Oregon's Nursing Shortage

A Public Health Crisis in the Making

NWHF

Issue Brief No. 1
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Northwest Health Foundation

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Acknowledgements

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About NWHF

Northwest Health Foundation is an independent, charitable foundation committed to advancing, supporting and promoting the health of the people of Oregon and Southwest Washington. Founded in 1997 from the net proceeds of the sale of PACC Health Plans and PACC HMO, the Foundation has awarded more than $6 million to organizations providing innovative health programs and projects throughout the region.

Guiding Principles

- The Northwest Health Foundation will operate in a conscious and considered, socially responsive manner, seeking advice from the public while preserving the decision-making authority of the Board.

- The working structure of the Northwest Health Foundation will support the diversity and pluralism of our community and will foster mutual respect for diverse opinions.

- The Northwest Health Foundation will stay connected to the community through appropriate media communications and by direct dialogue using one-on-one meetings, open forums and invitational meetings.

- The Northwest Health Foundation will seek out partnerships to leverage our grants at every opportunity —becoming proactive in presenting funded grant projects to other grantmakers and supporting, where possible, the funded grants from others that meet the Foundation's priorities.

- The Northwest Health Foundation will support projects to overcome the economic and non-economic barriers to health care, because we believe that all people deserve accessible health care.

- The Northwest Health Foundation will support projects that encourage cooperation among organizations and institutions; projects that effectively use volunteers; and community-based projects that involve, in the planning and implementation, the persons who will be served.

- The Northwest Health Foundation will pursue opportunities to confirm that our grants have a positive impact on the health of people.

Introduction

The stability of a health care system relies on a sufficient supply of appropriately educated and skilled nurses. Oregon (along with the rest of the United States) has, since early 1998, begun to experience a nursing shortage. If not corrected, this shortage will erode the quality of health care and in turn, the health and well being of Oregonians.

The number of nurses needed to provide health care in this country is staggering. Nurses represent the largest group of health care professionals in the United States. As of 1998, more than 2 million nurses were employed in health care organizations.[1] According to the Oregon State Board of Nursing Statistical Summary, more than 35,000 men and women hold licenses as registered nurses.[2]

In general, nurses comprise up to three-fourths of a hospital's workforce and account for two-thirds of its labor costs (excluding physicians). In nursing homes and home health agencies, the percentage of nursing personnel is even greater. In these environments, nurses serve as the backbone of care for patients. They are intimate with the patient's health and family history, and his or her medical care. They monitor patients for changes in health status, manage complex therapies to help patients maintain their delicate physiological balance, provide emotional support to patients and families, and teach self care approaches. They are conduits of information between the patient, the patient's family and other medical personnel, from physicians to nutritionists to physical therapists.

Nurses are increasingly employed in ambulatory care settings, such as physicians' offices and clinics, where they deliver medical therapies, provide self care instruction and advice, and make triage evaluations. In public health and schools, depending on the county and/or school district, registered nurses may be responsible for managing clinics (e.g., primary care, immunizations, infectious disease and well-child), follow-up on communicable disease contacts, and making home visits to high-risk families. They are responsible for assessing the health needs of selected populations (such as children with special medical needs, families who are at high risk for child abuse, and pregnant teens), and developing and implementing programs to respond to those needs. Administrators of county health departments are typically public health nurses who have education and experience in public health practice.

Shortage Analysis

Recognizing the importance of an adequate nursing workforce, and in response to growing concerns about a nationwide nursing shortage, Northwest Health Foundation commissioned a study of the current nursing workforce in Oregon to develop a framework for discussion of potential initiatives that could have a substantial impact on the shortage. Although there is evidence that a shortage exists in all levels of nursing personnel, including licensed practical

nurses and certified nursing assistants, the study focused only on the registered nurse workforce, addressing the following questions:

1. Is there a shortage of registered nurses in Oregon and Southwest Washington?
2. If so, what are the characteristics of the shortage, in terms of severity, types of facilities affected and geographic distribution?
3. What are the causes of the shortage?
4. What are the projections for adequacy of the registered nurse workforce through the year 2010?
5. What strategies are recommended to maintain or secure an adequate nursing workforce now and into the future?

Methods

Four approaches were used to address these questions: 1) existing statistical data were obtained from several sources and additional analyses of data were compared with nationally and regionally published reports on nursing practice; 2) interviews with key leadership in the nursing profession were conducted; 3) focus groups were held with nurses from various clinical practice settings in both metropolitan Portland and rural Oregon; and 4) the current literature on nursing shortage issues was surveyed.

Statistical Data

Reliable supply and demand data is crucial to this analysis. On the supply side, the numbers of current RN's licensed in Oregon and employed in nursing, as well as historical trends, were needed. Also needed were the numbers on projected supply—including new graduates from Oregon nursing programs and registered nurses who have relocated to Oregon.

The major source of existing nurse supply data was the Oregon State Board of Nursing (OSBN), which is the licensing body for registered nurses. Registered nurses are required to renew their licenses biannually; when applying, they provide information about current employment status (employed in nursing or not, full-time/part-time, employment setting and area of practice); additional education completed since previous renewal; and demographic data such as age, gender and ethnicity. The OSBN also receives annual reports from all approved registered nursing programs in the state, the 13 associate degree programs and the three baccalaureate programs. These data are summarized in an annual statistical summary produced by the OSBN.[3] The statistical summaries for the years 1991 through 1998 were used. In addition to these annual summaries, OSBN staff provided analyses on all current licensees as of August 1999 and October 2000.[4]

These supply data were supplemented with additional national and state level statistical summaries from federal sources,[5,6] national nursing organizations,[7,8] and published reports in nursing and health care literature. For population

data, the population estimates from the U.S. Census Bureau[9] and Bureau of Labor Statistics were used.[10] Supply projections were based on historical and current OSBN data, population estimates from the U.S. Census Bureau, and occupational growth projections from the Oregon Employment Department (OED). (see *Appendix* for a description of projection methods).

No source of reliable demand data could be found using such industry standards as unfilled positions and average number of days to fill vacant positions. The OED retains data on current positions that is updated monthly.[11] However, these data are far from complete; in the last year, some individual health systems had as many postings for registered nurse positions as were listed for the entire state in the OED's data. Data from the OSBN on employment settings for registered nurses, both current and historical, were used to examine trends in the number of filled positions. In addition, recent survey data from two organizations, Oregon Association of Hospitals and Health Systems and Oregon Health Care Association representing hospitals/health systems and long-term care, were obtained. These data provided some indication of demand for RN's in Oregon.

Key Nursing Leadership Interviews

Interviews with key leadership in the nursing profession were used to augment the secondary data sources in two main areas: demand data—regarding rates of unfilled positions, time to fill positions, and qualifications required for vacant positions; and supply data—application, admission and attrition rate to schools of nursing in Oregon and Southwest Washington. To augment the demand data, nurse executives of hospitals in Oregon and Southwest Washington and nursing leaders in other employment settings were interviewed, including public health, school health, long-term care, ambulatory care and home care. Human resource administrators in some of the larger health systems and additional individuals who work in organizations that provide workforce data and projections were also interviewed.

To augment supply data, deans/directors of selected nursing programs throughout Oregon and Southwest Washington were interviewed, including all baccalaureate programs and seven associate degree programs. These interviews also helped in analyzing the causes of the shortage, the strategies currently being used to respond to the shortage, and strategies that might be useful in the future.

Focus Groups

The focus groups featured nurses from all practice settings in order to understand the extent of the shortage, its impact on nurses and the patients they care for, and to explore possible solutions. A total of 40 nurses participated in six focus groups. Participants were selected based on representation of geography, practice areas and years of experience in nursing. In addition, interviews were conducted with high school and health occupation counselors, and nursing school recruiters, with the intention of understanding the messages that high school students receive about the nursing profession, and what might attract them to a nursing career.

Major Findings

"I sometimes spend as much as 80 percent of my time answering phones, answering questions, stocking shelves or arranging charts. We used to have a ward clerk."

