



North Dakota Nursing Needs Study: Year Nine Facility Survey Results

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Executive Summary

Background

In the July/August 2009 *Health Affairs*, Dr. Peter Buerhaus and coauthors found that despite the current easing of the nursing shortage due to the recession, the U.S. nursing shortage is projected to grow to 260,000 registered nurses by 2025. A shortage of this magnitude would be twice as large as any nursing shortage experienced in this country since the mid-1960s. In the article titled [The Recent Surge In Nurse Employment: Causes And Implications](#), the researchers point to a rapidly aging workforce as a primary contributor to the projected shortage.

The Nursing Needs Study was recommended by the North Dakota Century Code Nurse Practices Act 43-12.1-08.2 in which the North Dakota Board of Nursing was directed to address issues of supply and demand including recruitment, retention and utilization of nurses. The North Dakota Board of Nursing then contracted with Dr. Patricia Moulton at the University of North Dakota School of Medicine and Health Sciences to conduct the Nursing Needs Study. The study, currently in its ninth year, is approved to continue until 2012 by the Board of Nursing. This study will continue to provide valuable information about the nursing workforce through a 10-year period of time.

Facility Survey Results

This report includes the results from the facility survey, which was sent to all hospitals, long-term care facilities, regional public health facilities, clinics and home health facilities in North Dakota. A total of 206 organizations provided information on 226 facilities, (representing 88 percent of counties in North Dakota). Return rate on the surveys equaled 55% hospitals, 28% clinics, 45% long term care, 42% public health and 32% home health. These surveys provided a comprehensive picture of the nature of nursing employment and potential shortages throughout the state and to enable comparisons to be drawn between health care facilities, rural and urban areas and North Dakota and national data.

- **Recruitment Issues**

On average, it takes longer to recruit APN's than RN's or LPN's. In 2010 the average weeks to fill vacancies were slightly lower than in 2007 with rural clinics taking the longest time to fill open positions.

- **Salary and Benefit Issues**

For the past six years, the average starting salaries were not consistent with education level in that associate RNs had a greater hourly wage than bachelor level RNs. Nurses in urban areas had the greatest starting salary. The lowest starting hourly wages are in the Northwest part of state for LPNs and RNs.

Average hourly wages indicated that urban nurses had greater average wages. The lowest average hourly wages are in the Northwest part of state for LPNs and RNs (see Figure 10).

- **Staffing**

The statewide vacancy rate for LPNs was six percent, which was a decrease from the previous year. The statewide RN vacancy rate was four percent, which was a decrease from previous year.

The statewide turnover rate for LPNs was 22 percent, which is a decrease from the previous year. The statewide turnover rate for RNs was 30 percent, which was an increase from previous years.

- **Decision Making**

Fifty six percent (56%) of facilities reported having a formal structure in place for nurses to participate in decision making within the facility.

Hospitals, nursing homes, HSC, and assisted living facilities showed a higher percent of facilities that include nurses in the decision making process. Of those facilities including nurses in decision making, BSRNs 15.4%, LPNs 9.4%, ASRNs 7.1% and ASLPNs 6.9%.

North Dakota Nursing Needs Study Introduction

Health personnel shortages can negatively impact health care quality, through reduced health care access, increased stress on providers, and the use of under-qualified personnel. Also, shortages can contribute to higher costs by raising compensation levels to attract and retain personnel and by increasing the use of overtime pay and expensive temporary personnel. Workforce shortages, while a problem for the entire health care system, are likely to be most severe for rural/frontier regions and medically needy population groups such as the elderly. North Dakota has 41 designated medically underserved areas, and 81 percent of North Dakota's 53 counties are designated as partial or whole county health professional shortage areas. North Dakota also has the highest proportion of residents aged 85 and older, the age group with the greatest need for healthcare services. In North Dakota, this cohort is predicted to double in size by 2020.

Nurses are an integral part of the health care system providing nursing services to patients requiring assistance in recovering or maintaining their physical and/or mental health (North Dakota Healthcare Association, 2002). In the United States, nurses comprise the largest group of health care providers. The ability to provide accessible, high quality care depends on the availability of a nursing workforce with the requisite skills and knowledge. Over the past few years, research studies have identified clear relationships between nurse staffing and patient outcomes. For example, when nurses are short-staffed much of the necessary patient care is just not being done. One RN in the study stated: "People want to give good care and it bothers all of us when we can't do it. You are pulled in 10 directions, and you can't give quality care to your patients. It really bothers me." ("Missing Nursing Care: A Qualitative Study" Beatrice Kalisch) North Dakota is not immune to this problem.

The Nursing Needs Study was recommended, in 2001, by the North Dakota State Legislature (NDCC Nurse Practices Act 43-12.1-08.2) to address potential shortages in nursing supply. Specifically, the North Dakota Board of Nursing was directed to address issues of supply and demand for nurses, including issues of recruitment, retention, and utilization of nurses. To respond to this request, the North Dakota Board of Nursing contracted with the Center for Rural Health at the University of North Dakota School of Medicine and Health Sciences.

This study, initiated in 2002, was designed to obtain an accurate and complete picture of nurses in rural and urban areas of North Dakota, compare North Dakota's trends to national trends, and inform institutional and public policy. The study, currently in its ninth year, is approved to continue until 2012 by the Board of Nursing. This study will continue to provide valuable information about the nursing workforce through a 10-year period of time.

