



WHEN, Not If...

A REPORT ON

Oregon's Registered Nurse Workforce

- 2005 -





Funding support for this study was provided by the U.S. Department of Health and Human Services, Health Resources and Services Administration, and the Northwest Health Foundation.

A REPORT ON

Oregon's Registered Nurse Workforce

- 2005 -

Deborah A. Burton, *PhD, RN, CNAA, Regional Director, Nursing Education and Performance, Providence Health System and former Executive Director, Oregon Center for Nursing*

Beth A. Morris, *MPH, Research Consultant/Analyst*

Kristine K. Campbell, *RN, PhD, Executive Director, Oregon Center for Nursing*

ACKNOWLEDGEMENTS

This study was accomplished through the generous individual and collective contributions of time, funds and expertise. Specific thanks and gratitude are extended to U. S. Senator Gordon Smith, the Northwest Health Foundation, the Oregon State Board of Nursing, the federal Office of Rural Health Policy, the University of Portland, the North Carolina Center for Nursing, the Oregon Employment Department, the Oregon Governor's Office of Education and Workforce Policy, and the Oregon Governor's Simulation Alliance. Special individual thanks go to Mandy Alton, Michael Drais, DeWayne Hatcher, Linda Lacey, Jennifer Lakeman, Mary Cay Liebig, P.J. Maddox, Pat Miles, Terry Misener, Glenn Olson, S. Margie Olson and Dwayne Stevenson. We are also deeply indebted to each nurse and organization that helped to facilitate the distribution and completion of the multiple data collection and survey instruments used in this study.

TABLE of CONTENTS

EXECUTIVE SUMMARY.....	4
INTRODUCTION.....	6
SUPPLY OF REGISTERED NURSES.....	8
Overview	8
Methods.....	8
Findings and Discussion	9
Nursing Education	9
Oregon's Licensed Registered Nurses.....	10
Registered Nurse Supply Projections	12
Summary and Conclusions	14
Men in Nursing	15
DEMAND FOR REGISTERED NURSES.....	16
Overview	16
Methods.....	16
Findings and Discussion	16
Vacancy Rates.....	16
Turnover Rates	17
Industry Hiring Trends	18
Anticipated Demand for Nurses.....	18
Registered Nurse Demand Projections	19
Summary and Conclusions	20
Registered Nurse Wages.....	21
NEED FOR NURSING CARE	22
Overview	22
Methods.....	22
Findings and Discussion	22
Population Growth and Aging	22
Utilization of Health Services.....	23
Changing RN Practice and Education Requirements	24
Summary and Conclusions	25
Transformation of Nursing Care	26
RECOMMENDATIONS	28
METHODS	30
REFERENCES & NOTES	35

EXECUTIVE SUMMARY

This registered nurse workforce report is titled *When, Not If* because unless we take immediate and decisive action, a critical statewide nursing shortage is inevitable. Issues surrounding Oregon's nurse workforce came to the attention of Oregon's citizens and policy makers in 2001 when the Northwest Health Foundation released, *Oregon's Nursing Shortage: A Public Health Crisis in the Making*. The report confirmed a nursing shortage that threatened the very health of Oregonians was on the horizon.

Findings presented here illuminate the emerging demographic and industry trends that are setting Oregon's nurse workforce on a serious-to-critical course. This comprehensive analysis of Oregon's registered nurse (RN) workforce is based on current literature and existing data obtained from a variety of national, state and local sources. In addition, the Oregon Center for Nursing gathered original data through a series of surveys and interviews designed to add to our understanding of nurse supply and demand issues in Oregon. The study was sponsored by the Oregon Nursing Leadership Council (ONLC) and conducted by the Oregon Center for Nursing (OCN).

Major findings include:

- Nursing education programs are expanding to double enrollment as planned. Between 2001 and 2004, the number of graduates from RN education programs increased by 45 percent.
- Oregon has a large pool of qualified nursing school applicants, two to three times more than it has the capacity to educate at present.
- More new RN licenses are issued annually to nurses moving to Oregon than to recent nursing school graduates.
- Nearly one-half of Oregon's RNs are 50 years of age or older. The proportion of nurses over 50 has more than doubled over the past 20 years.
- An exodus of retiring nurses is now underway. By 2025, 41 percent of currently licensed RNs are expected to retire.
- By 2010, an estimated 65 full-time equivalent nursing faculty positions in Oregon will be vacated due to retirements.
- Six percent of RNs currently working in the state plan to leave Oregon's nursing workforce for reasons other than retirement within the next two years. Nurses under the age of 40 are more likely to have plans to leave than those 40 or older.
- Demand for RNs will continue to grow steadily. An additional 15,700 RN job openings are expected statewide over the next 15 years.
- The age distribution of Oregon's population will change dramatically over the next 20 years. The number of Oregonians 65 years of age or older will exceed one million by 2025, accounting for nearly 25 percent of all the state's residents.
- As Oregonians live longer, they will live with more chronic diseases and require more complex nursing care. Nursing care will need to be transformed to meet the changing health status of Oregonians.

Specific recommendations derived from this study:

- 1) Implement strategies that will retain nurses currently working in Oregon.
- 2) Continue aggressive efforts to increase educational supply.
- 3) Transform the work, roles, and work environments of registered nurses.
- 4) Support nurses to practice autonomously and to deliver the full scope of nursing care for which they are licensed.
- 5) Recruit nurses to, or back home to, Oregon.
- 6) Improve representation of ethnic minorities and males in the nursing workforce.
- 7) Encourage nurses who have left the workforce to return to work.
- 8) Fund advanced nursing education and nursing leadership development.
- 9) Expand nurse workforce research efforts.

These recommendations confirm the need to continue determined efforts to carry out the Oregon Nursing Leadership Council's strategic plan *Solutions to Oregon's Nursing Shortage*. The plan was adopted and released in 2001 by Oregon's nursing leadership organizations as a comprehensive approach to simultaneously address the registered nurse workforce and the health of Oregonians.

Current ONLC strategic goals are:

- Determine and support strategies for the recruitment and retention of nurses in the workplace.
- Achieve education reform and increased program capacity.
- Support the development and evaluation of innovative educational methodologies in nursing.
- Continue initiatives to diversify the nurse workforce to promote culturally competent care.
- Implement the ONLC competencies in practice settings.
- Promote leadership development in nursing.
- Enact nursing leadership for Oregon's health.
- Attain financial stability for the Oregon Center for Nursing.

Evidence presented here highlights the ONLC's initial successes. Specifically, the ONLC has increased educational capacity and the number of graduates from Oregon's nursing education programs; developed a comprehensive set of professional competencies that specifically address the knowledge and skills that will be required of the future nurse; and established the Oregon Center for Nursing to coordinate implementation and ongoing evaluation of the strategic plan. This report calls for a sustained commitment of nursing leadership, in partnership with the people of Oregon, to continue implementation of the ONLC Strategic Plan.

More than ever, the challenges we face require a partnership forged among policy makers, employers, educators, and the public. To avoid the adverse health effects that will result unless we act now, we must confront the nursing shortage head on. Let us heed this call to action.

Because Oregon's Health Depends On It.

INTRODUCTION

Oregon's ability to provide the quality health care our citizens deserve is in peril. This nursing workforce report is titled *When, Not If* because unless immediate and decisive action is taken, emerging demographic and industry trends make a critical statewide nursing shortage inevitable. It is impossible to pinpoint the exact date this shortage will reach grave proportions, but it is imperative that we act now to prevent it.

Imagine the year 2020. Nursing and health care will look different. The Good News: if we continue to implement the Oregon Nursing Leadership Council's (ONLC) strategic plan, Oregon's registered nurses will be well prepared to provide care for the state's growing, diverse and aging population. Nurses will be challenged, satisfied, and practicing to the full scope of their profession. They will be well compensated for their work. Their ranks will reflect more closely the changing "demographic face" of Oregon in ethnic and cultural mix. Males will continue to enter the profession in greater numbers. Oregon will continue to lead the nation in innovative policy and planning in nurse workforce management. Nursing educational institutions across the state will have met their social imperative to reform education and vastly increase the supply of RNs available to provide care. Employers will have substantively addressed pervasive nurse "dissatisfiers" such as workload and safety issues, compensation structures, and the organizational supports essential to retaining and challenging the practicing nurse.

Sounds encouraging, doesn't it? Now the Not-So-Good News: according to current data, unless today's registered nurses remain employed well beyond the age of 65, we face a nursing shortage that will be felt statewide by 2015. While there may seem to be plenty of lead time, it is well documented that it takes five to seven years to "produce" an independent and experienced registered nurse. Educating more nurses will offer relief but will not solve this nursing shortage. Much more can be done to ensure a stable and adequate nurse workforce, and now is the time to take the bold and visionary action for which Oregon is known.

In 2001, the Oregon Nursing Leadership Council (ONLC), comprised of the major statewide nursing leadership organizations, released its comprehensive strategic plan, *Solutions to Oregon's Nursing Shortage*, which set forth an agenda to address the nursing shortage. The plan built on the 2001 nursing workforce report, *Oregon's Nursing Shortage: A Public Health Crisis in the Making*, published by the Northwest Health Foundation (NWHF) and written by Dr. Christine Tanner. The report's startling revelations immediately caught the attention of Oregon's citizens and policy makers. (Both reports can be viewed on the Oregon Center for Nursing website: www.oregoncenterfornursing.org.)