ICU nurse,
rural Oregon

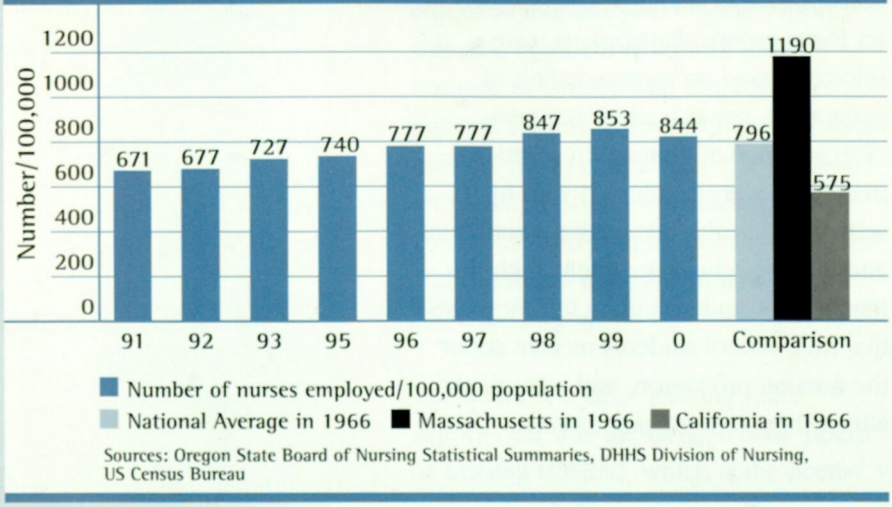
There is currently a multi-dimensional shortage of registered nurses in Oregon, for which the causes are multiple and complex. The nursing shortage is adversely affecting patient care, the safety and morale of the nursing workforce, and is driving up the cost of care. A worsening shortage is predicted over the next decade.

Current Multi-dimensional Shortage

The available nursing workforce is not adequate to meet the demand. Paradoxically, the supply of nurses has increased at a rate that actually exceeds population growth. The ratio of RN's employed in Oregon per 100,000 population has increased steadily over the last decade (*Figure 1*).

There are currently 844 RN's employed in health care per 100,000 population, nearly the highest level in a decade. The most recent comparative data is from 1996, also shown in *Figure 1*. In 1996, there were 777 RN's per 100,000 population in Oregon, just slightly below the national average of 796.

Figure 1
Number of RNs employed/100,000 population, 1992-2000, with comparisons



Sources: Oregon State Board of Nursing Statistical Summaries, DHHS Division of Nursing, US Census Bureau

Despite these trends, the growth in the supply of nurses per capita lagged behind national figures. The number of RN's in Oregon increased 24 percent between 1988 and 1996, while the state's population grew 17 percent. The result was a six percent growth in RN's per capita, compared with a 28 percent growth nationwide.[12] *Figure 2* shows the percent change in RN's, in the general population and in RN's per 100,000 population for Oregon, in comparison with the United States.

Recent surveys of nurse executives in hospitals, health systems and long-term care facilities, as well as our interviews with key informants in all sectors, provided reports of difficulty in filling vacant positions, and high vacancy and turnover rates—all indications of an inadequate supply in respect to the demand. There are shortages in all of the health care sectors that were evaluated. Long-term care and hospitals were hardest hit, particularly intensive care units, operating rooms, obstetrics and emergency departments.

While the majority of RN's continue to be employed in hospitals and nursing homes, RN's are increasingly employed in other settings such as home care, physicians' offices and other ambulatory care, public health, and a variety of other settings. *Figure 3* shows the proportion of RN's currently employed in each of these settings.

Below are the available data in regard to demand for RN's in hospitals, ambulatory care settings, long-term care, public health, home care, school health and schools of nursing.

Hospitals

Approximately 55 percent of the registered nurses who are currently licensed in Oregon practice in hospitals. The greatest shortages are in intensive care units (ICU's), operating room/surgical services, emergency departments and obstetrics. Float or resource pools have become depleted during this shortage, necessitating an increased reliance on temporary staffing agencies.

Between 1992 and 1998, there was growth in the number of full-time equivalent (FTE) nurses in hospitals, while the number of inpatient days declined (*Figure 4*). The number of FTE RN's working in hospitals increased four percent between 1992 and 1998, while the number of inpatient days declined by six percent. The result was an 11 percent increase in the ratio of FTE RN's-to-inpatient days. However, this increase is significantly less than what was experienced nationwide for the same time period—a 26 percent increase in the ratio.[13]

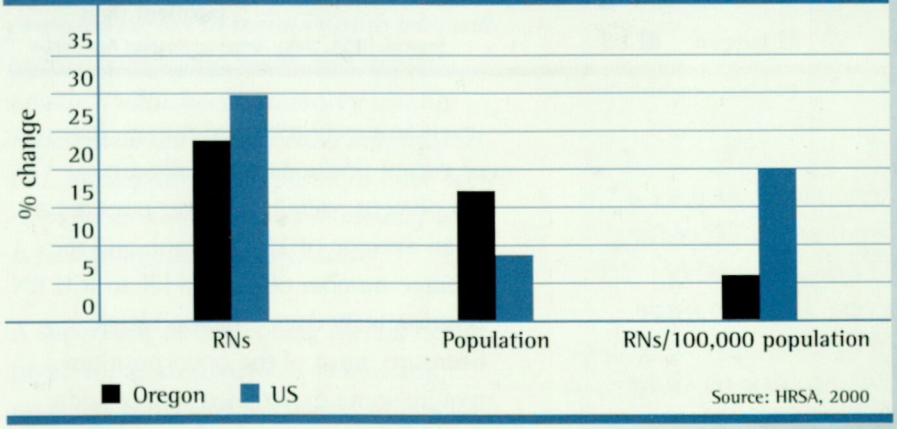
In a recent survey,[14] the nurse executives of 40 of Oregon's 59 hospitals (70 percent) responded to questions about shortages and the corrective actions being taken, though no numerical data were obtained.[15] Hospitals in Portland, the Willamette Valley and rural parts of the state are represented in the sample. Of those responding, all indicated that they are experiencing a shortage in one or more areas of practice. Only two hospitals (one Willamette Valley, one rural) reported shortage in all areas of nursing practice. The areas of greatest shortage are in ICU's (60 percent), operating room/surgical services (55 percent), and obstetrics (30 percent). Recruiting for float, relief or night shift positions is problematic for 40 percent of the respondents. This shortage pattern is similar to that which has been reported nationally and in the western region.[16]

These shortages are echoed in the interviews with nurse executives and human resource staff. In the metropolitan area and mid-Willamette Valley, the rates

"I would never encourage my daughter to go into nursing."

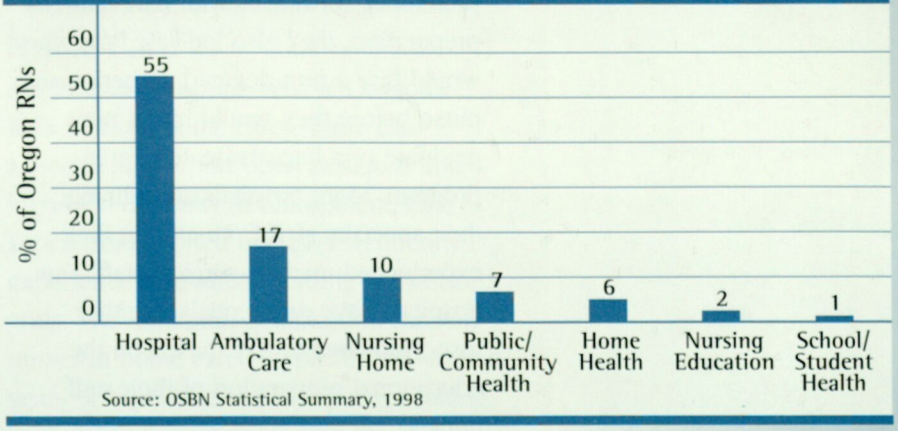
Nurse, Portland metropolitan area

Figure 2
Percent Change in RNs, Population, and RNs/100,000 Population between 1988 and 1996