Facility Survey Results

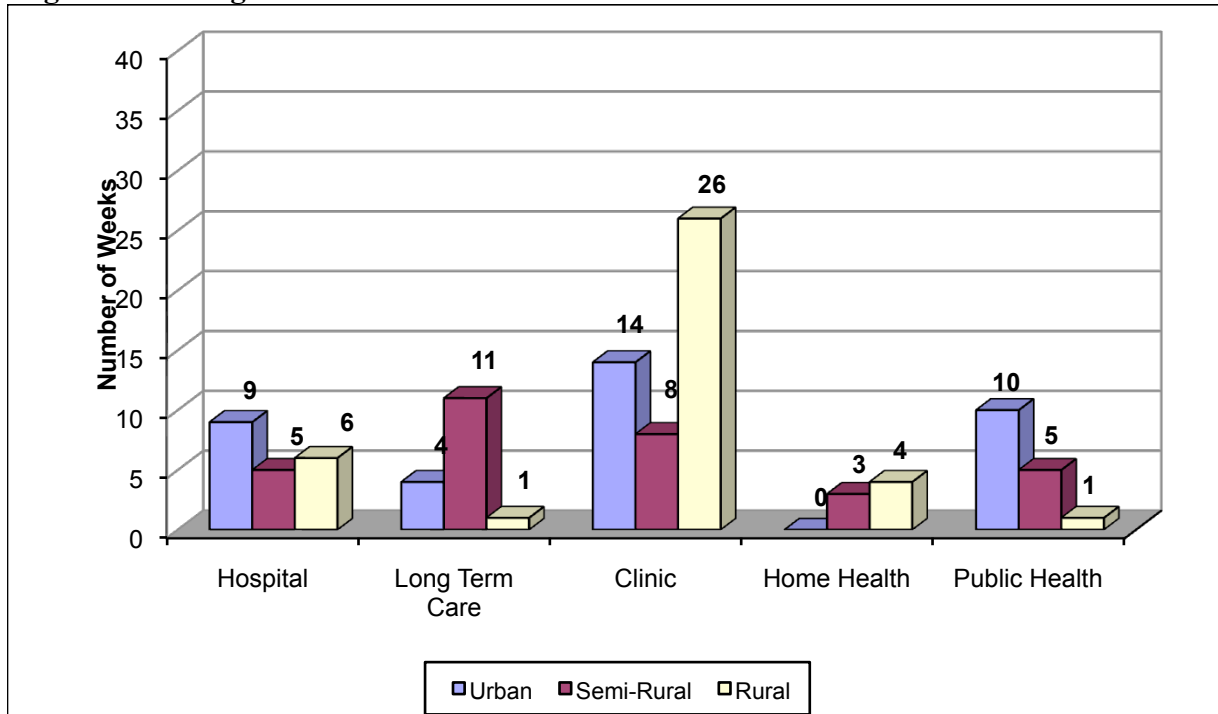
Surveys were sent to all North Dakota hospitals, long-term care facilities, regional public health facilities, home health facilities, and clinics in the winter of 2010. Of the 206 organization responses (210 different facilities), 25 percent represented urban facilities; 56 percent represented semi-rural facilities; and 19 percent of the responses came from rural facilities. Fifty-two of 53 counties in North Dakota were represented in the survey responses.

Data was analyzed by rurality using Urban Influence Codes and level of nurses. These results are also compared with facility survey results from 2003, 2004, 2005, 2006, and 2007 providing a six-year composite picture.

RECRUITMENT ISSUES

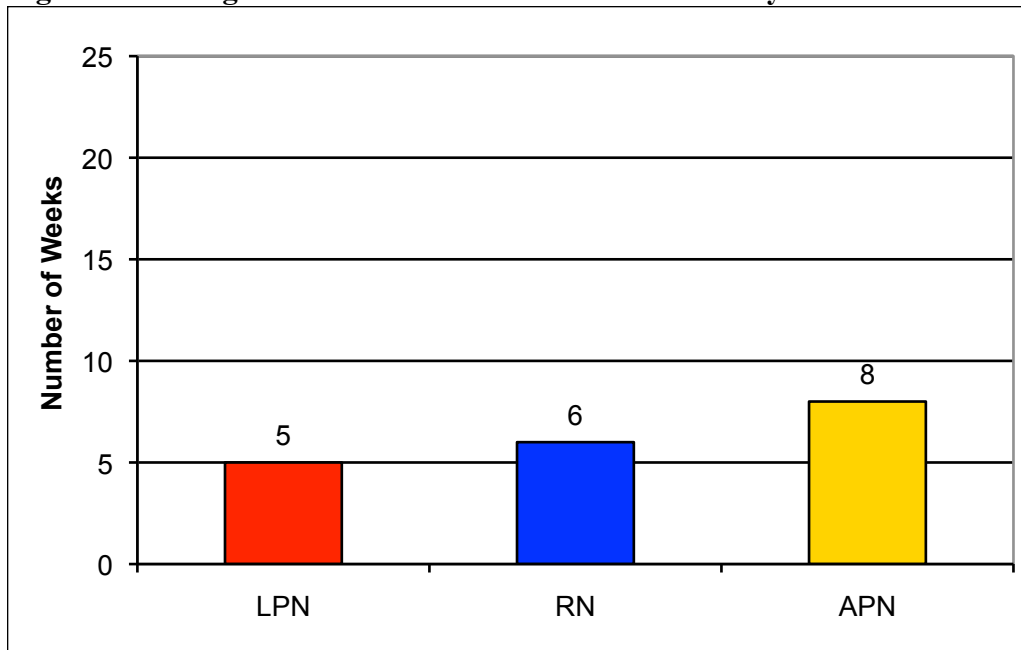
Facilities were asked how long (number of weeks) on average, it takes to fill a vacant nursing position. Public and home health facilities took the fewest weeks to fill a vacant position (see Figure 1).

Figure 1: Average Number of Weeks to Fill Vacancies



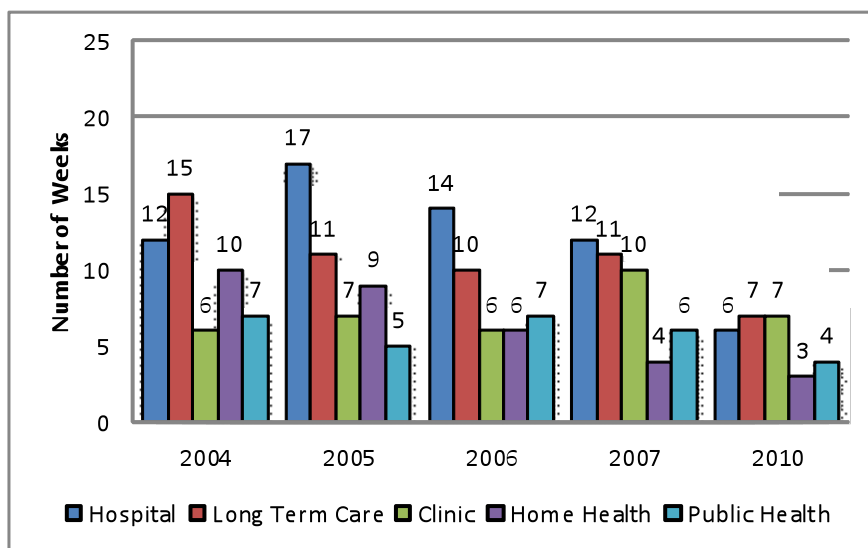
When divided by nurse level, Advanced Practice Nurses (APNs) had the greatest number of weeks to fill a nurse vacancy (see Figure 2).

Figure 2: Average Number of Weeks to Fill Vacancies by Nurse Level



Overall as compared to 2006 and 2007 home health, and hospitals facilities saw a decrease in the number of weeks to fill nurse vacancies. Clinics have experienced an increase in the last year (see Figure 3).

Figure 3: Average Number of Weeks to Fill Vacancies According to Year



SALARY AND BENEFITS ISSUES

Starting Wage

Starting wages are the average hourly wage paid to nurses when they were first hired as new graduates. In nearly all cases, urban nurses had a higher average starting pay than semi-rural and rural nurses. The highest average starting pay was for urban RNs with a bachelor degree, while the lowest average starting pay was reported for semi-rural, public health associate degree LPNs at \$12.50 (see Table 1). Overall starting salaries for all reported categories increased in the last 2 years.

