



Center *for*  
Rural Health

University of North Dakota  
School of Medicine & Health Sciences

## North Dakota Legislative Council Budget Committee on Health Care

### North Dakota Nursing Needs Study Update

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North Dakota Nursing Needs Study

September 12, 2006

*Connecting resources and knowledge to strengthen  
the health of people in rural communities.*

## **Budget Committee on Health Care Testimony**

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Chairman Krauter and members of the Committee, thank you for the opportunity to provide information regarding the health care workforce pipeline from the North Dakota Nursing Needs Study. I have provided you with a copy of my comments and a fact sheet with nursing supply data. Today, I am going to share with you trend data from the last four years of data collection and some information from a survey of North Dakota high school students.

### **North Dakota Nursing Needs Study**

First, some information about the North Dakota Nursing Needs Study. The Nursing Needs Study was recommended in 2001, by the North Dakota State Legislature to address potential shortages in nursing supply (NDCC Nurse Practices Act 43-12.1-08.2). 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, in 2002, 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 to conduct the study. The study is currently in its fifth year of data collection. The Board approved a ten-year timeline for the study last year, so data collection is projected to continue for five more years. A few states have had continuous data collection in order to maintain current information about the status of nursing workforce. For example, North Carolina has been collecting nursing workforce information since 1991.

The first four years of the study was designed to collect a comprehensive set of baseline data with information from all types of health care facilities including hospitals, long-term care, clinics, home health and public health; information from licensed nurses at all levels from licensed practical nurses to a doctoral prepared nurses; from current students and faculty in nursing education programs and finally from high school students throughout the state. Data collected thus far includes over 5,000 separate pieces of information including surveys, interviews and focus groups. Results from the study have been published in 17 reports and in four fact sheets.

In order to compare North Dakota workforce with national averages, the data collected from this study was designed to be comparable when possible with existing national data sets. Instruments developed as part of this ongoing study has been requested and used in several other states. Data from the study has been presented at numerous local, state and national conferences. Information from the study has been used in at least five grant proposals from higher education institutions across North Dakota. The conclusions that I presented in my March testimony are also being considered for action by the North Dakota Nursing Leadership Council. And lastly, North Dakota Nursing Needs study data is one of two state-level data sets (the other is North

Carolina) that is being used to determine a set of national parameters for nursing shortage designations. The North Dakota data is being used to test a statistical model developed based on North Carolina's data.

### **Nursing Supply**

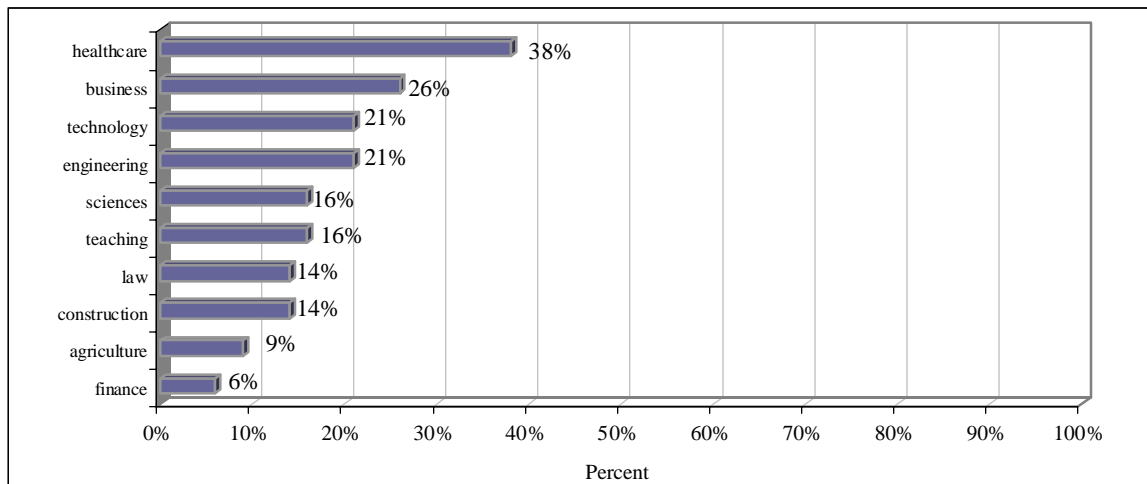
With that background, I'll turn your attention first to information about North Dakota supply and then I'll discuss nursing demand. In March, I described many aspects of the status of nursing supply. This included that we are facing a substantial loss of nurses due to retirement. This cannot under current circumstances be alleviated by an increase in enrollment in nursing education programs for two reasons. First, only about one-half of the graduates remain in North Dakota and secondly there are not enough nursing faculty available to staff nursing programs with increased enrollment. To address these barriers to adequate supply, significant and timely actions need to be taken. Many states and organizations within them are now determining the extent to which interest exists or can be cultivated in K-12 students for health professions careers. We have pursued a similar focus about the potential to recruit youth into the nursing profession and then retain graduates in North Dakota.