Source: HRSA, 2000

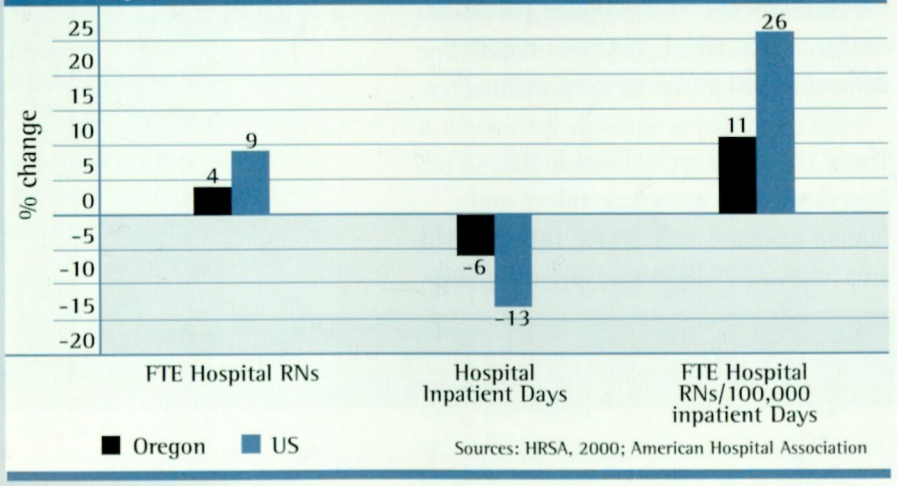
Figure 3
Percentage of Oregon RNs employed in major practice settings



Source: OSBN Statistical Summary, 1998

of the vacant positions are between 10 and 18 percent, with the average time to fill the positions between three and four months. The turnover rates are between 10 and 25 percent, with the highest

Figure 4
Percentage change in FTE hospital RN employment, hospital inpatient days and FTE hospital employment per inpatient day, 1992-1998



Sources: HRSA, 2000; American Hospital Association

levels in newly recruited nurses. Rates of vacant positions nationally are 8.6 percent overall, turnover rates are up to an average of 19.8 percent, and the average number of days to fill an ICU RN position is 39 days.[17] Beyond basic licensure, most of the open positions require some experience and/or additional training.

While most nurse executives indicated a preference for nurses with baccalaureate preparation, they also indicated that they would hire a non-degreed, experienced nurse before they would hire a new graduate of a baccalaureate degree program. More hospitals are training their specialty staff from among their experienced medical-surgical staff. Few hospitals have differentials in either responsibilities or pay, based on the educational preparation of their staff nurses.

"If a resident gets a bruise, which older people do nearly every day, we have to do mountains of paperwork to show that the bruise wasn't from abuse!"

Nursing home nurse, Portland

Ambulatory Care

Approximately 15 percent of the registered nurses who are employed in Oregon work in physicians' offices and clinics. The rates of vacant positions in clinics that were reported by selected health systems in Portland ranged from 10 to 15 percent, with the average time to fill the position being 50 to 75 days. The turnover rates ranged from 18 to 22 percent. The data show clearly that positions in inpatient settings, particularly intensive care units, are harder to fill than those in ambulatory care settings.

The length of time that it takes to fill positions in ambulatory care is a reflection of the severity of the shortage. At one time, positions in ambulatory care were quite easy to fill because of the daytime hours and regular schedule. Salaries are considerably lower than in hospitals, which will have further impact on this area in the future.

A minimum qualification for these positions is RN licensure, with some primary care and specialty clinics requiring relevant inpatient experience.

Long-term Care

Approximately 10 percent of the nursing workforce is currently employed in long-term care settings. The Oregon Health Care Association (OHCA) reports, "Oregon long-term care facilities face an uphill battle in finding qualified, dedicated staff to meet the needs of caring for elder Oregonians."[18]

In 2000, the OHCA conducted a survey of employers and administrators who work in long-term care facilities across Oregon to determine the severity of the workforce shortage, the causes of this problem and potential solutions. Eighty-four of the 477

facilities in the state responded to the survey, with representative distribution among types of facilities, and with respondents from both urban and rural areas. They found that 35 percent of the facilities surveyed reported a severe shortage of RN's, 48 percent of the facilities reported a severe shortage of certified nursing assistants, and 20 percent reported a severe shortage of licensed practical nurses. It takes an average of 40 days to fill an RN position, 60 days to fill a care manager position (an RN with additional training), 34 days to fill CNA positions and 27 days to fill LPN positions. Average turnover rates are high, with a 48 percent turnover for both RN's and nursing assistants, 57 percent for care managers and 40 percent for LPN's. The shortage of registered nurses in skilled nursing facilities and long-term care in Oregon is more severe than what was reported in a 1998 national survey of nurse executives.[19]

Public Health

Seven percent of Oregon's RN's work in public health settings. The pool of RN's with public health experience is very small. Moreover, there is an overall shortage of nurses with baccalaureate degrees, particularly in rural areas. Salaries are considerably lower than in hospitals, and thus staff nurses are difficult to replace. Almost more alarming is the rapidly retiring group of public health nursing supervisors.

A consultant at the Oregon Health Division reported the following:

We oriented seven new public health administrators in June 1999, and now in 2000 we have six more vacancies out of a total of 33 health departments. That is a 21 percent turnover in 1999 and an 18 percent turnover in 2000, or a total of 39 percent in a two-year period. When we fill our public health administrator positions, [the applicants] do not always meet the required standards of a master's degree or several years' experience in public health.

For example, Wallowa County just hired as their administrator a baccalaureate degree nurse who has no public health experience. Crook County just hired an associate degree nurse as the administrator, with pressure from the state to get her into an RNBS program [which she presently is]. Clatsop County couldn't find a public health administrator, so chose to give public health authority to a baccalaureate prepared nurse and then hire a master's prepared person in mental health who will oversee both public health and mental health. [Public health authority usually resides with the public health administrator]. Nurse practitioner positions have been open for as long as two and one-half years before being filled [Coos County].[20]

A supervisor in one county mental health division reported inability to find any qualified applicants who were willing to work with people with mental illness; positions have remained open for more than a year.

Home Care

Approximately six percent of Oregon's RN's work in home care. Home care agencies also report open positions and increased difficulty in filling them. One supervisor reported that they frequently experience inadequate staffing on weekends. The minimum qualification for staff nurses in home care is typically one to two years of experience in an inpatient setting.

"[My family] knows already what it's like to be a nurse. I'm not home on weekends, holidays and other times when my kids really need me."

Nurse, Portland metropolitan area

"I'm 50 years old. I've been in nursing for 27 years. I make less than my son does who just graduated from college. I worked on Christmas Eve, Christmas Day."

Nurse, Portland metropolitan area

School Health

School nurses comprise approximately two percent of the registered nurses in Oregon. There is evidence of the shortage affecting school health in Multnomah County. While all of the school nurse positions are currently filled, there has been difficulty in recruiting nurses to work with special needs children and to maintain an adequate substitute pool.

Schools of Nursing

To assess the extent of the current and projected faculty demand, deans/directors of the Oregon nursing programs were surveyed. Program directors from seven associate degree programs and three baccalaureate programs responded to the survey. In these ten programs, there are currently 202 FTE faculty positions. Since the 1998-99 school year, 35 faculty positions (14 in associate degree programs, 21 in baccalaureate and higher degree programs) have been vacated. Twenty-eight (80 percent) of these were filled with fully qualified faculty. The remaining positions have either been left open (one), filled with part-time faculty who met the qualifications (three), or filled with full or part-time faculty who did not fully meet the qualifications of the position (three). It typically took the program directors three to six months to fill vacant positions, but some positions have been open for one-and-one-half to two years. All directors cited as the reason for difficulty in hiring an inadequate supply of educationally qualified nurses in their geographic area. Half of the program directors cited poor salaries as an additional difficulty.

Only one percent of the registered nurses in Oregon are employed as faculty members in schools of nursing. While the rates are currently low, the impact of a single faculty vacancy in small nursing programs can be tremendous. Minimum educational preparation for faculty is a master's degree in nursing. Baccalaureate and higher degree programs typically require a doctoral degree in nursing or a related field.