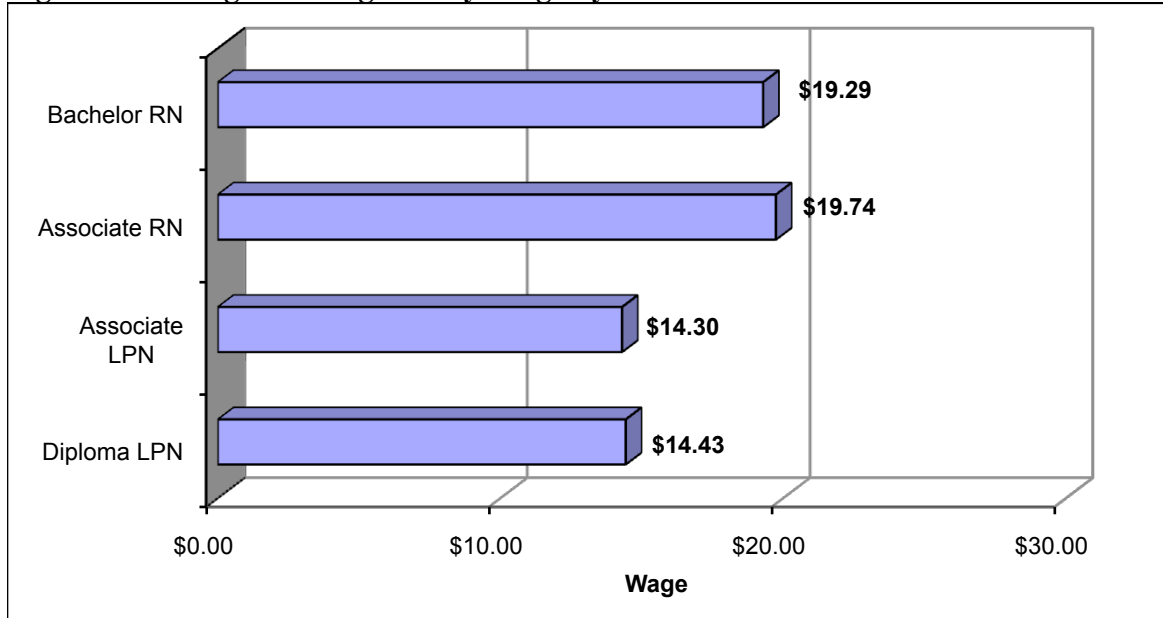
Table 1: Average Starting Hourly Wage for Each Nurse Category

		Diploma LPN	Associate LPN	Associate RN	Bachelor's RN
HOSPITAL	URBAN	\$14.22 (3)	\$14.39 (4)	\$22.25 (4)	\$22.56 (4)
	SEMI-RURAL	\$13.80 (3)	\$13.66 (7)	\$19.87 (3)	\$19.96 (8)
	RURAL	\$13.98 (4)	\$13.59 (6)	\$17.90 (3)	\$18.78 (8)
LONG-TERM CARE	URBAN	\$16.35 (5)	\$14.96 (11)	\$22.89 (6)	\$21.99 (12)
	SEMI-RURAL	\$16.42 (13)	\$14.94 (22)	\$20.92 (13)	\$20.68 (24)
	RURAL	\$15.24 (11)	\$14.17 (13)	\$20.46 (10)	\$20.23 (15)
CLINIC	URBAN	\$13.40 (8)	\$13.50 (3)	----	\$20.07 (7)
	SEMI-RURAL	\$13.41 (13)	\$13.14 (20)	\$17.33 (4)	\$16.97 (19)
	RURAL	\$15.00 (2)	----	---	\$---
HOME HEALTH	URBAN	---	---	---	\$19.50 (2)
	SEMI-RURAL	---	\$16.35 (1)	\$18.40 (1)	\$18.66 (4)
	RURAL	---	\$13.00 (1)	\$15.84 (1)	\$16.92 (2)
PUBLIC HEALTH	URBAN	---	---	---	\$21.58 (1)
	SEMI-RURAL	\$14.22 (3)	\$12.50 (2)	\$15.83 (4)	\$16.73 (13)
	RURAL	---	---	---	\$16.56 (5)

Note. The number of facilities that responded is included in parenthesis.

Overall, the average starting hourly wage is greater for diploma level LPNs compared to associate degree level LPNs while pay is greater for associate level RNs compared to bachelor level RNs (see Figure 4).

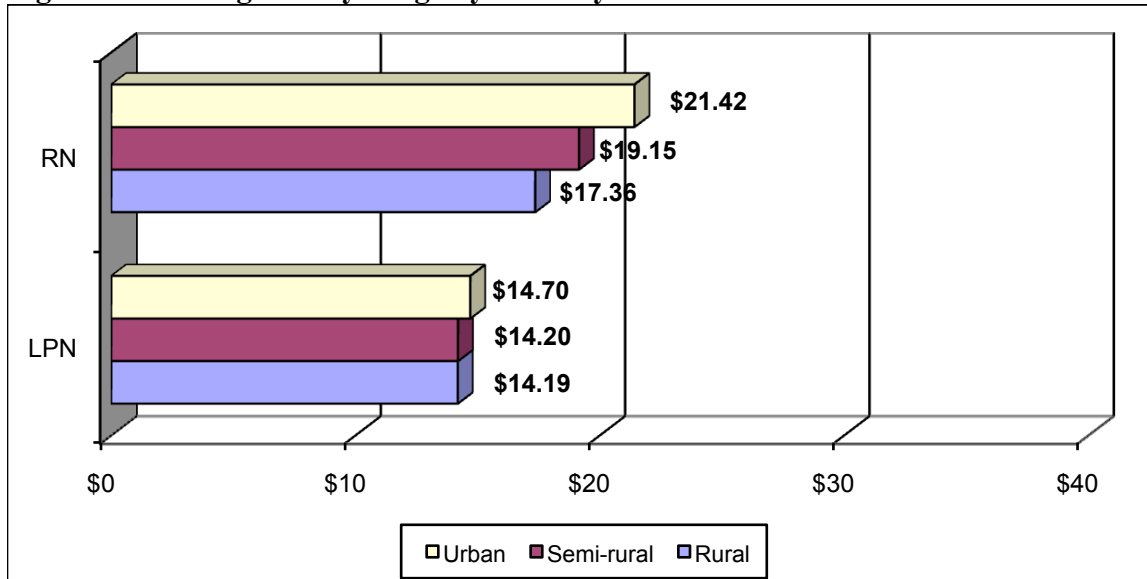
Figure 4: Average Starting Hourly Wage by Education Level



Note. Average starting wage for each category is a weighted mean.