### **High School Student Survey**

Data was collected from 568 students (grades 9-12) representing 25 high schools throughout North Dakota.<sup>1</sup> Of those surveyed, seventy percent of high school students plan to attend a four-year college and another 16 percent plan to attend a two-year technical school. Most students (73%) plan to attend a North Dakota school due to the cost of attendance and close proximity to home.

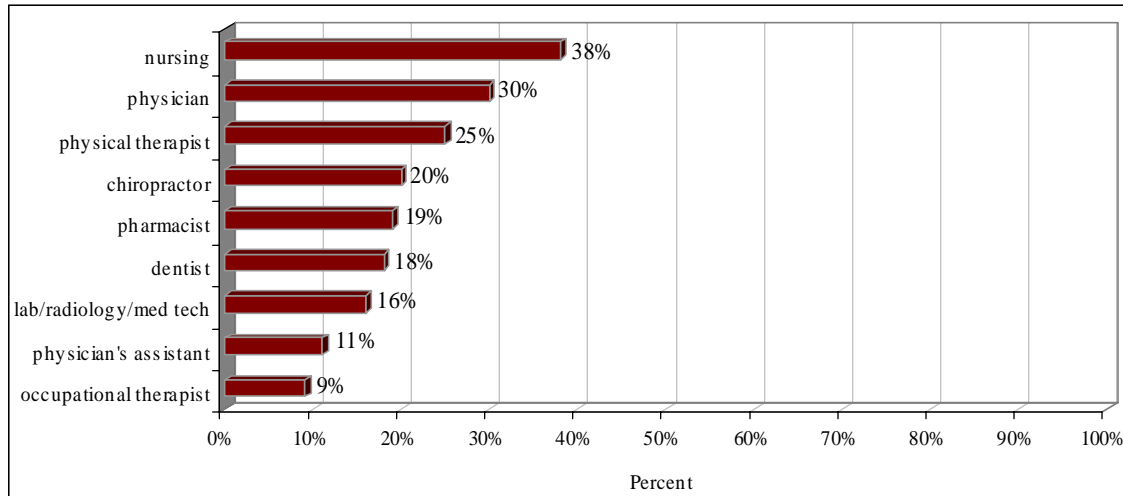
Thirty-eight percent of students indicated an interest in healthcare (see Figure 1). However, nearly half (46%) of students indicated an interest in more than one profession (for example healthcare or sciences). The North Dakota Healthcare Association<sup>2</sup> found similar trends but lower numbers in the most popular categories, with 23 percent of students interested in healthcare and 13 percent of students interested in business.

**Figure 1: Future Career Choice**



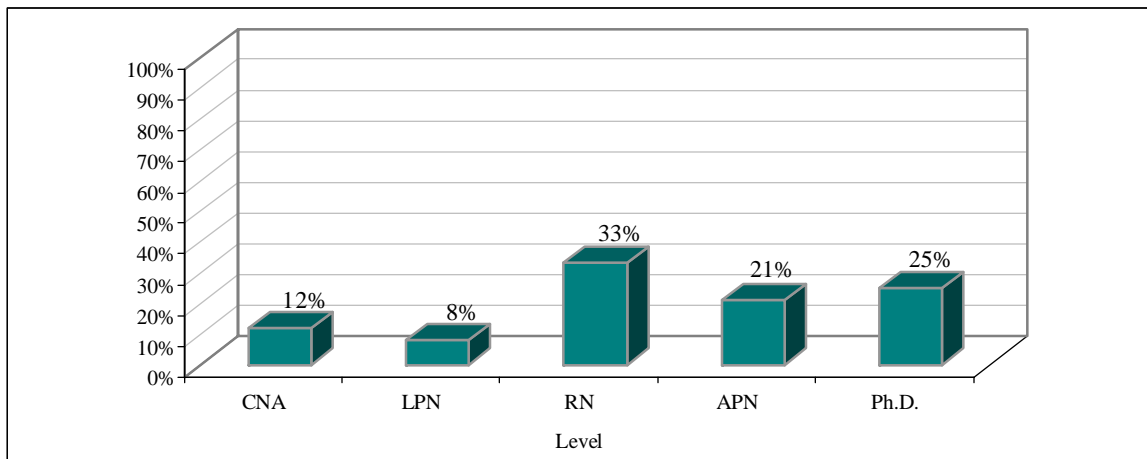
Of those that indicated health care, 38 percent indicated an interest in nursing followed by 30 percent in medicine and 25 percent in physical therapy (see Figure 2). Fifty-two percent indicated more than one area of interest (for example a nurse or a physician). Similarly, the North Dakota Healthcare Association study<sup>2</sup> revealed that students interested in healthcare were most likely to express interest in careers as a physical therapy, nursing and medicine. Students most frequently indicated that the reason that they didn't want to go into nursing was that they disliked nursing settings.