Characteristics of the Shortage

This shortage has other characteristics that warrant particular attention; specifically, the nurses who are in greatest demand have advanced education, specialized training, and are representative of the populations they serve.

Experience

Historically, entry-level nurses worked on general hospital units or in long-term care settings before moving to settings in which care is more complex (e.g., intensive care units in which patients are medically unstable and in which highly skilled observation and rapid decision-making are essential for safe care). In the last five years, acuity in all settings has markedly increased. The average length of stay for patients hospitalized in Oregon is the shortest in the country. Within the last year, hospital admissions have increased dramatically, but the hospitalized population consists of those patients with the most serious of conditions. With shortened length of hospital stay, there is an increasing acuity of patients in skilled nursing facilities, home care, physicians' offices and even school health, hence the demand for experienced nurses.

Education

The demand is greatest for nurses who are educated at the baccalaureate level. In 1996, the National Advisory Council on Nurse Education and Practice reported:

The current and emerging health care system requires a basic registered nurse workforce whose education prepares it to function across sectors and systems in managing and providing nursing services to individuals, families, groups and populations. The majority of the basic registered nurse workforce today was not educated for this breadth and depth of roles. The Council recommends that federal resources be targeted toward increasing the overall number and percentage of baccalaureate prepared nurses who make up the basic nurse workforce, with a policy target of at least two-thirds holding baccalaureate or higher degrees by the year 2010.[21]

In Oregon, associate degree programs educate a large portion of the basic RN workforce. In some rural areas, these programs may be the only source of RN's. ***Figure 5*** shows the proportion of nurses by educational preparation in 1996. The state's proportion of baccalaureate prepared nurses is comparable to national figures.

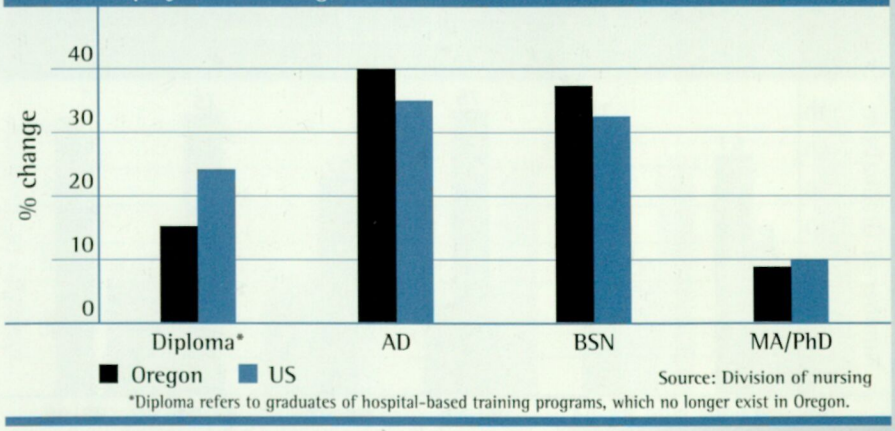
The supply of registered nurses prepared at the baccalaureate level has remained constant. ***Figure 6*** shows the graduation rates from Oregon schools of nursing between 1992 and 2000. Graduations from associate degree programs declined somewhat in the period between 1992 and 1998, while baccalaureate graduations fluctuated between a low of 250 in 1992, to a high of nearly 400 in 2000.

Most directors of associate degree programs report that they and their faculty encourage graduates to continue their education. Strong articulation agreements that permit nurses with an associate's degree to receive full transfer of academic credits to baccalaureate nursing programs exist between the associate degree and baccalaureate programs in the state. The directors report this process is working extremely well. Oregon Health Sciences University offers a statewide RN outreach program, using distance education technology and precepted clinical experiences in rural sites.

"A typical home health visit? Ten minutes with the patient, 30 with the paperwork."

Home health nurse, Portland

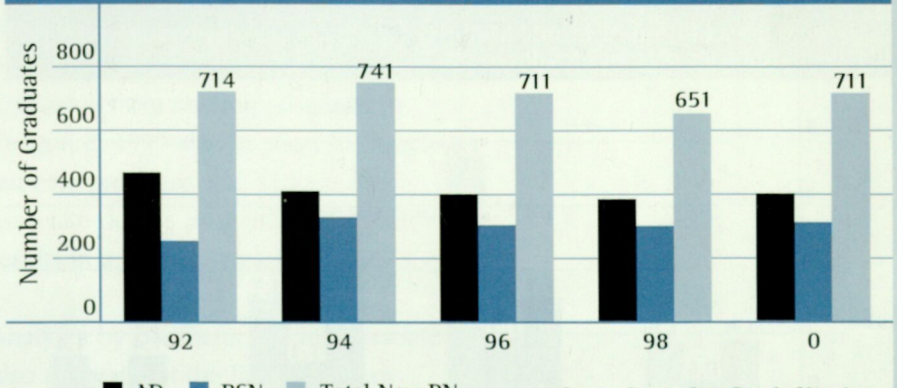
Figure 5
Highest nursing-related educational attainment of RNs employed in nursing, 1996



Source: Division of nursing

*Diploma refers to graduates of hospital-based training programs, which no longer exist in Oregon.

Figure 6
Graduations from Oregon Schools of Nursing, 1992-2000



Source: Oregon State Board of Nursing

"I can't give safe care and I'm an expert!"

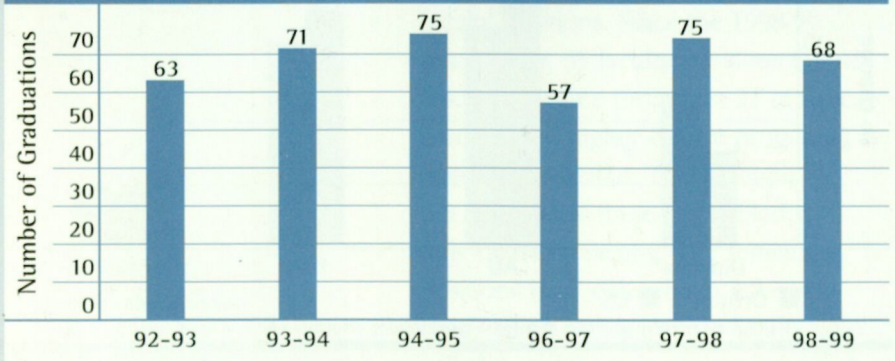
Nurse with 25 years' experience in mid-Willamette Valley

Even with these opportunities, a very small number of RN's graduate from baccalaureate completion programs each year (*Figure* 7). There are few incentives to do so. Most employing agencies do not require the baccalaureate degree, and very few offer a differential in pay or in practice responsibilities for those with the higher degree.

The shortage of baccalaureate prepared nurses will be most immediately felt in public health settings, since community/public health practice was historically taught only in baccalaureate programs, and the bachelor's degree has been entry level for public health nursing. Public health supervisors in the state have recently initiated collaborative efforts to address the pending shortage of baccalaureate prepared nurses available to practice in community health settings—particularly at supervisory levels.

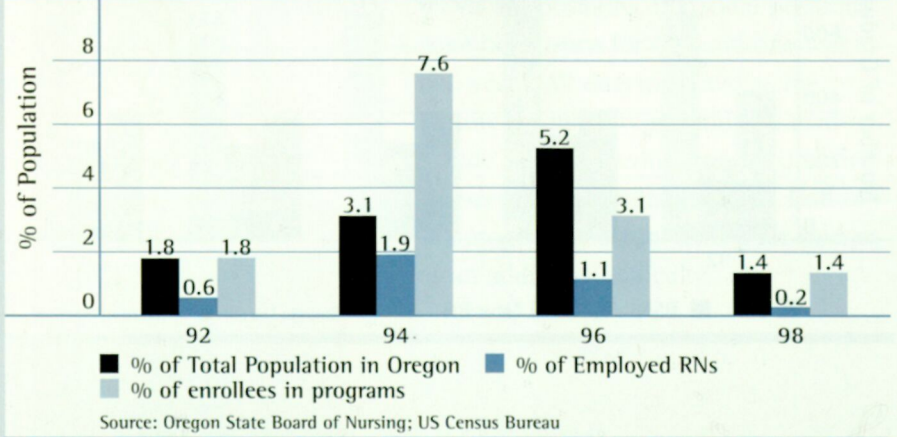
The shortage of baccalaureate prepared nurses has an additional adverse effect: this pool of nurses enters graduate programs to prepare for faculty, research, administrative and advanced practice positions.