When divided by rurality, nurses in urban areas had greater average starting hourly wages than nurses in semi-rural and rural areas. Urban RNs starting hourly wage is \$4.06 (18.9%) more than rural RNs.

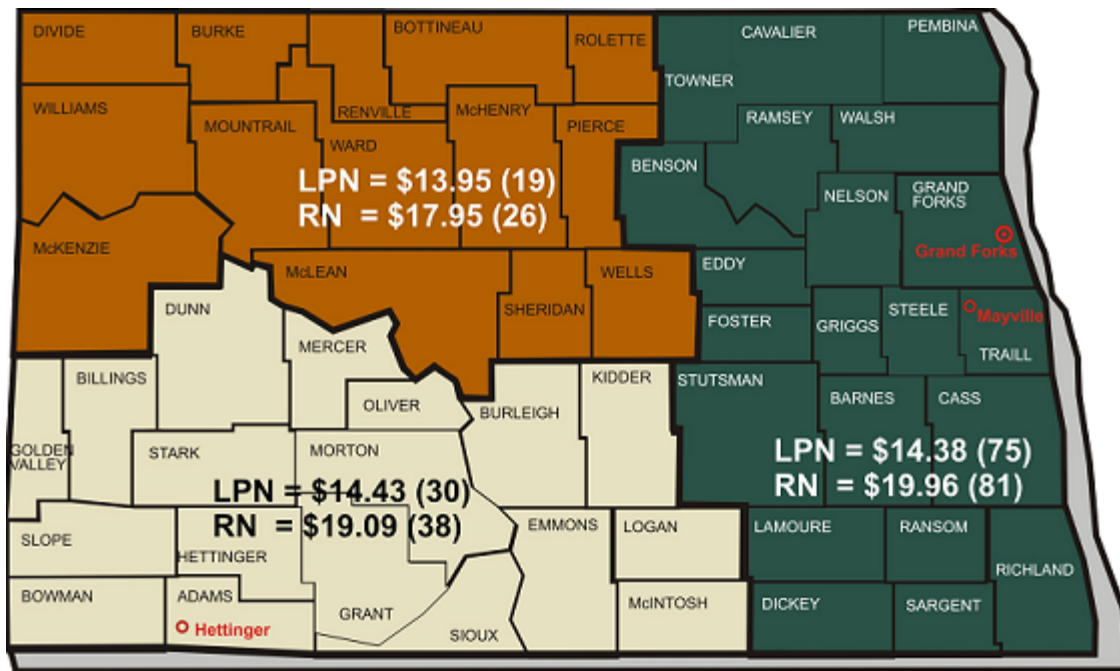
Figure 5: Starting Hourly Wage by Rurality



Note. Average starting wage for each category is a weighted mean.

When divided by region the lowest starting hourly wages are in the Northwest part of state for LPNs and RNs (see Figure 6).

Figure 6: Starting Hourly Wage by State AHEC Region

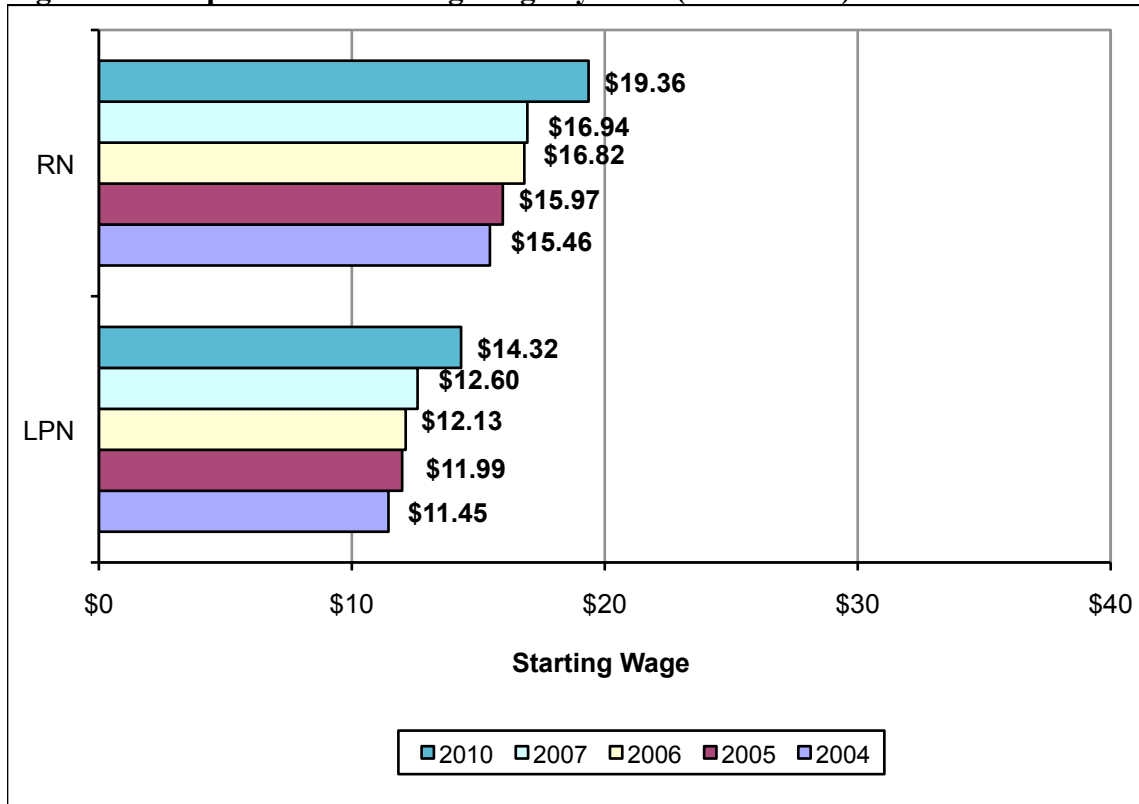


Note. The number of responses is included in parenthesis. Average starting wage for each category is a weighted mean.



Across the last five years, starting wages have increased for LPNs and RNs. (see Figure 7).

Figure 7: Comparison of Starting Wage by Year (2004 - 2010)



Note. Average starting wage for each category is a weighted mean.



Average Wage

Average wages reflects the average hourly wage paid for all nurses. The highest average wage was noted at urban hospitals at \$27.74 per hour for a bachelor RN. Lowest average pay was reported for semi-rural public health associate LPNs at \$13.80 per hour (see Table 2).