**Figure 2: Area of Healthcare**



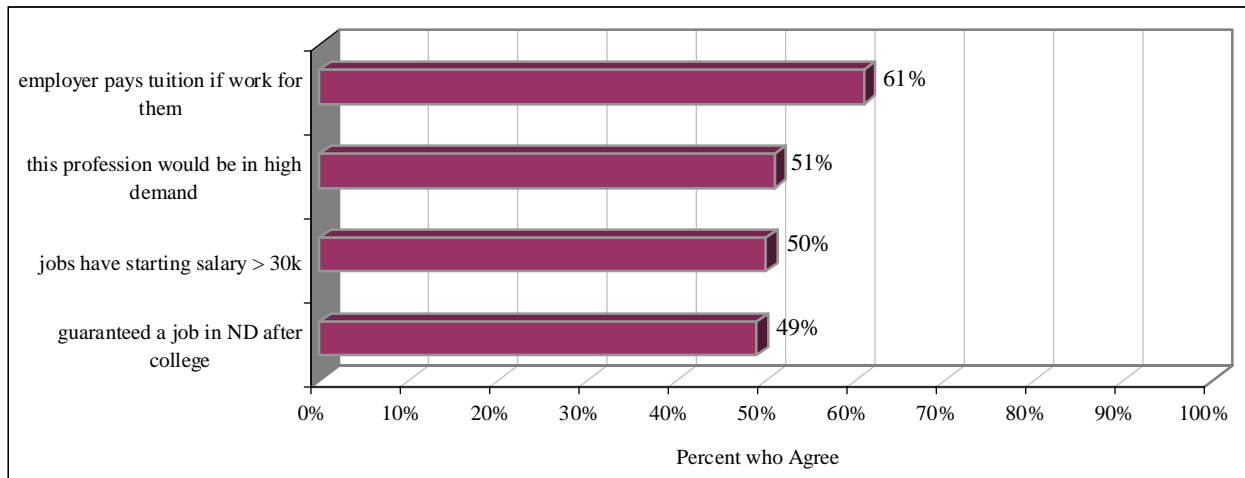
A third (33%) of the students interested in nursing plan to obtain a RN degree as their highest degree. One-quarter of students interested in nursing would like to obtain a Ph.D. in nursing. Clearly, this would be a potential pool for nursing faculty (see Figure 3).

**Figure 3: Highest Degree Planned**



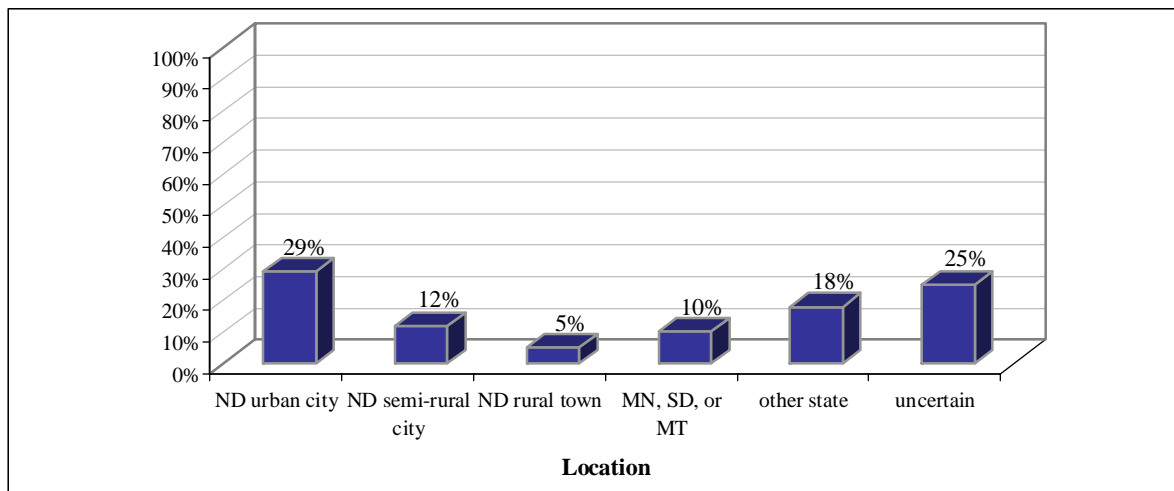
Students were also asked if certain scenarios would encourage them to choose a career in healthcare. Sixty-one percent of students agreed that they would choose a career in health care “if a local healthcare employer agreed to pay your college tuition in exchange for a guarantee that you would work for them after college” (see Figure 4). The North Dakota Healthcare Association study<sup>2</sup> found that students were most likely to agree that having college tuition paid in exchange for work would increase the likelihood of choosing a healthcare career.