The Oregon Center for Nursing (OCN), established by the ONLC to carry out the strategic plan, produced this report to provide an update on the NWHF's original workforce briefing and a progress report on the road to implementation of the ONLC plan. *When, Not If* focuses on Oregon's present reality and a vision of the future in three areas:

- 1) *Supply of Registered Nurses:* characteristics of the present workforce and projections of the future supply of RNs;
- 2) *Demand for Registered Nurses:* present and future expectations for industry hiring and employment trends in Oregon; and
- 3) *Need for Registered Nurses:* trends in demographics and health status that drive the public's requirement for nursing care.

What follows is an assessment of Oregon's registered nurse workforce based on current literature and existing data obtained from a variety of national, state and local sources. In addition, the Oregon Center for Nursing gathered original data through a series of surveys and interviews designed to add to our understanding of nurse supply and demand issues in Oregon.

Survey of Nursing Education Programs: We interviewed deans and directors representing educational institutions in Oregon and southwest Washington to investigate the characteristics of nursing school applicants, enrolled students, and nursing faculty.

Survey of Nurse Employers: We surveyed nurse employers representing various employment settings—acute care, nursing homes, long-term care facilities, public health, home health, hospice care, and schools—to collect data regarding vacancy and turnover rates and anticipated future demand for nursing personnel.

Survey of Registered Nurses: We surveyed registered nurses licensed in Oregon to learn about their current practice status, future career plans, and plans for retirement.

Additional details regarding these surveys can be found in the *Methods* section of this report.

Our findings make it clear that complex demographic, market, and industry trends are setting the registered nurse workforce on a serious-to-critical course. However, this report also highlights some innovative efforts already underway. These initiatives reflect a united commitment from nursing leadership to effectively manage the nursing workforce issues we face. The nursing profession, policymakers, employers and the citizens of Oregon need to work together to avert the *When, Not If* scenario. And avert it we must.

Because Oregon's Health Depends On It.

"Good nurses are leaving the profession. Although they CAN handle the stress, intensity and quantity of work, they choose not to. We need to increase the number of nurses but must address the healthcare systems that push them away!"

— Nurse Employer

SUPPLY OF REGISTERED NURSES

How many registered nurses will be working in Oregon?

OVERVIEW

The supply of registered nurses is commonly defined as the number of RNs qualified to provide health care services and who currently practice within the profession. There are three primary and distinct ways that the supply of registered nurses is measured: RNs licensed to practice, RNs currently working in the profession, and RN hours worked. The number of registered nurses licensed to practice overstates supply because it includes those licensees not currently working as an RN. The number of RNs currently working in the profession provides a better approximation of supply because the measure excludes licensees who are not active in the workforce. Finally, measuring supply in terms of the number of RN hours worked takes into account the degree to which nurses are participating in the workforce.

Following is a summary of essential information about the present and future supply of registered nurses in Oregon. Looking at the past can help us understand what to expect in the future, but history alone cannot provide an accurate depiction of the nursing supply story. Important changes are just around the corner. This section discusses these changes and presents projections of the future supply of registered nurses in Oregon based on existing and original data sources that rely on history but also address future trends both in nursing education and the aging RN population.

METHODS

The primary source of registered nurse supply data was the Oregon State Board of Nursing (OSBN), the state licensing body for registered nurses. Data pertaining to nursing education (students and graduates), registered nurse licenses issued, and licensee characteristics were analyzed. Bureau of Health Professions and U.S. Census Bureau data were used to compare demographics of Oregon RNs to U.S. RNs and to the overall population.

The Oregon Center for Nursing conducted a survey of nursing education programs to assess characteristics of nursing school applicants, students and faculty. Deans and directors representing educational institutions in Oregon and southwest Washington were interviewed by phone. Fifteen associate degree and four baccalaureate nursing programs were invited to participate. Seventeen of 19 programs responded (response rate: 89 percent).

Licensed RN supply projections were calculated using OSBN data, figures provided by the Oregon Area Health Education Centers Program, and original data collected by the OCN as part of the Survey of Registered Nurses. A mail survey was sent to a sample of 4,751 RNs between August and October 2004. The survey was included with all relicensure packets mailed by the OSBN during the three month period. The one-page survey contained eight questions concerning current employment status, future career plans, and plans for retirement. A total of 1,957 usable surveys were returned (response rate: 41 percent).

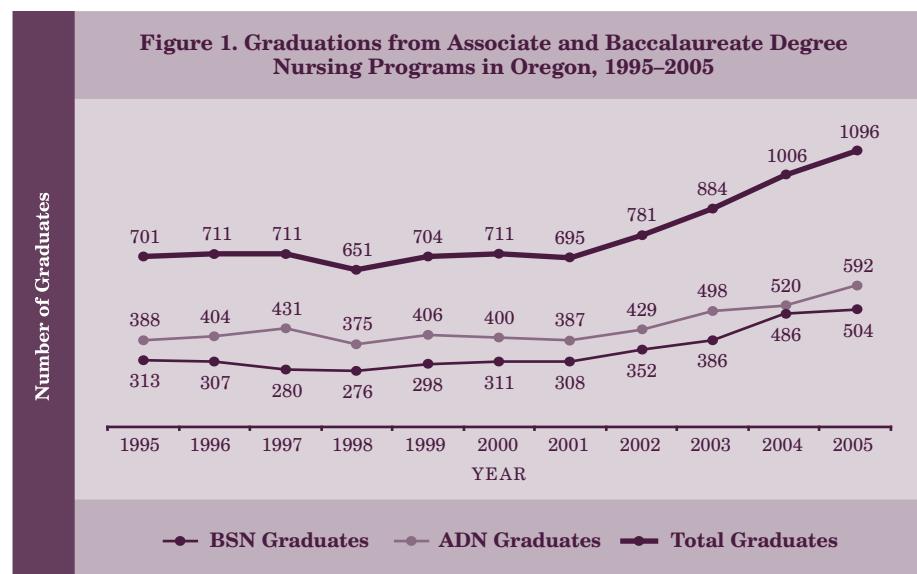
FINDINGS AND DISCUSSION

Nursing Education

At present, Oregon is fortunate to have an abundance of individuals who aspire to be nurses. The OCN Survey of Nursing Education Programs found that many applicants are not accepted to the state's public and private registered nurse programs. Resource constraints that limit educational capacity force Oregon's nursing schools to turn away two qualified applicants for every one admitted student. Clearly, nursing is a popular health care career. Whether this will continue to be the case depends on a number of factors including the status of the health care industry, the attractiveness of other health professions, and the rewards and satisfaction of nursing practice itself.

Recognizing that the current supply of new nurses in Oregon was inadequate to meet growing demand, the Oregon Nursing Leadership Council (ONLC) in 2001 boldly set a goal of doubling enrollment in Oregon's four baccalaureate degree and 14 associate degree nursing education programs by 2004. Figure 1 shows that this goal is well on the way to being met.

Oregon's nursing education community has "stepped up" to aggressively increase educational capacity. Graduations from Oregon's nursing education programs have increased steadily since adoption of the ONLC plan. Between 2001 and 2004, the number of graduates increased by 45 percent. This has been achieved through innovation and careful planning. Highlights include embracing distance learning and clinical simulation technology, unprecedented cooperative ventures between community colleges and baccalaureate programs, and active partnerships with health care employers.



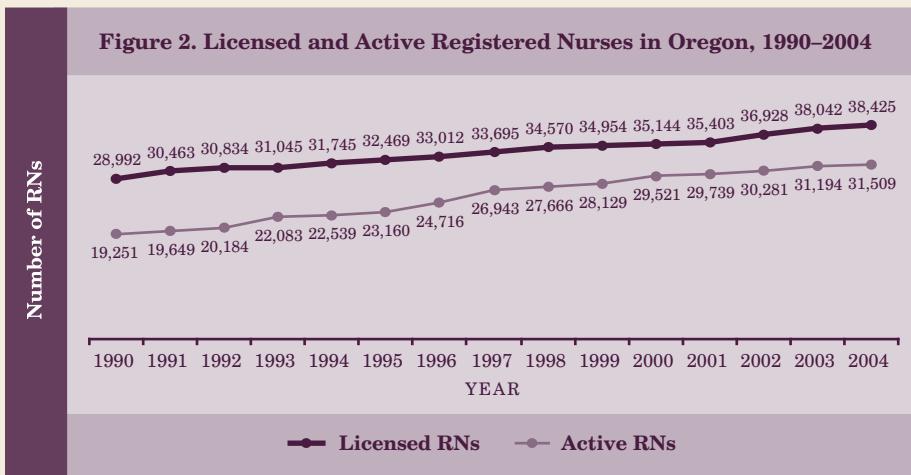
NOTE: Due to missing data, 1999 values are estimates; 2005 values are projected.

Sources: Oregon State Board of Nursing; Oregon Center for Nursing, 2004 Survey of Nursing Education Programs.