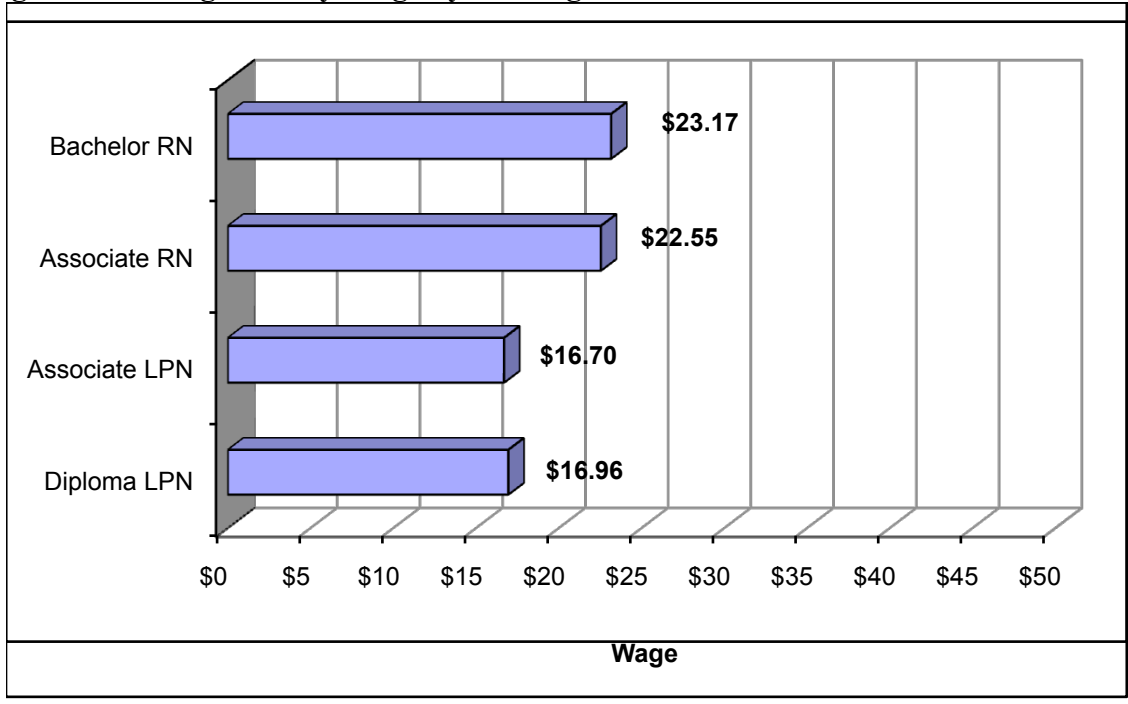
Table 2- Average Hourly Wage for Each Nurse Category

		Diploma LPN	Associate LPN	Associate RN	Bachelor RN
HOSPITAL	URBAN	\$18.47 (3)	\$17.16 (4)	\$26.76 (4)	\$27.74 (4)
	SEMI-RURAL	\$18.70 (2)	\$17.30 (7)	\$22.99 (2)	\$25.54 (8)
	RURAL	\$16.20 (4)	\$15.28 (4)	\$23.80 (3)	\$24.45 (5)
LONG-TERM CARE	URBAN	\$17.14 (5)	\$16.59 (7)	\$20.64 (5)	\$22.86 (10)
	SEMI-RURAL	\$20.03 (11)	\$18.04 (18)	\$23.38 (11)	\$25.61 (22)
	RURAL	\$19.90 (1)	\$18.50 (6)	\$22.32 (2)	\$25.65 (1)
CLINIC	URBAN	\$16.31 (8)	\$16.07 (2)	---	\$22.47 (10)
	SEMI-RURAL	\$14.65 (11)	\$15.03 (20)	\$19.08 (4)	\$19.53 (17)
	RURAL	---	---	---	---
HOME HEALTH	URBAN	---	---	---	\$26.50 (2)
	SEMI-RURAL	---	---	\$21.75 (1)	\$23.98 (4)
	RURAL	---	\$15.22 (2)	\$23.86 (1)	\$23.99 (3)
PUBLIC HEALTH	URBAN	---	---	---	\$26.97 (1)
	SEMI-RURAL	\$16.43 (2)	\$13.80 (1)	\$20.96 (4)	\$20.10 (7)
	RURAL	---	---	---	\$19.55 (5)

Note. The number of responses is included in parenthesis.

Overall, the average hourly wage is greater for diploma LPNs compared to associate degree LPNs and for bachelor degree education level RNs compared to an associate degree level RNs (see Figure 8).

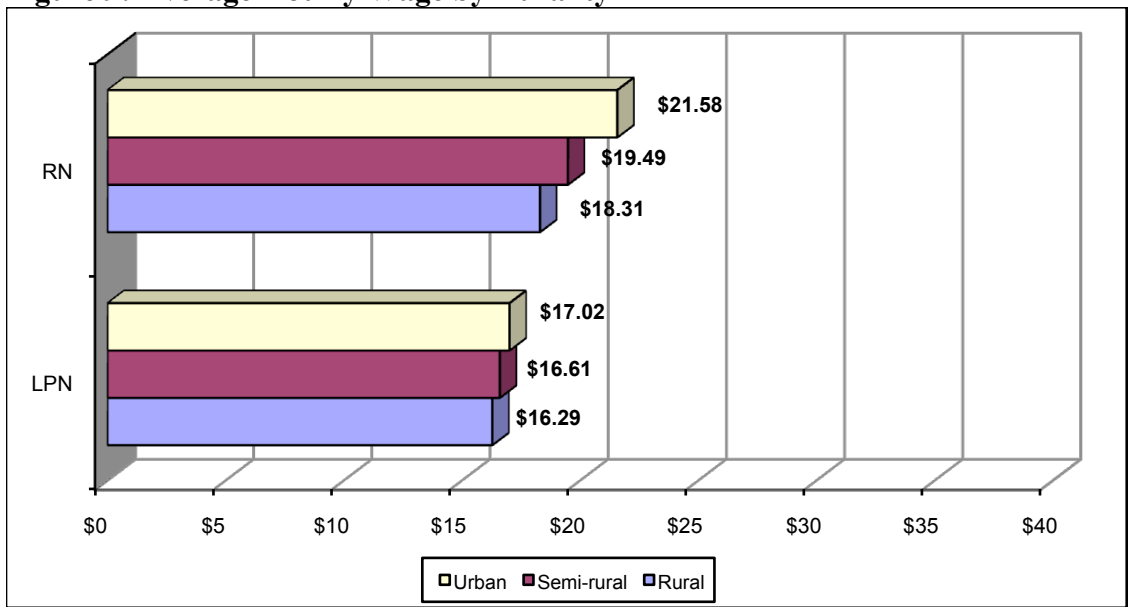
Figure 8: Average Hourly Wage by Nursing level



Note. Average starting wage for each category is a weighted mean.

When divided by rurality, nurses in urban areas had greater average hourly wages than nurses in semi-rural and rural areas (see Figure 9).

