculating the mean is the sum of the relevant position variable across all observations divided by the number of observations.
- The mean within each job specific vacancy and turnover analysis was then used to compute a contribution index for each facility by dividing each facility's population adjusted number of established positions by the mean.
- Facility specific, population-adjusted vacancy/turnover rates were calculated by dividing the population-adjusted number of vacancies/terminations reported by facilities with usable data by the relevant population-adjusted number of established positions. These facility specific rates were then multiplied by the contribution indexes to compute a population-adjusted, contribution-adjusted, facility-level vacancy/turnover rate.
- The sample standard deviation of the distribution of each population-adjusted, contribution-adjusted, facility-level rate within each job category was calculated. Upper and lower 95 percent confidence interval limits were then calculated using these sample standard deviations with the finite population correction.

### ***Perception of Recruitment Ease/Difficulty for Staff RNs, LPNs, and CNAs***

Facilities had the opportunity to indicate whether the recruitment of RNs, LPNs, and CNAs was easier than one year ago, the same as one year ago, more difficult than one year ago, or did not know. Percentages were computed for only those facilities that responded by indicating the extent of difficult for all three staff categories. Data for facilities with missing or did not know responses for any staff category were excluded from the analysis to determine relative difficulty of recruiting for each position at a facility.