Figure 7
Number of Graduations from Oregon Baccalaureate Completion Programs, 1993-1999



Source: Oregon State Board of Nursing

Figure 8
Representation of Ethnic Minority Groups in Oregon Population, Employed RNs and RN Programs



Source: Oregon State Board of Nursing; US Census Bureau

Representative of Population Served

All types of facilities report difficulty in hiring ethnic minority and/or bilingual nurses, or nurses who have expertise in providing care to a culturally diverse population. *Figure 8* shows the racial background of nurses currently employed, and of those enrolled in nursing programs in Oregon, compared with the proportion in the Oregon population. It is evident that all non-white ethnic groups continue to be underrepresented in the population of employed RN's.

Enrollment of ethnic minorities in nursing programs increased from 10 percent in 1995 to 13.4 percent in 1998. However, program directors report substantially higher attrition rates for both ethnic minorities and for students for whom English is a second language. Men also continue to be underrepresented in nursing. While there have been some modest increases in the number of men recruited to nursing, they comprise only 12 percent of the current Oregon workforce.

Multiple and Complex Causes

This shortage is occurring in the context of a general labor shortage, both in Oregon and nationally. Nearly two-thirds of all occupations in Oregon are experiencing a shortage. The "Baby Boom" of 1946-64 was followed by an 11-year "Baby Bust," during which time the birth rate fell to a low of 146 births per 1,000. As of the 1990 census, there were 77 million American "Boomers," compared with just 44 million "Generation Xers," which has created the smallest pool of entry-level workers since the 1930's.

The current nursing shortage is not a primary consequence of reduced supply. Overall, enrollment in schools of nursing has been maintained. However, program directors in some associate degree and baccalaureate programs report that the number of applications has declined in the last two years. ***Figure 9*** shows that enrollment as of Fall 1999 in nursing programs was at an all time high. In short, Oregon has not seen the annual decline in baccalaureate program enrollment of nearly five percent which have been reported nationally.[22]

Given the population gains of the last decade, Oregon could have expected a parallel increase in graduation rates from schools of nursing. However, graduation rates (as noted in ***Figure 5***) have remained relatively stable. The growth in the per capita RN workforce shown in ***Figure 1*** can almost entirely be accounted for by migration of RN's into the state. Given that there is a nationwide nursing shortage, it may not be possible to attract out-of-state nurses to Oregon. Recent figures from the National Council of State Boards of Nursing show a 16 percent decline in the number of new nursing licensees over the last two years, a significant drop in the national nursing workforce from which Oregon might draw.

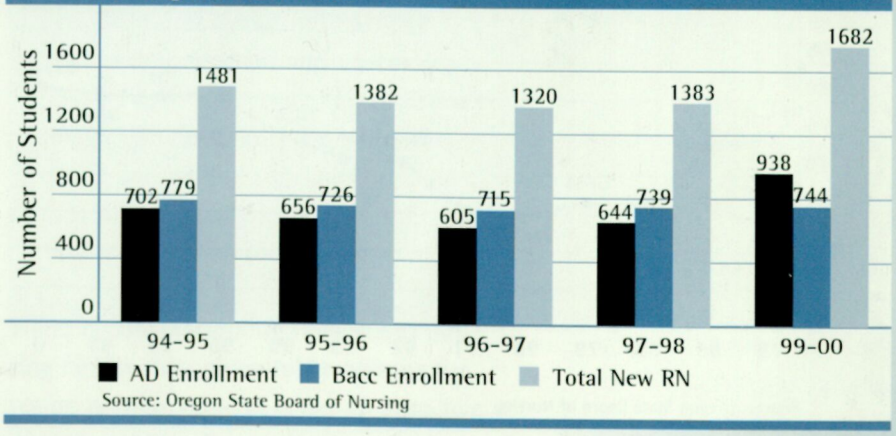
There is evidence that nursing is not attracting young people. The average age of graduates from RN programs has increased substantially. Nationally, the average age at graduation for RN's graduated prior to 1982 was 23.2 years of age; the average age of RN's graduated between 1991 and 1996 was 31.7 years.[23] The proportion of the RN workforce that is younger than 30 years decreased from 30.3 to 12.1 percent between 1983 and 1998. In contrast, the total labor force in the United States of those younger than 30 years decreased by less than 30 percent.[24] The average age of students graduated from nursing programs in Oregon in 1999 was 28 years for baccalaureate programs and 32.1 years for associate degree programs. This clearly results in a shorter work-life for RN's.

Analyses by Buerhaus and his associates also suggest that the failure to draw young people into the profession may, in part, account for the current shortages in intensive care units.[25]

"I work 12 days straight, then 2 days off. Do you think patients are getting good care?"

Nurse in rural hospital

Figure 9
Enrollment in AD and Baccalaureate Nursing Programs in Oregon, 1994-2000



Source: Oregon State Board of Nursing

"Hire-on bonuses? What does that say about the nurses who stay?"

ICU nurse,
metropolitan
Portland

Furthermore, nurses are apparently not leaving the workforce. More than 80 percent of licensed nurses are currently employed in nursing, the highest level in 30 years. Clearly, this proportion is influenced by the labor market as well as the overall economy. The proportion has increased significantly over the last decade and is now approximately 82 percent, the highest since 1969 (*Figure 10*).

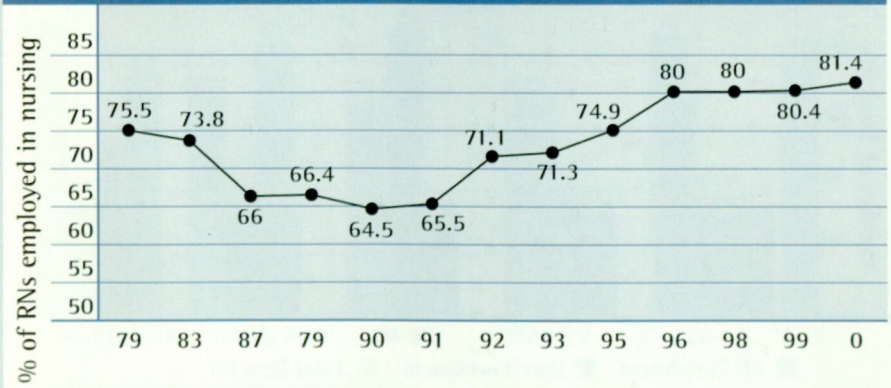
It should be noted that these figures may be somewhat inflated. Oregon State Board of Nursing regulations require that nurses work at least 960 hours within the previous five-year period to renew their licenses. Because licensees self-report employment status, this number may be overestimated. Indeed, we have heard numerous anecdotal reports of nurses leaving for other fields of employment. If so, these data do not yet support it. In fact, a federal report, based on a survey conducted in 2000 and released in February 2001, shows that Oregon is fifth highest in the nation in regard to the proportion of its licensed nurses who are employed in nursing (89.3 percent).[26]

There are also anecdotal reports of more nurses choosing to work on a part-time, rather than full-time, basis. However, available data suggest that the proportion of nurses who work full-time has remained relatively stable (50 to 55 percent) over the last decade.

The February 2001 report shows that 58.5 percent of the nurses in Oregon are employed full-time, a slight increase over what OSBN figures show for the last decade. However, Oregon also has the fourth highest proportion in the nation of nurses employed part-time—41.5 percent.