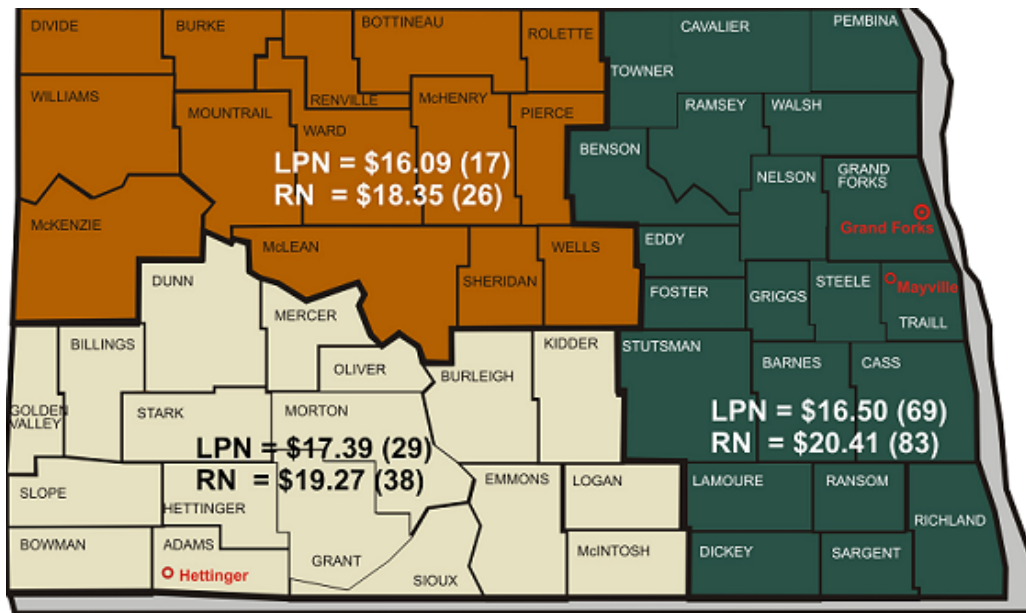
Figure 9: Average Hourly Wage by Rurality



Note. Average starting wage for each category is a weighted mean.

When divided by region the lowest hourly wages are in the Northwest part of state for LPNs and RNs (see Figure 10).

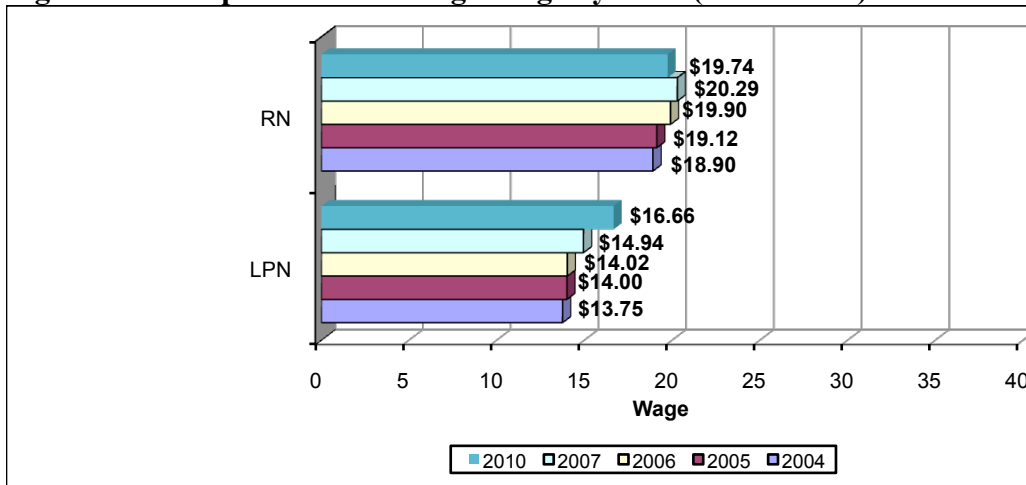
Figure 10: Average Hourly Wage by AHEC Region



Note. The number of responses is included in parenthesis. Average starting wage for each category is a weighted mean.

Across the last five years, average wages have increased for LPNs. RNs have seen a decrease in average wage since 2006 (see Figure 11).

Figure 11: Comparison of Average Wage by Year (2004 - 2010)



STAFFING ISSUES

Vacancy Rates

Vacancy rates for each facility type, and each nurse category, are defined as the average number of vacant FTE (full-time equivalent) positions divided by the total vacant FTEs + total filled FTEs X 100 (Reinier, Palumbo, McIntosh, Rambur, Kolodinsky, Hurowitz and Ashikaga 2005). According to economists, a full workforce in most industries exists when vacancy rates do not exceed five to six percent (Prescott, 2000). A shortage is considered to be present at a sustained vacancy rate above this level.

The highest vacancy rates were for LPNs especially in hospitals, clinics and long-term care facilities (see Table 3)

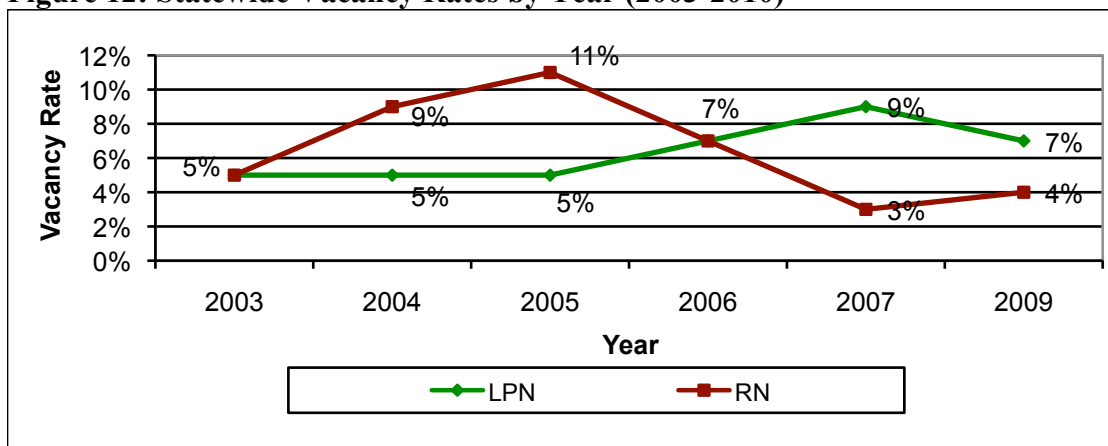
Table 3 – Vacancy Rate by Facility Type

	LPN	RN
HOSPITAL	5% (15)	6% (16)
LONG-TERM CARE	6% (37)	5% (35)
CLINIC	6% (29)	2% (21)
HOME HEALTH	---	--
PUBLIC HEALTH	---	1% (16)

Note. Parenthesis indicates the frequency of complete survey responses included in calculation of vacancy rates. Home health agencies did not supply vacancy rate information.