**Figure 4: Scenarios that Encourage Healthcare Careers**



Some students (29%) plan to seek employment in an urban area of North Dakota after completing their education. One-quarter of students (25%) are uncertain as to the geographic location in which they wish to work, thereby creating a potential for recruitment of these students to jobs in North Dakota (see Figure 5). The North Dakota Healthcare Association (2002) study reported that 48 percent of students planned to seek employment in North Dakota after obtaining their desired education. This number is comparable with the sum of the three North Dakota categories shown in Figure 5 (46%).

**Figure 5: Location of Future Employment**



## Nursing Demand

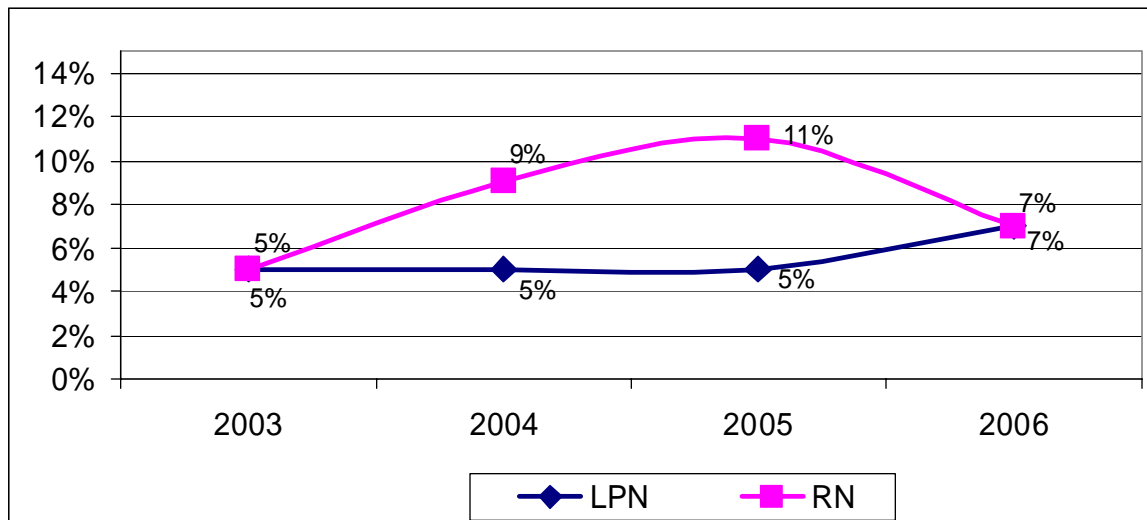
I would now like to turn to a description of the current statewide demand for nurses. In March, I reported results from the first three years of the study. Today, I would like to discuss a trend analysis including the fourth year of the study. Several reports conclude that a growing shortage of RNs is already having a negative impact on patient safety and health care quality as well as on the overall health care delivery system.<sup>3,4</sup> Increases in nurse staffing has been associated with reduced adverse outcomes and in-hospital deaths.<sup>5</sup> Shortages, while a problem for the entire health care system, are likely to be the most severe for rural/frontier regions and medically needy population groups.

## **Vacancy Rates**

One measure of demand is the vacancy rate for nurses in healthcare facilities for a particular county. The vacancy rate is the number of vacant positions relative to the number of budgeted positions. Vacancy rates were derived from information supplied on facility surveys sent to hospitals, long term care facilities, home health care, clinics and public health care facilities.<sup>6</sup> According to economists, a full workforce in most industries exists when vacancy rates do not exceed five to six percent. A shortage is considered to be present at a sustained vacancy rate above this level.<sup>7</sup> Nationally, current nurse vacancy rates in hospitals average about 15 percent.<sup>8</sup> The American Organization of Nursing Executives study reported the nation-wide vacancy rate for RNs in hospitals as 10.2 percent.<sup>9</sup>

The 2006 statewide vacancy rate for LPNs was seven percent which is an increase from the 2003, 2004 and 2005 vacancy rates of five percent. The RN statewide vacancy rate of seven percent was a decrease from previous years bringing the RN vacancy rate down to the same level as the LPN vacancy rate (see Figure 6). These changes underscore the importance of ongoing data collection. We will be unable to determine whether these changes are the beginning of a trend that reflects an easing of the shortage of RNs and a worsening of the LPN shortage or if it is sampling anomaly until we have collected the fifth year of data. Five years of data on shortage indicators provides a good stable, baseline on which to base changes in public policy.