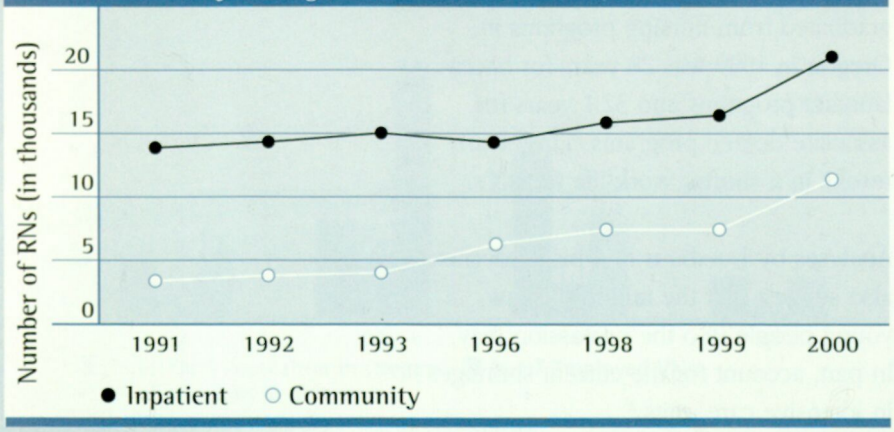
There is some evidence that the current shortage is a consequence of increased demand for nurses, in both traditional roles and in new and evolving roles (such as telephone triage). Population growth; spiraling census in hospitals, nursing homes and clinics; increasing acuity in all settings; and restored positions after a period of downsizing have all increased the number of budgeted nursing positions. *Figure 11* shows the dramatic change in employment patterns, both in institutional settings (hospitals and nursing homes) and in community-based settings.

Figure 10
Percent of RNs licensed in Oregon employed in Nursing, 1979-2000



Source: Oregon State Board of Nursing

Figure 11
Number of RNs in Hospital/Long-Term Care and Community Settings, 1991-2000



During the mid-1990's, there were fewer inpatient admissions to hospitals, and the average length of stay continued to drop. In the early to mid-1990's, many hospitals went through downsizing and restructuring, and the number of nurses employed in hospitals began to drop. Increased population, an aging population and technological advances have contributed to the census in hospitals increasing dramatically since 1998.

Moreover, nurse executives from across the state report that acuity in hospitals has continued to rise rapidly, due to the declining average length of stay and to new technology that allows for rapid assessment, treatment and discharge. Beginning in 1998, positions were restored from the downsizing era, and new positions have been added as a result of the booming census and increased acuity.

At the same time, as lengths of stay in hospitals declined and more care was shifted to the community, the anticipated growth in community-based nursing positions, such as in home care and ambulatory care, also occurred.

In addition, there are new types of positions that require or benefit from nursing education and experience. For example, there are nurses now employed in clinical informatics, radiographic imaging and other diagnostic testing facilities, quality management, utilization review, case management and pharmaceutical sales, all of which are areas of practice that were limited or non-existent for nurses 10 years ago.

There is evidence that the volume of work placed on nurses has increased, adding to the perception of inadequate staffing. Practicing nurses in virtually all settings hold the perception that staffing is grossly inadequate, even when all budgeted positions are filled. Nurses report three major sources for their increased workload:

1. Patients in hospitals, ambulatory care, nursing homes and home care are sicker than they used to be and discharged from care more quickly. Nurses talk about the rapid turnover of patients, the time it takes to admit and discharge patients from care, and the inability to really get to know their patients' health care needs in order to adequately respond to them.
2. While the nurse-patient ratios may have improved slightly over the last five years, there are significant reductions in nursing support staff (such as unit clerks and transportation departments) and in services available to some patient populations (e.g., the chronically mentally ill).
3. State and federal regulatory requirements are greatly increasing the volume of work for nurses.

"You wouldn't ask a neurosurgeon to float to orthopedic surgery."

ICU nurse,
metropolitan
Portland

There is concern among nurses and nursing faculty that, given other options for young people, nursing is not an attractive discipline. Indeed, many focus group participants reiterated this sentiment.

Shift work may seem unattractive to young people, though it may be a draw for others who need or want flexible scheduling. The recent shortage has resulted in unfavorable media reports of unsafe practice conditions or horrible working conditions. There continues to be salary compression, limited non-wage benefits in comparison to other industries, involuntary furloughs and mandatory overtime. Starting salaries for registered nurses are competitive, but the average nurse can

expect to reach his/her maximum earning power within seven years.[27]

With the tightening of the financial circumstances in hospitals and managed care organizations, the availability of clinical training sites for student nurses is shrinking. These clinical training sites are essential if the numbers of nurses are to be increased—schools of nursing simply cannot increase their enrollment if they do not have adequate clinical opportunities for their students.

In summary, the demand for registered nurses is outpacing supply. Nursing programs have not increased enrollments enough to keep pace with population increases. The supply of nurses in the state has increased over the last decade due to two factors: those migrating from out-of-state and those returning to the workforce. Both of these sources have now reached their peak. It is therefore essential that schools of nursing expand their enrollment and that necessary changes are made to practice settings in order to enhance the profession's attractiveness to young people.

Adverse Effect on Care

There is a growing body of evidence that shows the relationship between poor nurse staffing and adverse patient outcomes. A recent national study commissioned by the American Nurses Association shows significant relationships between adverse events (such as pneumonia, post-operative infections, pressure sores and urinary tract infections) and staffing levels.[28] Another study on medication errors found that the primary contributing factors were "distraction and workload increases, many of which may be a result of today's environment of cost containment."[29]

Buerhaus, in a recent review, points out that the evidence is not yet strong, nor adequately refined, to provide guidance for ideal staffing models. There are currently eight national studies underway that will be pivotal in the design of improved staffing models to ensure positive patient outcomes.[30]

The nurses in focus groups regularly expressed concern about being able to provide safe care. They reported the inability to perform basic care, patient assessment and monitoring in a timely manner, or to provide emotional support to patients or families.

Nurses clearly described the lack of a supportive working environment. Issues such as effective communication, a feeling of *esprit de corps* or belonging to a group, and a sense of respect and dignity, all of which substantially affect morale, were reported as diminished in current work environments. Because of restructuring in acute care facilities, nurses commented that the nurse manager is less visible and available to staff nurses.

A related issue is the lack of mentoring available to new nurses, as the number of experienced nurses has substantially decreased. With few notable exceptions, nurses in acute care settings in particular conveyed a sense of powerlessness and frustration in resolving the short staffing situation. They indicated that they were rarely involved in problem-solving about issues that directly affect their practice.

They described mandatory overtime, cross-training and being required to float to other units; some in rural areas talked about fluctuating census and an unpredictable work schedule. Nurses often felt as though

they had no choice but to work extra time or be rotated to a different unit within the hospital. With mandatory overtime, nurses were concerned about their ability to give quality care.

Nurses are frustrated by the lack of attempts to retain qualified nurses in their practice settings. They pointed to sign-on bonuses and the payment of premium wages to temporary staff while their own wages stagnated, and in some cases, decreased (due to actual reductions in hourly wage, increased cost of benefits or unpredictable work schedules). They discussed at length the need to have salary schedules in which competence and experience were rewarded.

In short, nurses believe that improvements in the practice environment are essential if older nurses are to be retained and young people recruited to the profession. They see the following as necessary changes:

- A practice environment that encourages high quality nursing care.
- Flexible benefits and competitive salaries that reward experience, education and clinical expertise.
- Positive, collegial working environments that provide respect and recognition from management.
- Flexible and adequate staffing models that recognize rapid turnover of patients, increasing acuity and differences among nurses' expertise.
- Significant increases in communication between management and staff, with staff participation in decision-making.
- Opportunities for professional development.

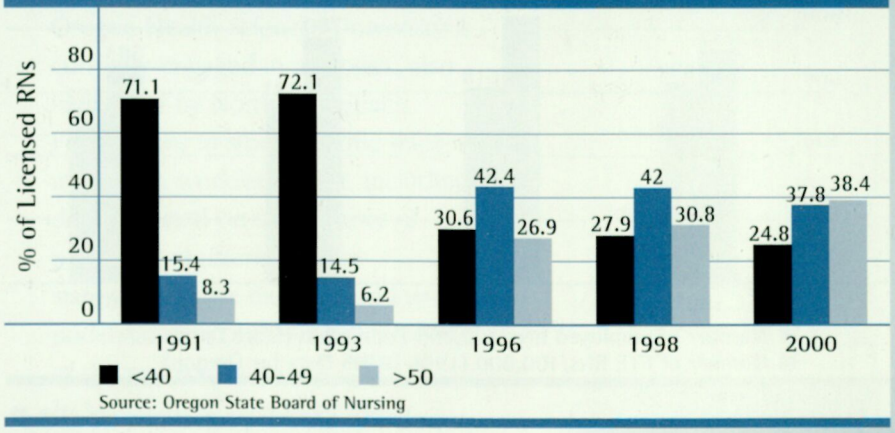
There is also some evidence that the nursing shortage may increase health care costs. We do not have precise figures, but the following problems would clearly increase costs:

- Not admitting patients to a lower acuity (and less costly) care setting (nursing home or home care) because of insufficient staff.
- Increased use of temporary agency staff at premium wages—$60-70 per hour or more, compared with $19-25 per hour (plus benefits).
- Payment of recruitment costs and sign-on bonuses.