The 2010 statewide vacancy rate for LPNs was seven percent, which is a decrease from the 2007 vacancy rate of nine percent. The RN statewide vacancy rate of four percent was an increase from the 2007 rate of three percent. (see Figure 12). Nationally, RN and LPN vacancy rates in hospitals are about 3 percent (AHA, 2002).

Figure 12: Statewide Vacancy Rates by Year (2003-2010)



Turnover Rates

Turnover rates indicate the stability of the workforce in a particular position. Turnover is defined as the number of individuals leaving in a particular time period divided by the total number of individuals during that period, expressed as a percentage. (Measuring the Nursing Workforce: Clarifying the Definitions, Reinier, et al 2005)

The national hospital average turnover rate is 15.0%. Bedside RN turnover trends slightly below hospital turnover. The national average turnover rate for bedside RNs is 14.2%. (2009 National Healthcare & RN Retention Report).

The statewide turnover rate is highest for RNs in long term care facilities and clinics. The highest LPN turnover rate is in public health. (see Table 4)

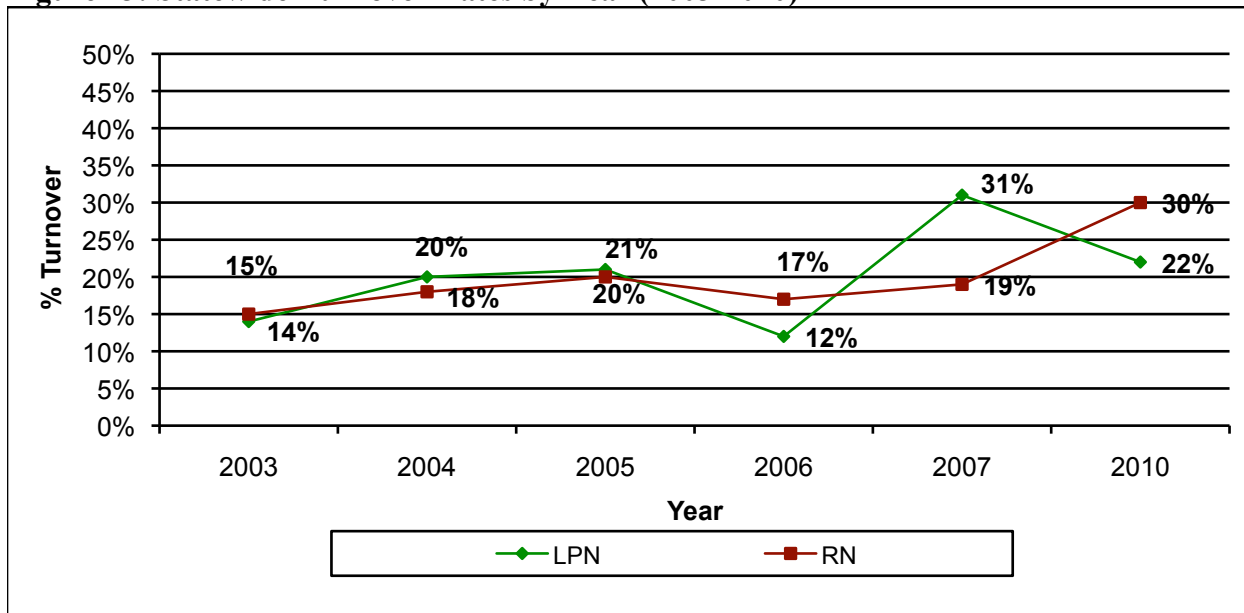
Table 4: Turnover Rate by Facility Type

	LPN	RN
HOSPITAL	16% (13)	16% (15)
LONG-TERM CARE	26% (33)	42% (34)
CLINIC	26% (18)	35% (9)
HOME HEALTH	---	27% (5)
PUBLIC HEALTH	33% (3)	10% (15)

Note. Parenthesis indicates the frequency of complete survey data that is necessary for calculation of turnover rates.

The statewide turnover rate for LPNs was 22 percent in 2010 which is lower than the statewide turnover rate in 2007. The statewide turnover rate for RNs was 30 percent, which was higher than previous years (see Figure 13).

Figure 13: Statewide Turnover Rates by Year (2003-2010)

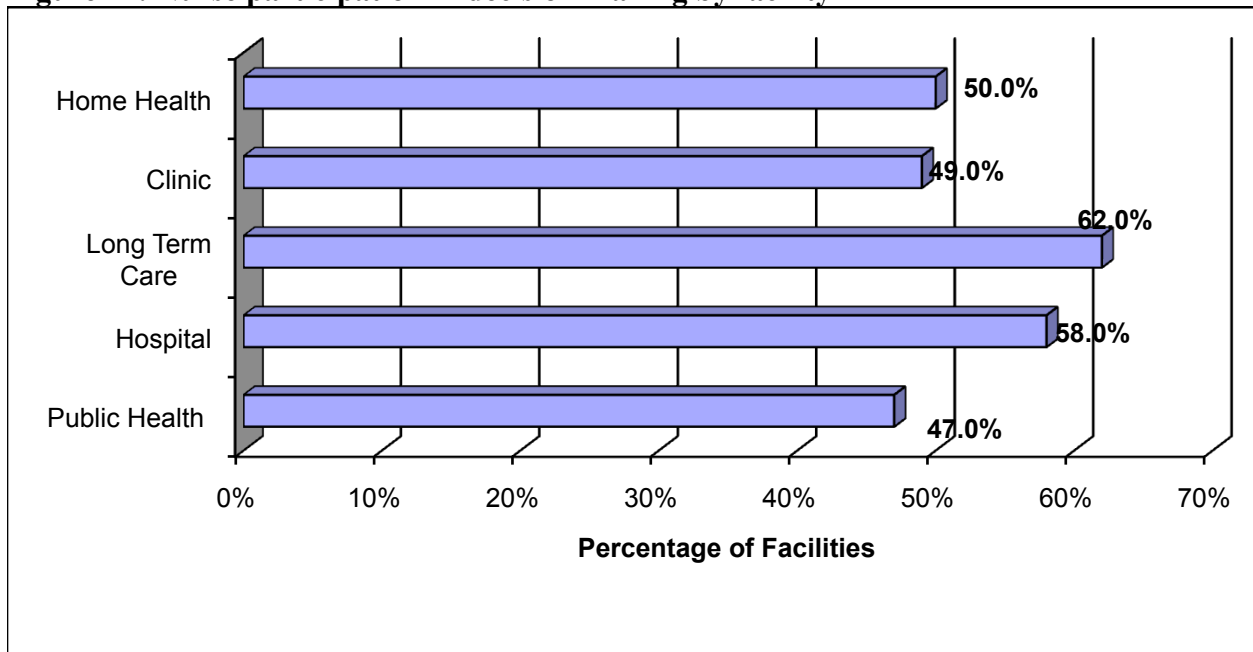


DECISION MAKING

A question inquired whether facilities having a formal structure in place for nurses to participate in making decisions. The majority (56%) of facilities do have a policy in place where nurses participate in the decision making process.