**Figure 6: Statewide Vacancy Rates by Year (2003-2006)**

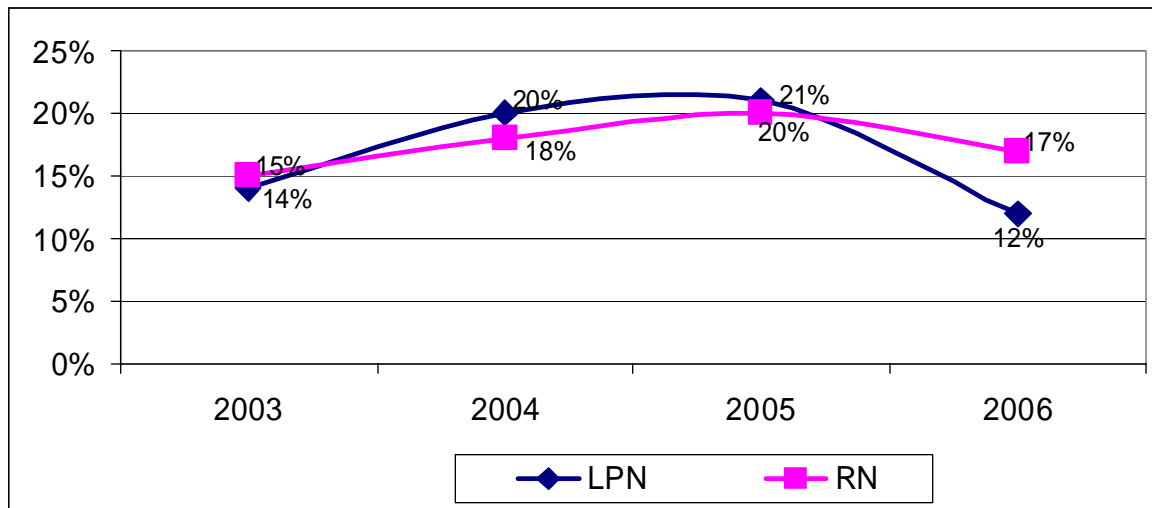


## Turnover Rates

Another measure of demand is turnover. Turnover rate is defined as the number of resignations or terminations divided by the average number of direct and indirect care full-time equivalent (FTE) positions for the same year.<sup>9</sup> Turnover rates reflect fluctuation in staffing at a facility. The American Organization of Nurse Executives report an average nationwide turnover rate of 21.3 percent for RNs in hospitals with a range of 10 percent to 30 percent.<sup>9</sup>

The statewide turnover rate for RNs was 17 percent which was lower than the last two years but is still greater than in 2003 and is still markedly higher than LPN turnover rates. The statewide turnover rate for LPNs was 12 percent in 2006 which is lower than the statewide turnover rate in previous years. (see Figure 7).