"They will gladly pay the agency 60 or 70 dollars an hour but they will not give us a raise."

Rural hospital nurse

Figure 12
Aging of the RN Workforce in Oregon



Source: Oregon State Board of Nursing

Worsening Shortage

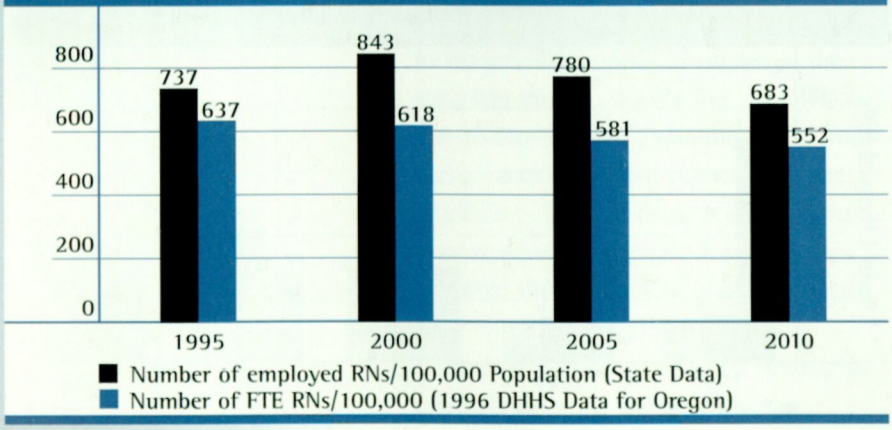
The national average age of an RN is 44 years. The average age of an RN in Oregon is 47 years. There can be little doubt that the RN workforce in Oregon is aging (***Figure 12***). As of October 2000, 38 percent of the RN workforce is over the age of 50 years and another 22 percent is between the ages of 45 and 50 years.

National Sample Survey data of RN's indicate that the percentage of RN's who report themselves unemployed rises steadily beginning at age 52 (17.5 percent); by age 57 years, the percentage of unemployed stands at

26 percent. A series of sharp increases then occurs at ages 61 years (41 percent), 63 years (55 percent), and 65 years (72 percent).

Unless measures are taken immediately, we can anticipate a severe shortage by 2010, and probably sooner. We have used data from multiple sources to project the workforce: industry growth projections from the Oregon Employment Division (OED); application, enrollment and graduation trends from the Oregon State Board of Nursing and schools of nursing; population growth projections from the U.S. Census Bureau; and demographic data and trends in employment patterns of registered nurses from the Oregon State Board of Nursing. Projections based on these trends and assumptions, and projections from the Department of Health and Human Services (DHHS), Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing, were both used (see *Appendix*). As shown in ***Figure 13***, projections in this report are comparable to the DHHS projections.

Figure 13
Projected RN supply using two prediction methods



Projections from this report would indicate that in 2005, nearly 1,000 fewer RN's will be employed than are employed in Oregon today. Additionally, in 2010 nearly 3,000 fewer RN's will be employed—a 10.3 percent reduction.

The number of FTE nurses per 100,000 projected by DHHS is a 10.7 percent reduction in today's levels. It should be noted that the OED is projecting growth in RN positions at 10.4 percent; if this somewhat modest estimate holds, a shortage of RN's of more than 20 percent in 2010 could be anticipated.

The nursing education system's capacity to respond will also be seriously limited, as the average age of nursing faculty is also increasing dramatically. In our survey, program directors and deans projected that 57 of 140 (41 percent) faculty in baccalaureate and higher degree programs, and 15 of 62 (24 percent) associate degree faculty are expected to retire by 2005. By 2010, an additional 65 (46 percent) baccalaureate and higher degree faculty and 21 (33 percent) associate degree faculty are expected to retire.

Most of the program directors indicated that they could increase enrollment with additional funding, although the availability of faculty and concerns about clinical placements are obstacles to increasing enrollment for at least half of the respondents.

The impending decline in the supply of RN's will come at a time when the first of the 78 million "Baby Boomers" begin to retire and in 2010 will enroll in the Medicare program. The population of Oregon is projected to increase by 12 percent between 2000 and 2010.[31] The Oregon population of individuals 65 years of age and older is projected to increase by 36 percent. Growth in the over-65 population creates increased demand for health care services.

Recommendations

There is a need for both short and long-term strategies. Evidence clearly shows that hospitals, health systems and long-term care facilities are now in the midst of a nursing shortage. Some strategies may be useful for responding to these immediate concerns.

However, all evidence suggests that this shortage will be long lasting; increasing in severity; affecting virtually every area of health care; and requiring long-term, innovative and collaborative strategies.

This report identifies a number of opportunities to positively influence the supply and retention of professional nurses. These are described below, with a brief rationale for their inclusion.

Short-term Strategies

Incentives and Postgraduate Programs for Shortage Areas

In most settings, this shortage currently affects areas of practice that require experienced nurses. The demand outstrips the supply for experienced nurses in ICU's; operating rooms; and some other specialty areas in acute care, home care and ambulatory care settings. There are students in the pipeline now who might be encouraged via scholarships, special training opportunities or postgraduate preceptorship programs to move into some of these shortage areas upon graduation. Programs designed to help new graduates acquire knowledge, special skills and confidence to work in shortage areas, such as ICU's, ambulatory care settings and operating rooms, would be essential and may help address some of the immediate issues.

Improved Data Quality

This research project, which focused primarily on analysis of existing data, was hampered by lack of reliable demand data, and by numerous problems in supply data. In addition, several areas emerged that require additional study:

- The Area Health Education Center at Oregon Health Sciences University is currently engaged in a project, also supported by Northwest Health Foundation, to study specific information on workforce data, including data collected on the number of practicing registered nurses statewide. These data will add to our understanding of the characteristics of the current shortage.
- In March 2001, data from the National Nurse Sample, Division of Nursing, Bureau of Health Manpower will be available. Preliminary findings were released in February 2001. These data, collected every four years, are sufficient for both national and state level predictions, and are extremely useful for analyzing trends over time. Support for analyses of the Oregon state level data will be critical.

Further Study Needed

It is clear that efforts to recruit and retain minority students to nursing have not been entirely successful. Minority enrollment and graduation rates are still well below their proportion in the population. The workforce is still far from reflecting the racial/ethnic composition of the population. Further study is needed to understand the barriers that exist in the region's nursing education programs and health care organizations that may deter ethnic minorities from a nursing career. Without this understanding, efforts to design and implement strategies to attract, educate and retain minorities in nursing education, and later in the workplace, are likely to be hampered.

It became clear through the course of this project that there is also a shortage of certified nursing assistants and licensed practical nurses that threatens the availability of care in skilled nursing and assisted living facilities. This shortage compounds the problems created by the shortage of registered nurses. Further analysis of the causes for the shortage, and development of a plan to reduce it, should be a high priority.

Long-term Strategies

Long-term strategies are offered to respond to four major needs:

1. More reliable, current and easily accessible workforce data that can be used by educators, employers and policymakers to monitor and respond to workforce trends.
2. Improved quality of the work and practice environment for professional nurses—both to retain the older, more experienced nurse, and to make the profession more attractive to young people.
3. Increased supply of nurses with the necessary education and competencies to care for patients with more complex needs and to replace the rapidly aging nursing workforce.
4. Examination of policy and health care regulation as it affects the nursing workforce.