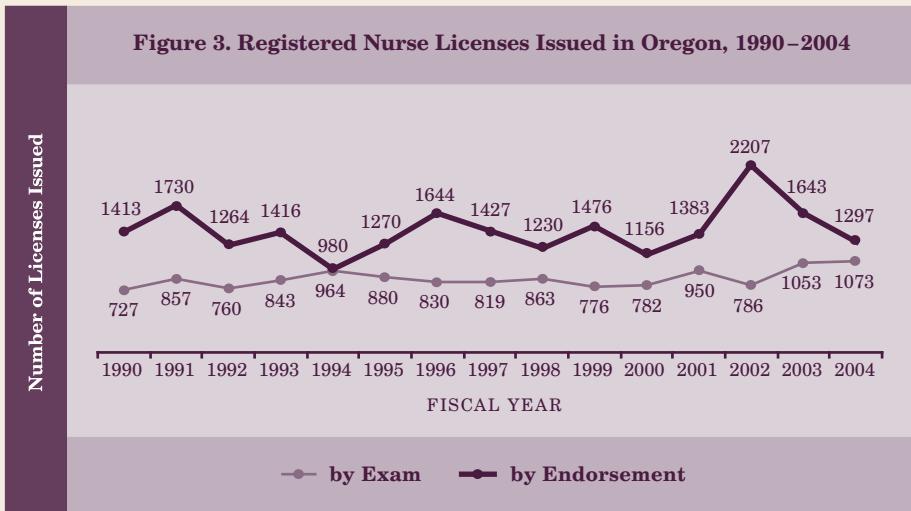
The Oregon Consortium for Nursing Education has engineered an expanded and redesigned baccalaureate nursing program to be delivered through the statewide community college network. A joint venture between Providence Health System and the University of Portland, the *Providence Scholars Program*, has supported doubling annual enrollment in the state's largest private baccalaureate program. This has been accomplished through scholarship support, subsidies for additional faculty, and sharing of clinical resources.

These results have been achieved despite a lagging state economy that has been unable to adequately invest in Oregon's higher education system. Efforts to maximize educational capacity are also limited by human, technical and clinical resource constraints. Most notably, there will continue to be a severe lack of available, qualified faculty to teach nursing students. The OCN Survey of Nursing Education Programs found that 15 percent of community college nursing faculty and 23 percent of baccalaureate program faculty are expected to retire within the next five years. By 2010, an estimated 65 "full-time equivalent" faculty positions will be vacated due to retirement.

SUPPLY OF REGISTERED NURSES



Sources: Oregon State Board of Nursing; "Registered Nurse Workforce 2002: A Sourcebook," Oregon Health & Science University Area Health Education Centers Program.



Source: Oregon State Board of Nursing.

Table 1. Race, Ethnicity and Gender of Licensed Registered Nurses in the U.S. and Oregon and Oregon's General Population, 2000

	U.S. RNs	Oregon RNs	Oregon Population
American Indian or Alaska Native	<1%	<1%	1%
Asian	3%	<1%	3%
Black or African American	5%	1%	2%
Native Hawaiian & Other Pacific Islanders	0%	0%	0%
Some other race	3%	5%	4%
Two or more races	1%	0%	3%
White	87%	93%	87%
Hispanic/Latino, any race	2%	1%	8%
Male	5%	12%	49%

Sources: Oregon State Board of Nursing; "The Registered Nurse Population: Findings from the national sample survey of registered nurses, March 2000," Division of Nursing, Bureau of Health Professions, HRSA, USDHHS; U.S. Census Bureau, quickfacts.census.gov.

Oregon's Licensed Registered Nurses

The number of licensed registered nurses in Oregon has grown steadily each year since 1990. The number of employed, or "active," RNs has increased annually as well (Figure 2). The number of active RNs fluctuates in response to factors such as economic downturns and upswings, RNs licensed in Oregon who choose to work in another state, and RNs who choose to exit the workforce temporarily. In 2002, an estimated 82 percent of the state's licensed RNs were working in Oregon.¹

The number of Oregon RN licenses issued varies annually (Figure 3). The vast majority of individuals obtain a license either by exam or by endorsement. A small number of RNs are licensed through a re-entry program. RNs obtaining their license by exam are typically recent nursing school graduates. A small number are foreign educated nurses seeking U.S. licensure. Those obtaining their license by endorsement are experienced nurses practicing in another state seeking licensure in Oregon. On average, more nurses are licensed annually by endorsement than by exam (1,384 and 864 per year, respectively).² However, current increases in the educational supply could modify this trend.

The ONLC strategic plan declared that the racial, ethnic and gender mix of the nurse workforce should mirror the patient population. Unfortunately, Oregon continues to lag in correcting under-representation of ethnic minorities in its RN workforce (Table 1). The need to improve existing disparities remains. Oregon's nursing leadership has made significant efforts to increase representation of males in the nursing profession and the work has paid off. Oregon boasts more than twice the proportion of male nurses than what is seen nationally (see *Men in Nursing*).

The age of registered nurses at the time they obtain a license to practice in Oregon has remained stable since 1996 (Table 2). Average age at time of licensure by examination is 32 years. Average age at time of licensure by endorsement is 40 years.

The average age of RNs holding an Oregon license is another matter. According to the Oregon State Board of Nursing, the proportion of licensed RNs 50 years of age or older has more than doubled over the past 20 years. In 1985, licensees 50-plus years of age accounted for less than one-fourth of the state's RN population. In 1996, nearly one-third of Oregon's licensed registered nurses were 50 or older. By 2004, the proportion had risen to nearly one-half. The legion of RNs nearing retirement continues to grow (Figure 4). The increasing number of "over 50" nurses in Oregon makes significant increases in retirements a daunting proposition over the coming years, but predicting how and when RNs will retire is difficult.

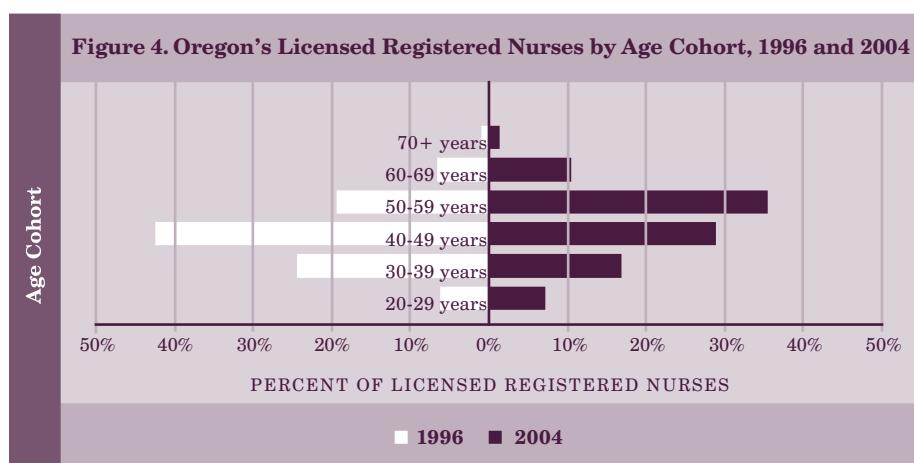
To gain a better understanding of nurses' retirement plans, the OCN conducted a survey of Oregon's RNs. Results showed that of those nurses currently licensed approximately 28 percent will retire by 2020. By 2025, fully 41 percent of currently licensed RNs are expected to retire. However, when nurses *plan* to retire and when they will actually be able to do so may not coincide. Economics, health status, and family issues are just some of the many contingencies that can interrupt retirement plans. Nurses may ultimately decide to remain in the workforce longer than they currently anticipate.

Table 2. Average Age of Oregon Registered Nurses at Time of Licensure (Years)

YEAR	By Exam	By Endorsement
1996	33.5	39.2
1998	32.2	39.1
2000	31.2	39.6
2002	30.5	39.8
2004	31.4	41.6

Source: Oregon State Board of Nursing.

Figure 4. Oregon's Licensed Registered Nurses by Age Cohort, 1996 and 2004



Source: Oregon State Board of Nursing.

"I am hoping to retire by 60. The workload is very demanding at the bedside. It is what I love, but at my age the energy drain is great. If I am unable money-wise to retire, I will have to change to part-time work due to the workload and increased acuity of patients."

— 56 year old Registered Nurse

The impact of nurse retirements will be fundamental to the RN supply problem. The influence of an overall aging population on the workforce in general will be profound. Currently there are an estimated 4.17 Oregon workers for every retiree in the state. By 2025, the ratio will be reduced by approximately one-half: 2.17 workers per retiree (Figure 5). In the case of nursing this presents a unique dilemma for all Oregonians: the problem of an aging population is compounded by the aging of its caregivers.

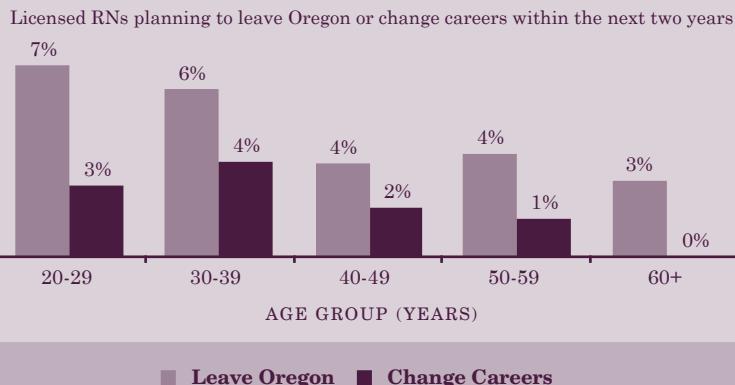
Aside from retirement, nurses stop working for various personal and professional reasons. The OCN Survey of Registered Nurses asked RNs about their non-retirement-related separation plans over the next two years. Many early-to-mid career nurses (ages 20-49 years) plan to move out of the state (17 percent), and nearly one in ten plan to leave the profession altogether (Figure 6). Survey results suggest that Oregon is at greater risk of losing precisely that group of RNs we must retain in order to maintain an adequate supply of nurses.