Long-term care facilities most frequently reported nurse participation in decision making. (see Figure 14).

Figure 14: Nurse participation in decision making by facility



CONTINUING EDUCATION

As part of the survey, facilities were asked what type of continuing education for nurses would you like to have available. These included:

- Annual infection control
- Diabetes
- Basic CPR
- Women's Health Education
- Charge nurse role and responsibility as shift supervisor
- Recognition of an impaired caregiver
- Continuing education for rural situations
- CPAP
- Nebulizer use
- Critical Thinking
- Dementia Care
- Ethics
- HIPAA/Confidentiality
- Managing Crisis Situations
- Team Building
- Tailoring Treatment Plans
- ACLS
- Pain management
- Nurse Mentoring
- Patient & Employee safety
- Hospice – end of life pain management, grief bereavement

Facilities were also asked about their greatest workforce issues. Commonly cited issues included:

- Getting a group of people to work together to be very efficient
- Finding quality employees
- Getting workers to locate to western ND
- Greatest workforce challenges are finding employees that are planning for long term employment.
- Quality applicants
- Recruiting, training and retaining qualified and talented employees
- Staffing is a constant challenge
- Replacing retiring employees in rural communities
- Meeting needs of under served populations

SURVEY CONCLUSIONS AND POLICY IMPLICATIONS

Hospitals, home health, and public health facilities indicated that they spent less time recruiting nurses than the previous years. Clinics indicate an increase in recruiting time with rural clinics having the highest increase. According to economists, vacancy rates above five to six percent are indicative of a shortage. Vacancy rates increased this year for RNs to four percent. Turnover rates, which are used to determine the amount of staffing fluctuation that is occurring in health care facilities, increased to 30 percent for RNs. This may indicate that there was an increase in vacant nursing positions, as well as an increase in the fluctuation (i.e., turnover) of nurses filling these positions.

This is paired with some indication of a slight decrease in the shortage of LPNs. The statewide vacancy rate for LPNs decreased to seven percent. The statewide turnover rate decreased for the LPNs to 22 percent after seeing a decrease in 2006 but an increase in 2007. This may indicate that more LPNs are staying their current positions and that the total number of unfilled positions throughout the state has decreased.

Salary continues to be a prominent issue in the nursing field. In the case of RNs, nurses with a greater amount of education (nurses with bachelor level RN degrees) receive a slightly lower starting salary and a slightly higher average salary when compared to RNs with less education (associate degree RNs). Nurses in rural and semi-rural areas also continue to receive less compensation compared to those in urban areas. There are also differences in salaries across sections of the state with LPNs and RNs receiving the lowest average starting wages in the Northwest section of the state. The lowest average hourly wages are in the Northwest part of state for LPNs and RNs.

There is also a difference between nursing level and likelihood to be included in decision making. Long term care facilities are more likely to include nurses in the decision making process. Bachelor degree RNs were most likely to be included in the decision making process. Inclusion of nurses in facility decision making is an important retention strategy.

Policy Implications

- Although data indicate a slight increase in the severity of the RN shortage, this may be a phenomenon associated with the particular facilities that participated in this survey research. This also applies to the slight decrease in LPN shortage found in this year's survey. Even with changes in LPN and RN shortage indicators, it is clear that some rural areas are facing a severe nursing shortage.
- Facilities should examine their salaries to determine whether nurses are rewarded for obtaining greater levels of education. Efforts should be increased to provide equality in salary for nurses working in rural areas of the state.

FACILITY SURVEY METHOD

This project was designed to assess nursing workforce demand and the characteristics of potential shortages in North Dakota health care facilities. To better understand current nursing workforce a survey was sent to the CEO's at all hospitals and long-term care facilities (nursing homes and basic care facilities) in North Dakota. A survey was also sent to the administrators of all regional public health facilities, home health facilities, and clinics in North Dakota.

This survey was developed to provide a comprehensive picture of the nature of nursing employment and potential shortages throughout the state and to enable comparisons to be drawn between health care facilities, rural and urban areas in North Dakota and national data. Survey questions were derived from the National Nursing Workforce Minimum Dataset. Questions were modified to be appropriate for LPNs. Questions on the survey were also modified to be appropriate for the various types of facilities that were queried.

Mailing lists for all facilities were derived from the 2009 North Dakota Medical Services Directory. Following the Dillman method, participants first received a postcard informing them of the upcoming survey mailing, then received the survey by mail and were asked to mail the survey back to the North Dakota Area Health Education Center in a postage-paid envelope. The survey was accompanied by a cover letter outlining the purpose of the study. The surveys were sent in January/February 2010 and respondents were asked to return the survey within two weeks. Those participants that had not returned their survey within one month were sent another copy and given two weeks to respond. Facilities that did not respond to the second mailing were sent a postcard reminding the organization to return the survey or contact the North Dakota Area Health Education Center if a new copy of the survey was needed.

The actual responses were given for each facility and for each level of nurses in the facility. These values were used to calculate the vacancy and turnover rates according to facility type.

- Total percentages were obtained by computing the average of all data points and rounding the results rather than by averaging percentages across the rural—urban continuum.
- If the response contained a range of numbers, the response was converted to a median number (example: the range 2-4 was reported as 3)
- Facilities that did not employ a certain category of nurse or did not provide a response to the survey question were excluded from analysis on items relating to that specific category.

Definitions

¹When appropriate, data were divided by Urban Influence Codes (USDA Economic Research Service, 2003). Urban Influence Codes are a method of classifying U.S. counties according to the size of metropolitan areas, proximity to metropolitan areas and the population of the largest city within the county. There are nine codes including two metropolitan county categories and seven non-metropolitan county categories. Due to the rural nature of North Dakota, several of the categories include no counties and some categories have a small number of counties represented. North Dakota counties were collapsed as follows into three larger categories based on their original Urban Influence Codes.

- Urban counties: Those small metropolitan counties with fewer than one million residents (4 counties).
- Semi-rural counties: Those non-metropolitan counties adjacent or not adjacent to a small metropolitan county with a town containing at least 2,500 residents (36 counties).
- Rural counties: Those areas not adjacent to a small metropolitan area, which does not contain a town with at least 2,500 residents (13 counties).

²For each facility setting, the following options were given for level of nurses employed at that setting: Certificate licensed practical nurses (Cert LPN), associate degree licensed practical nurses (ASLPN), associate degree registered nurses (ASRN) and bachelor degree registered nurses (BSRN).

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