Partnerships to Project Workforce Needs

Support for collaborative partnerships among educators, employers, state government and regulatory bodies are needed to:

- Improve collection, coordination and dissemination of workforce trend information.
- Monitor and implement responses to changing demand for nursing services.

Coordinated Efforts to Recruit to the Profession

Recruitment materials that are directed toward prospective nurses from both the "traditional" source (high school students) and nontraditional sources (retiring high tech managers, firefighters), and toward underrepresented ethnic minorities and men, need to be developed and disseminated.

Retention of Experienced Nurses

Projects need to be directed toward improving the practice environment, in order to retain experienced (usually older) nurses and improve the attractiveness of the discipline to young people. For example, there is a need for projects

that provide support for hospitals to meet the criteria of a magnet hospital designation, and support the development of innovative staffing models that make the best use of the experienced but aging nurse.

Expanded Enrollment in Nursing Programs

Enrollment in all nursing programs needs to expand, which will require, in addition to coordinated recruitment efforts and improved practice environments, the following:

- Increased funding to nursing education programs.
- Educational preparation of additional faculty.
- Increased number of clinical placements available to students.
- Scholarship and loan forgiveness programs to recruit nurses to high shortage areas.

Expanded Access to Baccalaureate Education

In addition, it is essential to expand the access to baccalaureate level education, both to meet the demand for baccalaureate prepared nurses in clinical practice and to provide the pool for entry into graduate programs that prepare faculty, researchers, administrators and advanced practice nurses. In addition to the requirements listed above, this will require:

- Enhanced articulation agreements between associate degree and baccalaureate programs.
- Expanded enrollment for both RN and basic students to baccalaureate programs.
- Delivery of educational programs to remote areas of the state, where baccalaureate education has not been available.
- Employer-provided incentives and access to degree-granting programs, to encourage staff to return for additional education.

Policy Examination Needed

Collaboration with other health oriented foundations is necessary in order to examine federal and state legislation, regulation, and other policy that adversely affects the health care workforce. During the interviews and focus groups, informants repeatedly referred to the impact of regulation on patient care. This is a particular problem in long-term care, but is being experienced increasingly in other settings as the demand for quality assurance monitoring increases.

Action in Progress

The Oregon Nursing Leadership Council (ONLC) is developing plans to respond to the nursing shortage. Recommendations contained in this report and others are being considered by the ONLC. In June 2001, the ONLC will host an invitational conference regarding this shortage. The conference will be supported in part by Northwest Health Foundation. At that time, a strategic plan for addressing the nursing shortage will be developed and endorsed by key stakeholders.

Conclusion

Consistent with the rest of the nation, the state of Oregon is headed for a nursing shortage. Employment and graduation data, in addition to personal testimony from current nursing professionals, indicate a multi-dimensional shortage of registered nurses in Oregon, for which the causes are multiple and complex. The nursing shortage is adversely affecting patient care, as well as the safety and morale of the nursing workforce. It is also driving up the cost of care.

This shortage is unlike nursing shortages of the past: left unchallenged, it will not simply cycle back into an adequate supply. It will, in fact, worsen over the next decade.

This lack of educated and experienced personnel will have a dramatic impact on every area of health care, from public health to surgery to eldercare. We cannot ignore this threat. It is imperative to understand the causes of the shortage and to collaborate with all sectors of the health care industry—including consumers, government agencies, educational institutions and grantmaking organizations—to forge a path toward a solution. The health of all Oregonians depends on it.

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Appendix

Table 1. Summary of data used for workforce projections

Year	Number licensed in Oregon	Net gain in number of licensees from previous year	Number of new graduates from Oregon Schools of Nursing [1]	New licenses issued by exam[2]	New licenses issued by endorsement[3]	Predicted total[4]	Number of lapsed licenses[5]
1991	30463						
1992	30834	371 (1.2%)	714	757	1394	32614	1780
1993	31045	211 (.7%)		849	1522	32205	1160
1994	31745	700 (2.2%)	741	956	1070	33071	1326
1995	2469	724 (2.3%)		574	1156	33475	1006
1996	33012	543 (1.7%)	711	627	1498	34594	1582
1997	33695	683 (2.1%)		750	1346	35708	1413
1998	34570	875 (2.6%)	651	867	1201	36763	1786
1999	34977	407 (1.2%)		NA	NA	NA	NA
2000	35475	498 (1.4%)	711	NA	NA	NA	NA
Average for years data are Available		1.7%	706	874	1312		1307

Sources:
1991-1998 figures are taken from Oregon State Board of Nursing (OSBN) Statistical Summaries
1999-2000 figures are from additional analyses completed by OSBN analyst Patricia Miles

[1] Data reported by individual schools in annual reports to the Oregon State Board of Nursing. Missing data from individual schools in any given year replaced by average for that school.
[2] License by examination includes new graduates from Oregon schools of nursing as well as nurses previously unlicensed in any state who pass the National Council of State Boards of Nursing (NCLEX) licensure examination.
[3] Licensure by endorsement includes nurses who have been licensed in another state and who meet other qualifications for licensure in Oregon.
[4] The predicted number of RN's equals the total of licensed RN's from the previous year plus RN's licensed by endorsement and by examination.
[5] The actual number of RN's who do not renew their licenses (or allow their licenses to lapse) is not available from OSBN. The number of lapsed licenses is estimated by subtracting the predicted total of RN's for a given year from the actual number of RN's. The number lapsed includes revocations of licenses as well as failures to renew license on the biannual date of renewal.

Table 2. Computations for Workforce Projections

Age Ranges									Losses to RN Workforce		Gains to RN Workforce		
Year	20-29	30-39	40-44	45-49	50-54	55-59	60-64	>65	Lapsed licenses[1]	Retirees[2]	New grads[3]	New licensees	Total number of RN's
2000	2362	6586	5539	7852	6397	3660	1951	1236					35475
2005		5065	3293	5539	7852	6397	3660	2321	-5228	1600 +1830 1625 -5055	+3568	+5657	34374
2010				3293	5539	7852	4797	2526	-5228	1963 2399 1768 -6130	+3528	+5657	- 31,687

Sources:
Proportion of licensees within each category is based on data provided by the Oregon State Board of Nursing, October 2000

[1] The number of lapsed licenses from estimates in previous table. It is assumed that 80% of these lapsed licenses are due to NON-retirement factors, such as relocation, leaving the RN workforce for other employment or unemployment, etc.

[2] Retirement rates based on the following projections:

25% of RN's will retire between the ages of 55-59
50% of RN's will retire between the ages of 60-64
70% will retire at the age of 65

These estimates are based on the retirement behavior of the National Survey Sample of RN's, 1996.

[3] Since 1992, average graduation rates for the state have remained steady. Nationally, graduation rates have declined by 4.6 percent/year over the last 5 years (American Association of Colleges of Nursing, 2000). However, Oregon has experienced a decline in graduation rates for only one year since 1992. Enrollment has been maintained and is at its highest in fall 1999, supporting the assumption that graduation rates will NOT follow national trends.

Table 3. Projections of Supply of RNs per 100,000 Population 1995-2010

Year	Oregon Population[1]	Number of RN's[2]	Projected Number of FTE and Part-time Nurses in the Workforce[3]	Number of Employed RN's/100,000 population	Projections FTE[4]	Number of FTE RN's/100,000
1995	3,141,000	32,469	23,160	737	20,000	637
2000	3,421,399	35,475	28,860	843	21,000	618
2005	3,613,000	34,374	28,186	780	21,000	581
2010	3,803,000	31,687	25,938	683	21,000	552

[1] U.S. Census Bureau Population Projections http://www.census.gov/population/projections/state/stpjpop.txt/; 2000 Census data based on actual U.S. census. www.census.gov/population/state

[2] Projections based on number of licensed RN's reported by the Oregon State Board of Nursing in 1995 and 2000.

[3] 1995-2000 based on actual data; 2005-2010 calculated assuming that 82% of RN's would be in workforce.

[4] Health Resources and Services Administration (HRSA), Bureau of Health Manpower, Division of Nursing, U.S. Department of Health and Human Services (DHHS), Projections 1996.

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