Figure 5. Estimated Worker-to-Retiree Ratio in Oregon, 2000-2025



NOTE: "Workers" are Oregonians ages 20-64; "Retirees" are Oregonians 65+
Source: Oregon Center for Nursing calculations based on U.S. Census Bureau data, www.census.gov.

Figure 6. Oregon RN Workforce Separation Plans (non-retirement)



Source: Oregon Center for Nursing, 2004 Survey of Registered Nurses.

Registered Nurse Supply Projections

The Oregon Center for Nursing projected the supply of registered nurses in Oregon through 2025. Results are summarized in Table 3.

To make sense of the figures, it is important to understand the distinctions between licensed, active, and FTE RNs:

- *Licensed RNs* have been granted the privilege to practice nursing in Oregon. Because not all licensees work as a nurse or work in Oregon, this measure overstates supply.
- *Active RNs* adjusts for this overstatement by including only those licensees currently taking part in the nursing workforce. The number of active RNs represents a headcount.
- *FTE, or full-time equivalent, RNs* further adjusts supply estimates by applying rates that account for the number of hours active RNs contribute to the labor force.

The key finding is not the absolute number of registered nurses expected to be working in Oregon but the trend in overall growth of the registered nurse workforce. Over the next five years, growth is expected to keep pace with historic trends—an approximate two percent annual increase in the number of licensed RNs. However, by 2015 the growth rate will decrease by one-half and will gradually “flatten” as 2025 approaches. Both active and FTE RNs are expected to increase over time, but supply will fail to keep up with projected demand. Oregon will operate “close to the bone” over the next ten years. The 20 year outlook is grim and is projected to approach dangerous proportions by 2015.

The extent to which licensed RNs choose to work in Oregon (active RNs) and the number of hours they choose to work (FTE RNs) determine the supply of RNs. The number of active RNs is calculated using an activity rate. The number of FTE RNs is calculated using a participation rate. Changes in either or both of these rates can dramatically impact RN supply.

To illustrate the impact of changes in activity and participation rates, we graphed two scenarios that could occur and projected supply accordingly. These scenarios, along with the actual OCN supply projections presented previously, are illustrated in Figure 7. The line labeled “No change” shows projected full-time equivalent (FTE) RNs-per-100,000 population based on the OCN supply methodology. This method assumes that activity and participation rates will remain stable through 2025. The line labeled “Decrease” illustrates what would happen to RN per population projections if the activity rate decreased by 2 percent and the full-time participation rate decreased by 1.5 percent during each five-year period.

The line labeled “Increase” illustrates what would happen to RN per population projections if the activity rate increased by 2 percent and the full-time participation rate increased by 1.05 percent during each five-year period.

This exercise illustrates how changes in work patterns of nurses can profoundly affect RN supply. Work patterns are heavily influenced by a variety of factors including economic conditions, retirements, work environments, and public policy. Implementation of the existing ONLC plan and recommendations set forth in this report will have a dramatic impact on these factors, and therefore, RN supply.

“One of my best nurses is 81 years old!!!”

— Home health/Hospice employer

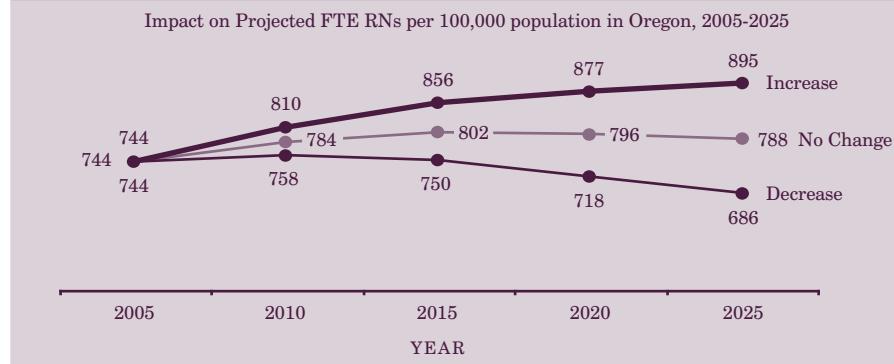
Table 3. Projected Supply of Registered Nurses in Oregon, 2005-2025.

YEAR	Licensed RNs	5 Year Growth	Active RNs	FTE RNs	FTE RN Demand	FTE RNs Surplus/Deficit
2005	38,809	—	31,824	26,891	24,800	8%
2010	43,018	10.8%	35,274	29,807	27,700	8%
2015	46,220	7.4%	37,900	32,026	31,100	3%
2020	48,013	3.9%	39,371	33,268	35,100	-5%
2025	49,453	3.0%	40,551	34,266	39,400	-13%

NOTE: 2025 demand calculated by the OCN assuming growth in demand continues to increase at previous levels.

Sources: Oregon Center for Nursing; National Center for Health Workforce Analysis, Bureau of Health Professions, HRSA, USDHHS.

Figure 7. What if Activity and Participation Rates Change?



Source: Oregon Center for Nursing.

SUMMARY AND CONCLUSIONS

Without aggressive intervention, these findings indicate that RN supply will not be sufficient to meet expected demand within the next 15 years. This is due to three primary factors: insufficient educational capacity; failure to maximize RN activity and participation rates; and aging of the RN population. Oregon has achieved unprecedented results in increasing the number of newly licensed RNs through the educational “pipeline” in recent years. Increasing the number of nursing school graduates must continue well into the future. As the supply pipeline grows, concerted efforts directed at correcting ethnicity and gender imbalances must continue. Bolstering educational capacity, especially assuring an adequate supply of nursing faculty, is essential.

A major finding of this study is that more new RN licenses are added to the workforce each year through migrations to Oregon than through education of new RNs within the state. While the ONLC strategic plan focuses heavily on expansion and redesign of nursing education within the state, opportunities to market Oregon outside the state must be made a priority. The intent is not to take nurses away from other states but to welcome those RNs who actively choose to move to Oregon because it is an ideal destination state in which to live and practice nursing.

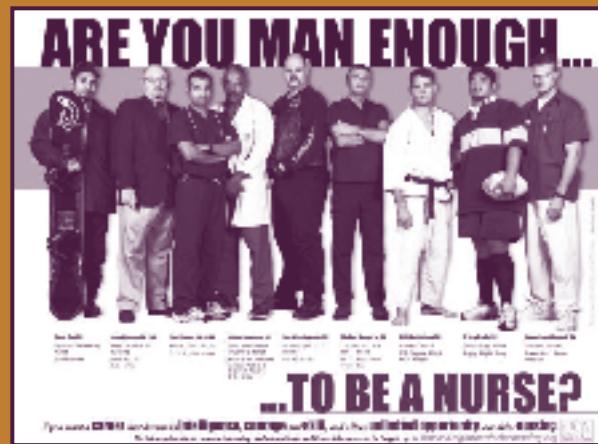
The most efficient way to improve supply is to encourage RNs to participate more fully in the workforce. This includes supporting RNs such that they remain in the workforce longer, encouraging RNs not currently employed to re-enter the workforce, and inspiring nurses currently working part-time to increase the number of hours they work. Specialized effort needs to be directed at retaining early-to-mid career nurses.

In order to retain and satisfy the practicing nurse, nursing care must be redesigned if not overhauled (see *Transformation of Nursing Care*). The work of nurses must evolve to support the undeniable reality of a maturing RN workforce. Physical expectations, work schedules and shifts, and effective use of nursing talent require strategic attention now. Nurses at 25, 45 and 60 years of age all need to be utilized to their full potential. The work of registered nurses should embrace their maturity, capitalize on their psychomotor skills, and make the most of their wisdom and judgment.

MEN IN NURSING

Men have represented a very small proportion of the U.S. nurse workforce for over a century. Despite more than 50 years of declarations and resolutions to the contrary, men still represent only five percent of the nation's registered nurses.²⁷ Oregon has fared much better but not well enough. Currently, 10 percent of Oregon's registered nurses are male.²⁸

Addressing diversity in nursing needs to include correcting gender disparity. Why the historic under-representation of men has persisted is complex. Men have not been recruited, supported, encouraged or retained adequately in nursing. Some suggest that men have been discriminated against in the profession. Others argue men have been more advantaged than women in receiving opportunities and promotions in nursing.^{29 30 31 32} Many feminine stereotypes persist, and the masculine aspects of nursing practice have not been highlighted or marketed. The word "nurse" is not just a verb describing caregiving; it also defines a physiologic function only females (mothers) can perform. But more than ever, contemporary nursing requires courage, technological skill, quick reaction, and risk-taking, all stereotypically considered masculine attributes. For whatever reasons, men have not sought nursing careers in the way women have flocked to medicine and law over the last 25 years.