**Figure 7: Statewide Turnover Rates by Year (2003-2006)**



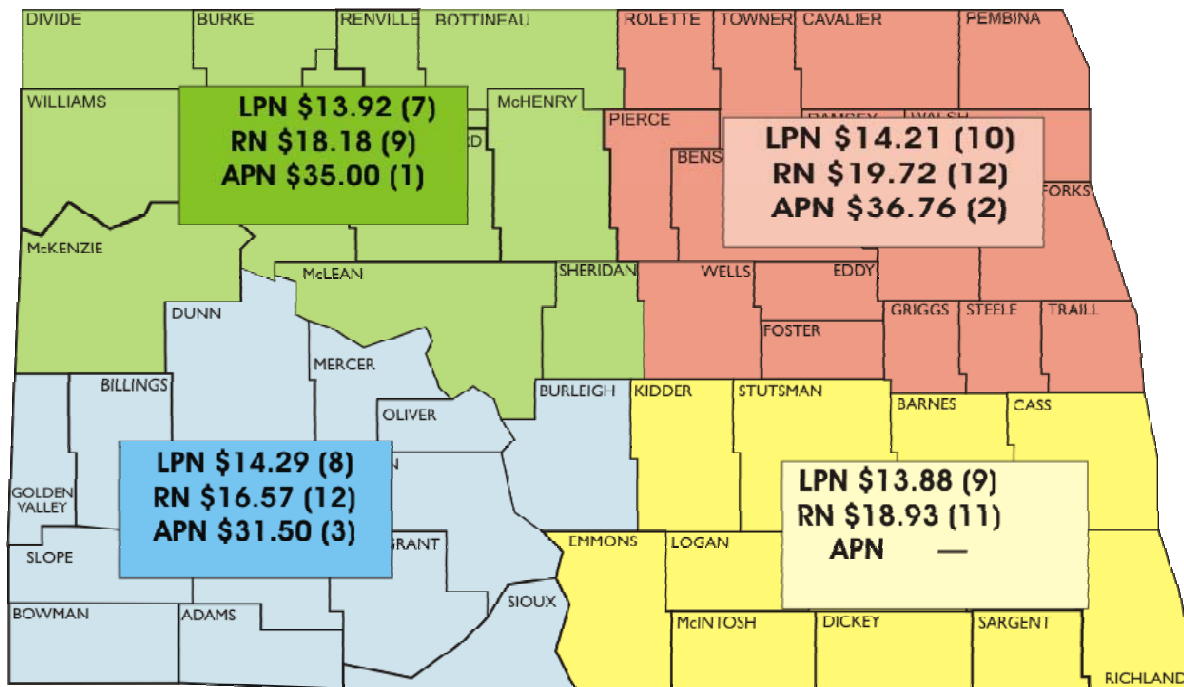
Overall, there was a decrease this year in the primary indicators of RN shortage (vacancy rates and turnover rates). Hospitals, long-term care and clinics also indicated that they spent less time recruiting nurses than the previous years. While vacancy rate decreased this year for RNs to seven percent (this is still considered a shortage). The turnover rate for RNs also decreased to 17 percent. This suggests that there is a decrease in vacant nursing positions that is paired with fewer RNs leaving their current positions.

In contrast, there is some indication of a worsening shortage of LPNs. The statewide vacancy rate for LPNs increased to seven percent after remaining stable at five percent for the previous three years. However, the statewide turnover rate decreased for the LPNs to 12 percent. This suggests that fewer LPNs are leaving their current positions and that the total number of LPN vacant positions throughout the state has increased.

## Salary

Nurses with a greater amount of education do not receive a higher salary. The average starting salary for a new nurse is higher for Associate degree RNs (\$16.69/hour) vs. Bachelor degree RNs (\$16.46/hour).<sup>6</sup> The same pattern is found with LPN nurses with Diploma LPNs (\$12.13/hour) having a greater salary than Associate degree LPNs (\$11.14/hour). Nurses in rural and semi-rural areas<sup>11</sup> have salaries that continue to lag behind their counterparts in urban areas. Figure 8 described average wages for all nurses by quadrant. As you can see LPNs in the Southwest receive the highest hourly wage and RNs in the Northeast receive the highest hourly wage. In comparison, the national average for LPNs in 2004 was \$17/hour and for RNs was \$27/hour.<sup>10</sup>

**Figure 8: Average Hourly Wage by State Quadrant**



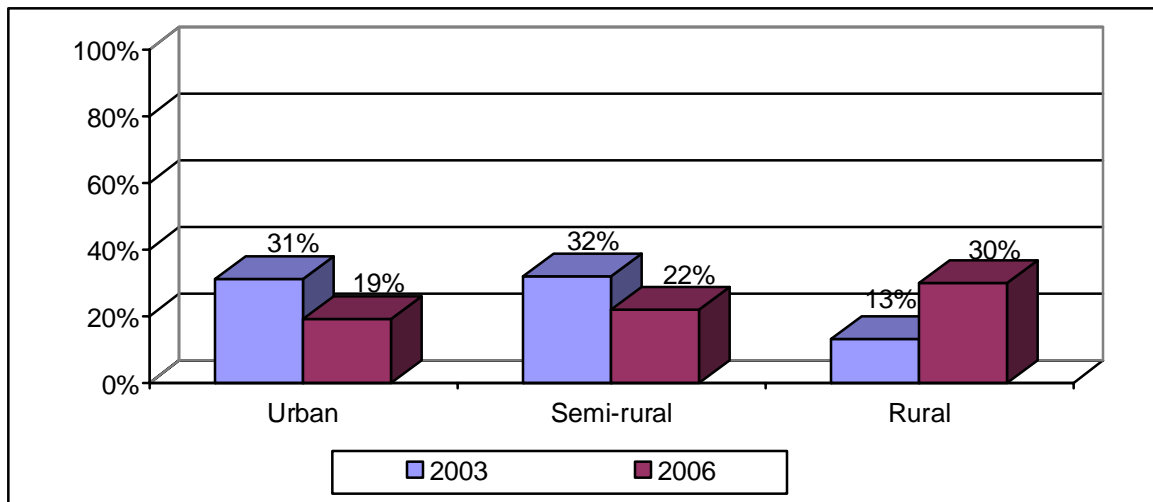
Note. The number of responses is included in parenthesis. Average starting wage for each category is a weighted mean.



## Education in Health Care Facilities

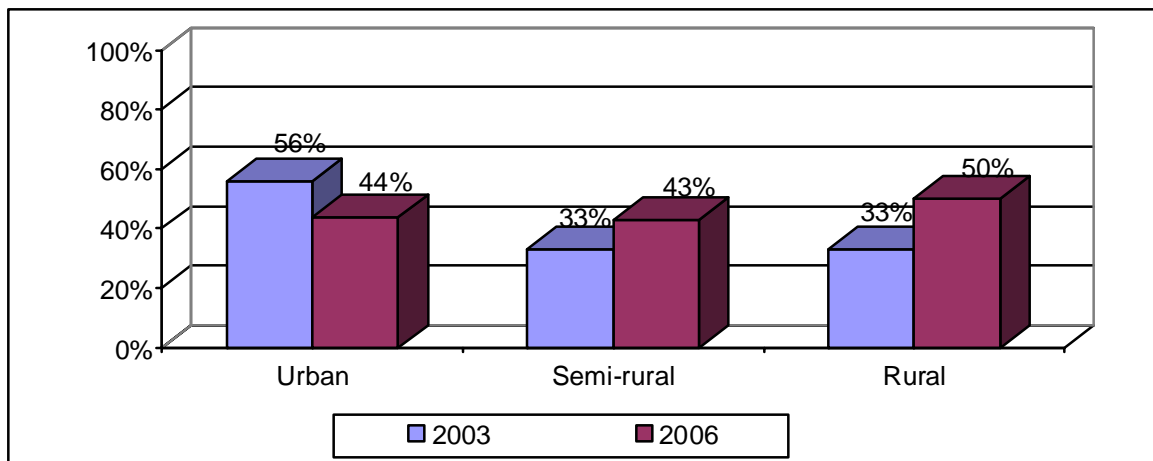
Last year we collected information about characteristics of nursing education in health care facilities (hospitals, long-term care, clinics, home health and public health). Nineteen percent of urban, 22 percent of semi-rural and 30 percent of rural facilities<sup>11</sup> indicated that they have agreements with schools of nursing to provide clinical education opportunities for LPN students. When compared with 2003, this is an overall decrease in the percentage of urban and semi-rural<sup>11</sup> facilities with agreements with nursing education programs for urban and semi-rural and a substantial increase in rural facilities with agreements (see Figure 9).

**Figure 9: LPN Clinical Education Agreements with Healthcare Facilities 2003 and 2006**



Forty-four percent of urban, 43 percent of semi-rural and 50 percent of rural facilities indicated that they have agreements with schools of nursing to provide clinical education for RN students. When compared with 2003, there was a decrease in the percentage of urban facilities that have agreements with nursing education programs and an increase in semi-rural and rural facilities (see Figure 10).

**Figure 10: RN Clinical Education Agreements with Healthcare Facilities 2003 and 2006**



## Conclusions

In addition to the five primary findings I presented to you in March (conclusions 1-5), this new information indicates the need for action in three areas:

1. We are going to lose a substantial number of nurses and nursing faculty due to retirement within the next few years. This loss will not be alleviated solely by recent increases in nursing education programs. Steps need to be taken to help enable nurses and faculty to work past their current anticipated retirement.
2. Although nursing education programs are starting to use technology to reach more students, connectivity remains a large problem along with funding for faculty education. In addition, a critical component is the balance between technology-driven instruction and quality clinical experiences.
3. We have had persistent and worsening RN vacancy rates suggesting an increasingly larger shortage. This is paired with the great amount of fluctuation in our facilities as suggested by the turnover rates. Retention efforts for nurses already working should be emphasized.
4. There is still a large gap in nurse salary and this gap is widening for nurses living in urban areas. Although, facilities exist in a time of budget constraints, nursing salary should be closely examined by each facility and potentially adjusted to better match state averages along with including increases for education and experience.
5. The workplace environment continues to be problematic. Our health care facilities, in particular our hospitals located in urban and larger rural areas still lag greatly behind national averages for including nurse representation at their organization. Long-term care facilities across the state on the other hand have increased representation over the last three years.
6. Although high school students are indicating an interest in health professions careers and in nursing in particular, they are indicating an interest in multiple career paths. Health education programs designed to provide high school students with didactic instruction and practical experiences in health profession careers could help to solidify student plans.
7. A substantial number of high school students are unsure as to where they will work upon graduating from college. This uncertainty continues while students are attending nursing education programs. Efforts should be made to encourage students to work in North Dakota including tuition assistance and loan repayment programs.
8. Increasing clinical education opportunities in health care facilities would assist in increasing student exposure to North Dakota employment opportunities. Health care facilities and nursing education programs should work together to maximize the student placements.