A recent national survey of men who are nurses found that men are attracted to nursing for many of the same reasons as women. They seek to help others and appreciate the variety and growth possibilities the profession offers. They tend to stay in nursing and would recommend nursing to others.³³

The OCN's efforts to "repackage" and market nursing to men, especially to high school boys making career decisions, has received national and international acclaim. The *Are You Man Enough To Be A Nurse?* poster showcases Oregonian men who chose and enjoy careers in nursing, yet embody stereotypically male characteristics. Its message highlights some of the "masculine" attributes of nursing practice.

It is too soon to detect increases in new RN licenses for men resulting from this campaign. Those who would have been influenced by the message are in school now. We expect the poster's long-term impact to reach beyond the gender imbalance by correcting the public's perception of the nursing profession itself.

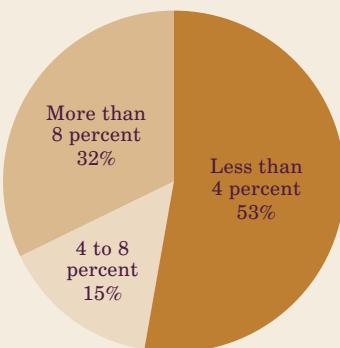
DEMAND FOR REGISTERED NURSES

How many registered nurses will Oregon's employers want to hire?

OVERVIEW

Demand for registered nurses refers to the number of RNs employers are willing to hire. Thus, demand is a market-driven concept. Characteristics of the health care system, the population, and the economic environment determine demand for nurses. Technological advances, the number of uninsured individuals, the geographic distribution of the population, and nurse wages all directly influence the number of nurses employers will hire. Following is a summary of the current demand for registered nurses in Oregon and a look at expected demand for RNs in coming years.

Figure 8. Registered Nurse Position Vacancy Rates



Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

Table 4. Vacancy Rates by Employer Type

EMPLOYER TYPE	Position Vacancy Rate	Sample Size
Hospital / Acute care	4.2%	33
Public health department or clinic	4.4%	26
Nursing home / Long term care facility	9.2%	53
Home health / Hospice	5.1%	52
School/ESD*	na	6

* Rate not calculated due to small sample size

METHODS

The Oregon Center for Nursing conducted a Survey of Nurse Employers in 2004 to gather current data regarding vacancy and turnover rates and anticipated future demand for nursing personnel. The mail survey was sent to 329 nurse employers across the state. Various employment settings were surveyed—acute care, nursing homes, long-term care facilities, public health, home health, hospice care, and schools. A follow-up survey was sent to non-responders to strengthen the return rate. A total of 182 useable surveys were returned (response rate: 55 percent).

The Oregon State Board of Nursing supplied data regarding settings in which RNs are employed. Data from the Oregon Employment Department and the National Center for Health Workforce Analysis were used to examine future demand for registered nurses.

FINDINGS AND DISCUSSION

Vacancy Rates

Vacancy rates are an indicator of the relative ease or difficulty with which employers can recruit personnel. There is no industry “gold standard” for an acceptable or “normal” vacancy rate, and the methods used to calculate rates vary from study to study. Therefore, interpreting the meaning of vacancy rates is tricky. Nonetheless, studies have shown that unfilled nursing positions do affect access to health care. High vacancy rates have been associated with emergency room overcrowding, ambulance diversions, and hospital bed closures.^{3,4}

Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

The OCN conducted a survey of nurse employers to assess statewide demand for nurses. We calculated a position vacancy rate for each respondent. Just over one-half had vacancy rates below four percent. About one-third had vacancy rates greater than eight percent (Figure 8).

We also calculated vacancy rates by employer type (Table 4). Rates were lowest for hospital and acute care employers (4 percent) and highest for nursing home and long term care employers (9 percent). On average, vacancy rates in Oregon are not alarming, but as increasing numbers of RNs retire and exit the workforce, employers can expect the process of filling vacancies to become more difficult and positions to remain vacant longer.

Turnover Rates

Turnover refers to the rate at which employees leave their positions and is an indicator of the relative ease or difficulty employers experience in retaining personnel. There is great variability in RN turnover across sectors and geographic regions. Studies have reported rates ranging from 17 percent in hospitals in the northeast to 51 percent in nursing homes in the mid-Atlantic states.^{5,6} As with vacancy rates, the lack of an accepted "normal" range and variations in study designs make assessing turnover rates challenging. Regardless, turnover in health care has been shown to reduce effectiveness and increase the cost of delivering care.⁷ It logically follows that a negative cycle results: nurse dissatisfaction and burnout lead to more turnover which leads to more dissatisfaction and more turnover, and so on.

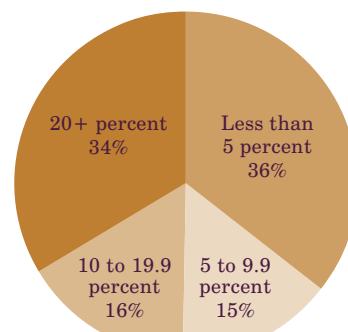
Using data from the OCN Survey of Nurse Employers, we calculated a turnover rate for each respondent by comparing the number of nurses who left their jobs to the average number of nurses employed during the most recent fiscal year. About one-third of Oregon's registered nurse employers had turnover rates less than five percent, and about one-third had rates greater than 20 percent (Figure 9).

Within each sector, turnover rates vary widely. Some employers reported no turnover while others had turnover rates greater than 100 percent (Table 5). Registered nurse turnover was lowest for public health employers (7 percent).

"I have not worked in acute care for almost 10 years. Twelve-hour shifts drove me away. I sometimes miss the patient contact but would never return to clinical nursing in the current environment."

- 54 year old Registered Nurse

Figure 9. Registered Nurse Turnover Rates



Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

Table 5. Turnover Rates by Employer Type

EMPLOYER TYPE	Turnover Rate	Range	Sample Size
Hospital / Acute care	9.1%	0%-60%	32
Public health department or clinic	7.1%	0%-67%	29
Nursing home / Long term care facility	26.3%	0%-133%	50
Home health / Hospice	14.4%	0%-133%	49
School / ESD*	na	na	7

*Rate/range not calculated due to small sample size.

Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

"At my age, the 12 hour shifts are too much, but my employer is not willing to change. I might leave the hospital to do home hospice care."

— 60 year old Registered Nurse

Turnover rates in Oregon's nursing homes and long-term care facilities were two to four times greater than in other sectors. This difficult situation is further compounded by the fact that average RN wages in these settings are approximately 15 to 25 percent lower than wages for registered nurses working in acute care settings.⁸

Industry Hiring Trends

Since 1996, the distribution of registered nurses by employment setting has remained remarkably constant (Table 6). Hospitals and acute care organizations employ more than half of Oregon's registered nurse workforce.

Table 6. Registered Nurses by Employment Setting, 1996-2004

SETTING	OREGON					U.S. 2000
	1996	1998	2000	2002	2004	
Hospital/Acute care	53%	50%	51%	53%	55%	59%
Ambulatory care	11%	11%	12%	13%	13%	10%
Home health	7%	10%	6%	5%	5%	7%
Nursing home/Extended care	8%	8%	7%	6%	5%	7%
Public/Community setting	5%	5%	6%	5%	5%	6%
School/Student health	2%	2%	2%	2%	2%	4%
All other settings	14%	15%	16%	16%	15%	7%

Sources: Oregon State Board of Nursing; "The Registered Nurse Population: Findings from the national sample survey of registered nurses, March 2000," Division of Nursing, Bureau of Health Professions, HRSA, USDHHS.

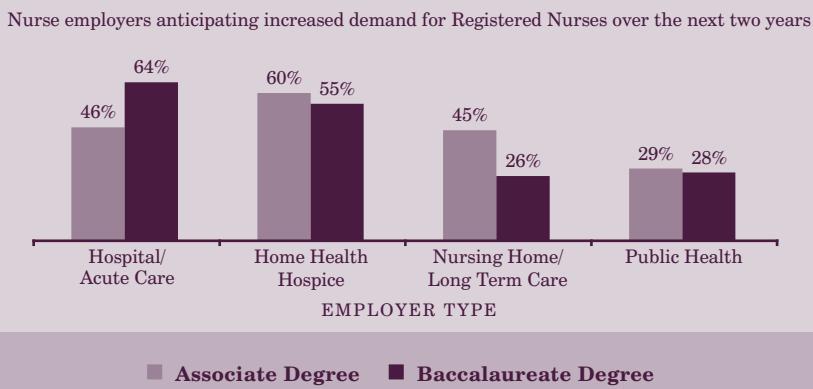
Compared to national averages, Oregon has consistently had a lower proportion of RNs working in acute care settings, indicating that Oregonians receive much of their care in non-hospital settings. The implications for educating nursing students and influencing practice specialty choices are significant. Nurses have traditionally been encouraged to begin their careers in hospital medical-surgical units. However, trends in population growth, aging and the prevalence of chronic illnesses suggest that educators and employers need to work together to evaluate how students are encouraged and rewarded for practice specialty choices. As care delivery shifts from hospitals to other settings, the mix of nursing practice specialties will need to change accordingly.

Anticipated Demand for Nurses

The OCN Survey of Nurse Employers revealed that slightly less than half (45 percent) expected demand for registered nurses to increase over the next two years. Slightly more (51 percent) anticipated demand to remain unchanged. Just four percent of respondents, most of whom were public health agencies, reported they expected demand to decrease.