Taken together, findings suggest that no one action will be sufficient to ensure an adequate nursing workforce. Rather, concrete steps are needed from a variety of stakeholders including academic programs, health care institutions, policymakers, nurses and others, in order to ensure an adequate nursing workforce in the future. Clearly, these findings merit serious consideration

by employers, policymakers and educators as stakeholders collectively work to address challenges around recruitment into nursing, recruitment into specific practice settings, and retention of nurses in the work environment.

In March, I mentioned that the Center for Rural Health was exploring the idea of holding a statewide Health Workforce Summit. I would like to give you an update on that effort. To respond to what we heard across North Dakota communities through a series of Rural Health Dialogues and to ensure that North Dakota is as well positioned as possible to field an adequate health care workforce, the Center for Rural Health is planning to facilitate a one-day workforce summit on December 5, 2006 at Kelly Inn. The steering committee for the summit includes representation from the Dakota Medical Foundation, the North Dakota Healthcare Association, the North Dakota Medical Association, the University of North Dakota, Minot State University and Vocational and Technical Education. Funding is being provided by the Dakota Medical Foundation, Robert Wood Johnson Health Policy Forums, the Medicare Rural Hospital Flexibility Program and the State Office of Rural Health.

I have passed out a save-the-date flyer for this summit. We plan to convene starting at 7:30 A.M. in order to encourage legislator participation prior to your meetings that start at 9:00 A.M. and then continue with presentations describing potential solutions through education institutions and communities. Invitees for the summit include state policy makers, health profession educators, state government agencies, primary & secondary school educators, career counselors, health care administrators, state health care organizations, licensing boards, and public health. The intent of this meeting is to identify immediate and longer-term workforce supply and demand strategies appropriate to North Dakota. According to a number of high-level reports, including the Institute of Medicine, a multifaceted approach is needed to assure an adequate supply of health care personnel. Clearly, many of the approaches will come from stakeholders participating in the summit. However, to inform audience member deliberations, we plan to share action steps identified through similar state workforce summits in several other states including New Mexico, Vermont and South Dakota. We will also make available summarized recommendations from national level reports.

Thank you for the opportunity to speak to you about the current status of nursing workforce. I would be happy to respond to any questions.

## References

1. Hanson, B., Moulton, P., Rudel, R. & Plumm, K. North Dakota Nursing Needs Study: High School Student Survey. Report of the North Dakota Nursing Needs Study.
2. North Dakota Healthcare Association. (2002). Healthcare Career Perceptions.
3. Institute of Medicine (2004). Keeping Patients Safe: Transforming the Work Environment of Nurses. National Academies Press: Washington, D.C.
4. Kovner et al. (2002). Nurse staffing and post surgical events: An analysis of administrative data from a sample of U.S. hospitals, 1990-1996. Health Services Research 37 (3): 611-629.
5. Needleman, J., Buerhaus, P., Stewart, M., Zelevinsky, K. & Matke, S. (2006). Nurse staffing in hospitals: Is there a business case for quality? Health Affairs, 25, 204-211.
6. Moulton, P. & Speaker, K. North Dakota Nursing Needs Study: Year 4 Facility Survey Results. Report of the North Dakota Nursing Needs Study.
7. Prescott, P. (2002). The enigmatic nursing workforce. Journal of Nursing Administration, 30 (2).
8. AHA Commission on Workforce for Hospital and Health Systems. (2002). In Our Hands: How Hospital Leaders Can Build a Thriving Workforce. Chicago: American Hospital Association.
9. HSM Group (2002). Acute Care Hospital Survey of RN Vacancy and Turnover Rates. American Association of Nurse Executives.
10. U.S. Department of Labor, Bureau of Labor Statistics (2005). National Compensation Survey: Occupational Wages in the United States, July 2004.
11. When appropriate, data were divided by Urban Influence Codes (Ghelfi & Parker, 1997). 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 0 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 (20 counties).
  - Rural counties: Those areas not adjacent to a small metropolitan area, which does not contain a town with at least 2,500 residents (29 counties).