Two-thirds of hospital and acute care employers anticipated demand for baccalaureate-educated RNs to increase. More than half of home health and hospice employers foresaw increased demand for both associate degree and baccalaureate-prepared RNs. Public health employers reported the lowest anticipated demand for registered nurses overall (Figure 10).

Figure 10. Anticipated Demand for Registered Nurses



Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

The OCN Survey of Nurse Employers included an additional set of questions for hospital and acute care employers designed to assess demand for registered nurses in specific practice specialties. Hospital-based nurse employers anticipated the greatest demand for staff RNs in infusion therapy, medical-surgical and peri-operative nursing, operating rooms, and emergency departments. The majority also expected increases in demand for Clinical Nurse Specialists and Nurse Practitioners. Employers anticipated demand for Certified Registered Nurse Anesthetists (CRNAs) and RNs to fill unit management, administrative and executive positions to remain largely unchanged. Psychiatric and mental health was the only specialty area where marked decreases were expected (Table 7).

Registered Nurse Demand Projections

Nursing careers are among Oregon's fastest growing occupations. Registered nurse employment is expected to grow by 26 percent for RNs over the next seven years.⁹ Figure 11 presents projected increases through 2020 in RN job openings based on Oregon Employment Department data and RN FTE demand according to the National Center for Health Workforce Analysis.

Using Oregon Employment Department projections for registered nurse job openings between 1994 and 2012, we projected demand through 2020. If demand for RNs continues to grow at historic rates, there will be an additional 15,700 RN job openings statewide over the next 15 years.

Table 7. Demand for Registered Nurses by Practice Specialty

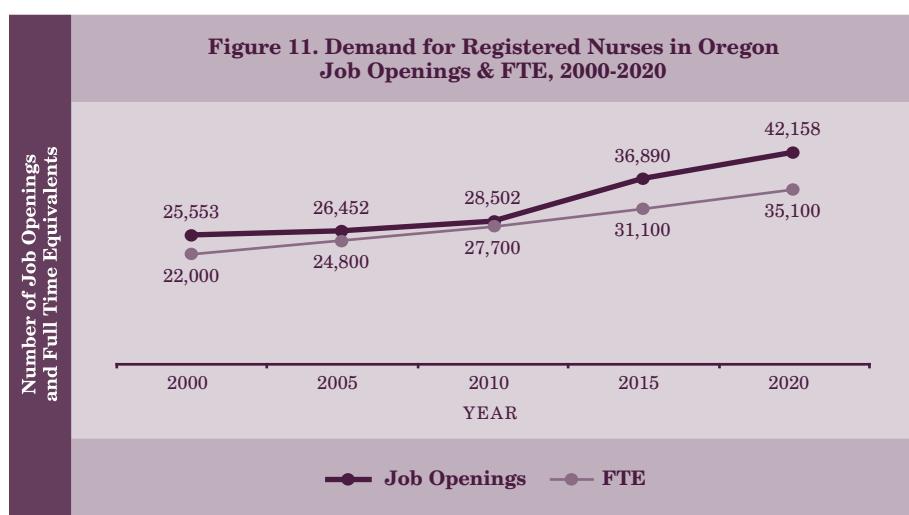
Over the next 2 years, Health System/Hospital/Acute Care employers expect demand for RNs to:

PRACTICE SPECIALTY	Increase	Decrease	Not Change	Sample Size	Percent Employing*
Critical care/Trauma	48%	3%	48%	33	97%
Emergency	53%	0%	47%	34	100%
Geriatrics/Long term care	40%	0%	60%	10	31%
Home health/Hospice	40%	0%	60%	25	74%
Infusion therapy	75%	0%	25%	20	59%
Labor & Delivery	50%	3%	47%	32	94%
Medical/Surgical	62%	0%	38%	34	100%
Operating Room	64%	3%	33%	33	97%
Pediatrics/Neonatal	50%	0%	50%	18	55%
Pre/Post Surgery	55%	0%	45%	33	97%
Psychiatric/Mental health	36%	14%	50%	14	42%
Unit Management	32%	0%	68%	31	94%
Executive/Administration	9%	0%	91%	33	100%
Certified Nurse Midwife	40%	0%	60%	10	29%
Clinical Nurse Specialist	60%	0%	40%	15	44%
Certified Registered Nurse Anesthetist	27%	0%	73%	22	65%
Nurse Practitioner	69%	0%	31%	16	47%

*Percent of respondents employing this type of nurse

Source: Oregon Center for Nursing, 2004 Survey of Nurse Employers.

Figure 11. Demand for Registered Nurses in Oregon Job Openings & FTE, 2000-2020



Sources: Oregon Employment Department; National Center for Health Workforce Analysis, Bureau of Health Professions, HRSA, USDHHS.

"My recruitment of nurses has been made much easier by the poor treatment of staff by hospitals. I've been able to get the best nurses even with slightly lower salaries."

– Home health/Hospice employer

The National Center for Health Workforce Analysis develops national and state-level RN demand projections for full-time equivalent (FTE) RNs. These projections take into account a variety of factors including population demographics and geographic distribution, characteristics of the health care system such as numbers of uninsured residents and HMO enrollment penetration, nurse wages, reimbursement rates, and per capita personal income. Recent projections indicate that demand for registered nurses in Oregon will increase by 10,300 FTEs between 2005 and 2020.

SUMMARY AND CONCLUSIONS

Demand for registered nurses is expected to grow markedly over the next 15 years. Oregon's ability to deliver a stable and adequate RN workforce is questionable unless we take immediate and bold steps. Given inadequate supply to meet significant increases in demand, the ONLC strategic plan must be fully supported and implemented. In addition to increasing the supply of nurses, the ONLC plan focuses on redesigning both the education and the practice of nurses to improve retention. Strategies grounded in terminal RN competencies specifically address the knowledge and skills required of the future nurse who will work in a complex, fast-paced, and technology-driven environment. Oregon's educational programs unanimously endorsed and adopted these new competencies which need to be implemented in practice as well.

Leaders must focus on both the practice environment and on nurse retention in order to meet future demand for RNs. Deferring retirements and encouraging part-time and non-employed nurses to return to full-time work will partially offset the effect retiring nurses will have on the RN workforce. This will require the transformation of nursing such that RNs at all phases of their careers will be highly productive and satisfied (see *Transformation of Nursing Care*).

Educators and employers will need to work together to influence and reward registered nurses' practice specialty choices. Nursing education programs must prepare more students for practice in long-term care, gerontology, community health, and ambulatory care. Nurses will need more preparation in managing and delegating to multidisciplinary care teams. They will also need to expand their focus on prevention, health promotion, chronic disease management, and supporting quality of life for older Oregonians and their families. Finally, nurses must be supported to deliver the full range of professional care they are licensed to provide, and they need to be compensated accordingly.

We have the ability to take command of the *When, Not If* dilemma. However, addressing growing demand by increasing the supply of nurses alone is only part of the answer. We must also transform nursing care, build support for nurses at all phases of their careers, and assure they are well prepared to confront the changing patient and practice realities that lie ahead. Fortunately, the ONLC strategic plan provides a roadmap.

REGISTERED NURSE WAGES

Nurse wages are an area of great interest, but the influence of wages on nurse supply is not well understood. The interaction of supply and demand, or the choices and requirements of workers and employers, is complex. Increasing wages may not necessarily lead to an increase in the supply of nurses.

When employers encounter difficulty in hiring workers, they often respond by offering higher wages in order to boost the appeal of available jobs. Historically, this approach has been used by employers of nurses. Studies have shown that increased wages have positively influenced RN supply in the past.^{34 35 36 37} This has been the case for both short-term supply (nurses re-entering the workforce or increasing the number of hours worked) and long-term supply (new nurses entering the workforce because nursing is perceived as an attractive career).

While higher wages will encourage some RNs to re-enter the workforce or increase the number of hours worked, others will respond by reducing hours because they can make an acceptable wage while working fewer hours.³⁸ In addition, the effectiveness of wages as a tool to retain nurses is limited. Evidence indicates that working conditions are much more important to nurses than higher wages.³⁹

For those choosing a career, earning potential plays a role in the decision to enter nursing. However, a recent survey of practicing RNs revealed that salary and benefits ranked 7th as the primary reason for choosing a career in nursing. Factors such as a desire to comfort and care for others, the influence of a friend or relative, and personal experiences with health care were much more important influences.⁴⁰

Actual wages for registered nurses have increased over the past 10 to 15 years, but real (or inflation-adjusted) wages have not. Between 1989 and 2000, earnings for RNs in the U.S. fluctuated annually just keeping up with the rate of inflation.⁴¹ In Oregon, between 2000 and 2003, actual wages increased by nearly eight percent but when adjusted for inflation, they rose by less than one percent.⁴²

HRSA estimates that a one percent annual growth in real wages over 20 years would increase FTE RN supply by 13 percent.⁴³ Applying this result to the projected gap between supply and demand for Oregon RNs in 2025, an annual real wage growth rate of one percent would reduce the expected deficit of 5,000 FTE RNs to a deficit of 700 FTE RNs. However, for increases in wages to have such a dramatic influence on supply, RN wages would need to increase by much more than one percent each year. If wages for other occupations keep up with an inflation rate of 3 percent per year, RN wages would need to increase by 4 percent annually.

NEED FOR NURSING CARE

What kinds of nursing care will Oregonians require?

OVERVIEW

Need is a clinically-based concept that addresses the number of nurses that should be employed to attain a desired health status. Whereas demand for nurses is market-driven, the need for nurses is population-driven. Need reflects the demographic characteristics and health status of the populace. A society's need for nursing care typically exceeds affordable limits, but examining need provides important insight into how and where nurses will be deployed in the future. The concept of need is particularly relevant to the nursing workforce. As Oregon's population ages, the requirement for nursing care will

increase. Following is a summary of imminent demographic and epidemiologic changes that will drive the need for nurses in Oregon.

METHODS

U.S. Census Bureau statistics were used to determine Oregon's present and future demographic profile. Oregon Association of Hospitals and Health Systems and Office of Oregon Health Policy and Research data were used to evaluate hospital utilization. Nursing, health care, demographic and economic literature were also used to examine utilization trends as well as technology and nurse education and practice.

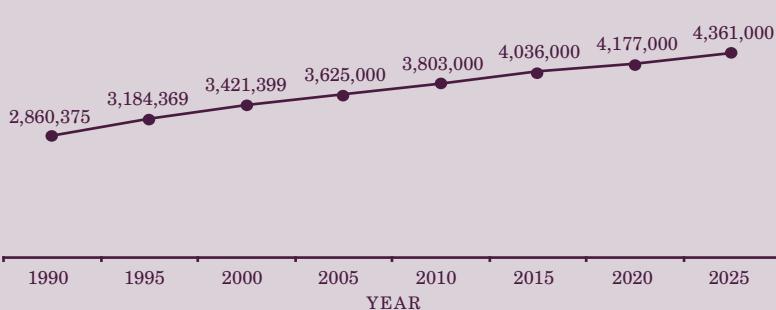
FINDINGS AND DISCUSSION

Population Growth and Aging

Although Oregon's overall population is expected to increase steadily through 2025 (Figure 12), net annual population growth will decline over time (Figure 13). Since 1990, the state's population has increased by 27 percent. In contrast, the overall growth rate is expected to slow to 16 percent over the next 15 years.

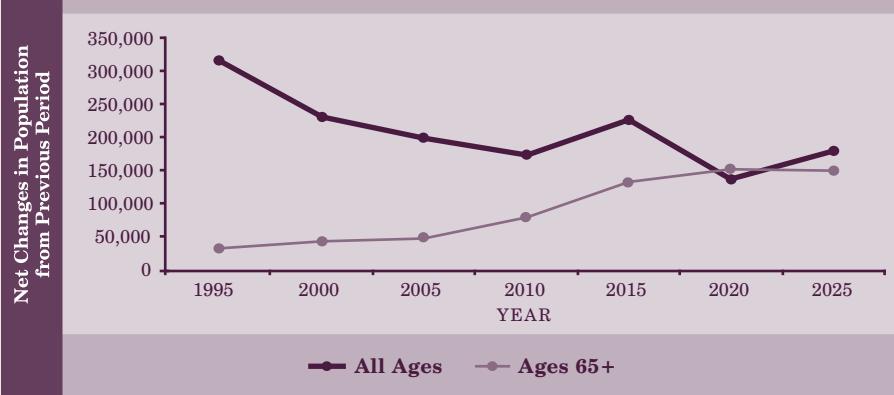
Analysis of growth and characteristics of Oregon's older population (65 years and older) paints a very different, and somewhat alarming, picture. While the net change in Oregon's total population is expected to decline over time, the older population will increase steadily over the next 20 years (Figure 13). Since 1990, the number of older residents rose by 33 percent. By 2025 this segment of the population is expected to increase by 72 percent. The U.S. Census Bureau projects that the state's older population will exceed one million by 2025, accounting for nearly 25 percent of all Oregon residents.

Figure 12. Oregon Population, 1990-2025



Source: U.S. Census Bureau, www.census.gov.

Figure 13. Net Change in Oregon Population, 1995-2025



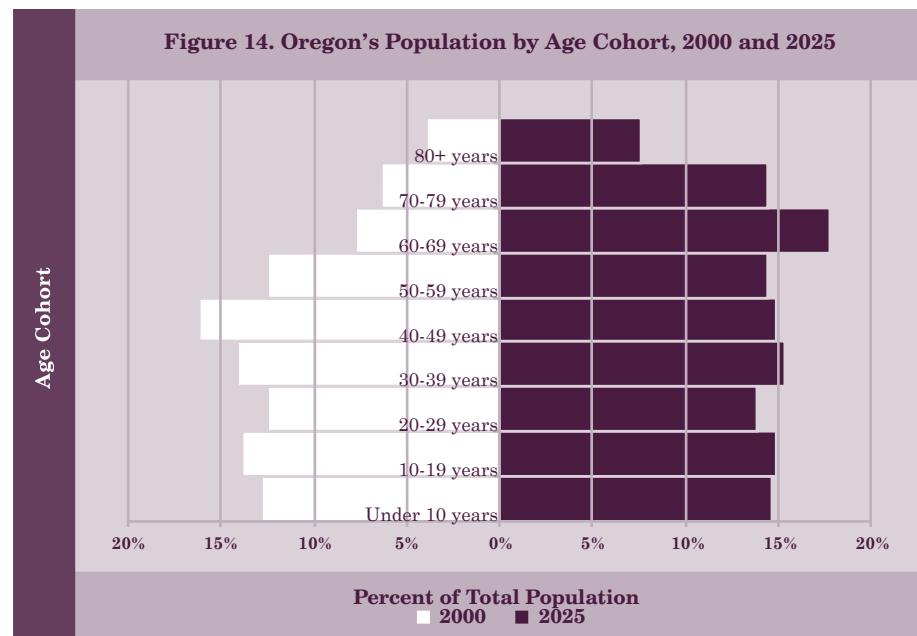
Source: U.S. Census Bureau, www.census.gov.

The age distribution of Oregon's population will change dramatically over the next 20 years. Figure 14 compares Oregon's population distribution in 2000 with forecasts for 2025. Proportionately, the 65-plus age cohort will expand as younger age cohorts shrink. Oregon's seniors are also expected to live longer than the average U.S. senior. Life expectancy in the U.S. is 77.2 years.¹⁰ In Oregon, life expectancy is 77.9 years,¹¹ a full decade longer than the average American was expected to live in 1950.¹²

Demographic shifts will have a significant impact on the need for health care services. In general, the older we get, the more health care services we require. The average 75 year old has three chronic illnesses and uses five prescription medications.¹³ As Oregonians live longer, they will live with more chronic diseases and consume more health care resources. To illustrate, the prevalence of Alzheimer's disease doubles every five years after age 65. Approximately one in ten adults aged 65 years or older has been diagnosed with this degenerative and debilitating disease. Nearly one in two will be diagnosed by age 85.¹⁴ Health care will need to be organized and delivered in ways that are responsive to the changing needs of the aging population.

Utilization of Health Services

Patients are admitted to hospitals because they have high acuity levels—that is, they are extremely sick or seriously injured, face considerable risk, and have complex health problems. Hospitalized patients require specialized and intensive health care services not available in other community-based settings.



Source: U.S. Census Bureau, www.census.gov.

Despite growing acuity and intensity, the length of stay in an Oregon hospital is shorter than the national average (3.9 days and 5.7 days, respectively).¹⁵ Because patients are discharged sooner, many require continued specialized care after they leave the hospital. This care is delivered in nursing homes and long-term care facilities and by home health and hospice care providers.

The 65 and older population generates 3.5 times as many hospital admissions and 4.5 times as many hospital inpatient days as the under 65 population.¹⁶ As the number of older Oregonians increases, more health services will be consumed. The result will be considerable increases in the need for nurses and nursing care. This growing need for nurses will be felt in all health care sectors. Home health and long-term care settings, which serve a traditionally elderly population, will be hardest hit. Wages in these settings are lower than in hospitals, making them far less able to compete for nurses.¹⁷

As the older population expands and lives longer, and as technology advances, the trend of patients requiring more and highly complex care across all health care settings will magnify.¹⁸ Nurses will have increasing responsibility for all aspects of patient care delivery. The complex case mix, or range of health problems seen in older patients, will require even more extensive nursing knowledge, critical thinking, problem solving skills, and clinical preparation.¹⁹ Technology will continue to become more sophisticated and advanced technologies, such as robotics, will migrate to the bedside and to the home.²⁰ Additionally, patients' use of technology and information processing is expanding. They are becoming savvy consumers who expect to partner with care providers to actively participate in their own care.

Changing RN Practice and Education Requirements

Based on known changes in patient characteristics, and the dramatic industry shift from acute care to chronic care, nurses will require a different and more complex set of competencies and cognitive skills. At the very least, nurses will need considerably more preparation in the care of geriatric patients and technology-based nursing care delivery. Leadership and management skills will be needed in order to successfully direct and coordinate care provided by other health care team members. There is a consensus that a baccalaureate degree in nursing is the minimum preparation needed for nurses who practice in community settings.²¹

Research validates that the mix of nurses by educational background is insufficient to meet present and future nursing requirements.²² There is an excess of nurses prepared at the associate degree (ADN) level and an undersupply of RNs prepared at baccalaureate degree (BSN) and higher levels. Nurse education levels have been linked to improved safety and quality of care and better clinical outcomes in hospitals that employ higher proportions of BSN-prepared or higher nurses.²³

In rural areas, RNs are more likely to have an associate degree, and while nurse employers express a preference for BSNs, rural employers report greater difficulty recruiting them.²⁴ Research has shown that younger RNs are attracted to nursing education programs that take the least amount of time to complete. Three-fourths of new, younger RNs are graduates of ADN programs.²⁵ Yet recent evidence has also established that nurses with baccalaureate preparation begin their careers earlier, work longer, and tend to stay at least ten years in a position.²⁶ Effective management of the registered nurse workforce requires the right mix of ADN and BSN-prepared nurses. Increasing the pool of baccalaureate-prepared nurses will also ensure there are enough graduate students to become nursing faculty, advanced practice nurses and nurse administrators.

SUMMARY AND CONCLUSIONS

The need for nursing care will increase as Oregon's population grows and ages. An unprecedented number of older citizens with chronic and complex health conditions will accelerate health care consumption. Nurses will be expected to master new skills quickly and assimilate more knowledge than ever before. They must be prepared to practice in complex, fast-paced environments; plan, manage and deliver care across multiple settings; and lead and manage diverse care teams.

The need for nursing care will increase across all health care settings. Hospitals will care for the sickest patients, yet many ill patients will be cared for in nursing homes, in hospice facilities, and at home. In addition to preparing nurses to practice in these settings, compensation must be structured such that non-hospital employers are able to successfully recruit and retain RNs.

A number of factors will influence the way Oregonians participate in their care and will require nurses to interact with patients in new and different ways. Advances in technology will continue to change the health care industry and the manner in which care is delivered. The volume of information available to patients will continue to proliferate. Patients are becoming savvy health care consumers, and will expect to play an active role in managing their care. There will also be greater need for care that emphasizes and encourages healthy aging.

Incorporating the advanced professional competencies instituted as a result of the ONLC strategic plan into the design of patient care delivery is an important next step in ensuring we are equipped to meet the need for nursing care in Oregon. There will also be a crucial need to recruit experienced nurses into graduate programs for the purpose of educating advanced practitioners, nursing faculty, and future leaders in the nursing profession. An appropriate mix of appropriately prepared registered nurses is essential if we are to provide Oregonians with the health care they need and deserve.

***"I will work as long as I'm able.
I enjoy it too much to stop altogether."***

– Registered Nurse

TRANSFORMATION OF NURSING CARE

The work performed by nurses is often mentally, emotionally and physically challenging. In the absence of support from employers, managers and colleagues, many nurses experience dissatisfaction, apathy and burnout. Ultimately, patient safety and the quality of patient care suffer.

Recently, attention to the underlying causes of nurse dissatisfaction and burnout has led to proposed solutions ranging from the redesign of paper forms to the implementation of completely new care delivery models. Despite an abundance of new approaches, concerns about the well-being and career longevity of nurses continue to pervade the industry. In many ways, the system is truly broken. Incremental changes to the health care system, efforts to contain costs, and regulatory burdens have added inefficient, redundant, and unnecessary tasks to the practicing nurse's workload. Restoring nurses' passion for their work will require the nursing profession to assume leadership in transforming nursing care so that:

Nurses spend their time delivering professional nursing care. Nurses must be supported to spend adequate time in direct contact with patients. When nurses perform non-nursing functions, the best interests of the nurse and the patient are ill-served as these activities take valuable time away from the essentials of quality nursing care: assessing, listening, teaching, intervening, supporting and evaluating.

The care environment supports safety, efficiency and effectiveness. The industrial organization of nursing care and the architectural design of hospitals and other facilities need to, first and foremost, support patient care and safety. Every day, nurses unnecessarily risk physical injury, exposure to dangerous chemicals and infectious disease, and considerable psychological and emotional stress. Ergonomics and access to the patient need to guide the design of health care facilities. No nurse should be lifting heavy patients or equipment. Technology can obviate many of these risks as well as streamline documentation, manage care, and track medication delivery.

Nurse-clinician relationships are grounded in collegiality and mutual respect. Nurses and other care providers must interact in ways that honor the knowledge and expertise that each brings to the health care team. Over the years, the skills and competencies of nurses have expanded. The contemporary nurse is equipped to manage multidisciplinary teams, organize patient care, and delegate responsibility. Nurses must now be empowered to assume leadership roles that utilize these skills. This will likely strain relationships between nurses and other members of the health care team, but these pressures must be confronted to ensure that the best interests of the patient are served.

The maturing nurse is fully utilized.

The transformation of nursing care must embrace nurses' cognitive and psychomotor skills, physical capability, and accumulated experience, wisdom and judgment throughout his or her entire career. Compensation should be structured to reward each career stage and encourage advancing to the next. Design of the physical environment and nursing "shift work" evolved in the post World War II era when the average nurse was younger than 30 and a hospital stay often lasted weeks if not months. Today, the average nurse has entered midlife and a typical patient rarely spends more than a few days in the hospital. Sadly, the expectations placed on nurses have not evolved to reflect changing times.

The nursing profession can no longer allow stopgap measures to erode the crucial relationship between the nurse and patient, nor the rewards that come with delivering superb nursing care. Nurses' career satisfaction depends on autonomy in practice. Thus, it is essential that RNs are expected and supported to practice independently and to the full scope of their profession. In addition to more satisfied nurses, this will result in healthier patients, increased efficiency, and improved retention of nurses at every career phase. Transforming nursing care mandates that the nursing profession take the lead in determining its own destiny and no longer accept solutions that "nibble around the edges."

"I have been in nursing since 1981 and have seen changes in practice and staffing. I expect I spend 50 percent of my time performing duties unlicensed staff could do."

– Registered Nurse

RECOMMENDATIONS

This report isolates and describes trends in the supply, demand and need for registered nurses in Oregon. It is also a Call to Action. Findings confirm both the impending exodus of retiring nurses and the growing and aging population that will drive increasing demand and need for nursing care in Oregon. Findings from this study bring focus to the following recommendations:

- 1. Implement strategies that will retain nurses currently working in Oregon.** Focus on retaining and satisfying nurses throughout their careers. Direct specialized effort toward retaining early-to-mid career nurses. Realign the work, work schedules, and compensation structures of nurses with an eye toward the skill, experience and capacity of the maturing nurse. Remove non-nursing functions from the RN's clinical workload. Develop nursing leaders at all levels to design and implement these retention strategies.
- 2. Continue aggressive efforts to increase educational supply.** Focus on recruiting and retaining nursing faculty. Continue pioneering work in the integration of community college and baccalaureate degree programs to bring comprehensive education to more aspiring students across the state. Assure that technology is used to increase enrollment and improve efficiency wherever possible.
- 3. Transform the work, roles, and work environments of registered nurses.** Overhaul outmoded care delivery models and inefficient and unsafe working environments that lead to dissatisfaction and burnout.
- 4. Support nurses to practice autonomously and to deliver the full scope of nursing care for which they are licensed.** Reduce time spent performing non-nursing functions. Assure that interprofessional relationships are collegial and mutually respectful.
- 5. Recruit nurses to, or back home to, Oregon.** More than half of the RNs licensed in Oregon each year are experienced nurses who are new or returning residents. Nursing careers and quality of life in Oregon need to be "packaged" and marketed to nurses seeking relocation.
- 6. Improve representation of ethnic minorities and males in the nursing workforce.** The nursing population needs to reflect the ethnic, racial, language and gender mix of the patient population served. Targeted initiatives aimed at unique barriers to a nursing career faced by ethnic minorities, especially Hispanics, Native Americans and African-Americans, need to be expanded. Aggressive efforts to recruit and retain men in nursing must continue.
- 7. Encourage nurses who have left the workforce to return.** Streamlined, evidence-based programs that support nurses to safely and efficiently return to nursing practice need to be in place and accessible throughout the state. Such programs need to incorporate adult learning and competency-based approaches.

8. Fund advanced nursing education and nursing leadership development.

In order to achieve an appropriate balance of educational preparation in the nursing ranks, more currently employed nurses will need to return to school to receive baccalaureate and graduate nursing degrees. More nurses will need to be subsidized to receive graduate degrees in nursing education as well as the areas of leadership, administration, gerontology, community health, informatics and research.

9. Expand nurse workforce research efforts. Decisions at all levels of nursing workforce management must be evidence-based. Focused research that recognizes the challenges unique to Oregon must be encouraged and supported. This includes both forecasting models that explore supply, demand, and need issues and qualitative research that uncovers the subtle yet powerful influences surrounding the work and career satisfaction of nurses.

The evidence and recommendations in this report lead to one inescapable conclusion:

Fully implement and fund the ONLC Strategic Plan.

The ONLC Strategic Plan (highlighted below; available at: www.oregoncenterfornursing.org) aims to expand educational capacity; transform the work of nurses such that they are supported, motivated and highly satisfied with their work; redesign nursing education so that nurses will be fully prepared to care for Oregonians in the future; and correct ethnic, racial and gender imbalances. Support of these efforts is essential if Oregon is to secure adequate nursing care. Building on the momentum gained since adoption of the ONLC plan in 2001 is crucial.

The Oregon Nursing Leadership Council, through the Oregon Center for Nursing, must continue proactive and unified leadership in implementation of the ONLC strategic plan and these study recommendations. We rely on our policy making, educational, employer, legislative and community partners to support our success

Because Oregon's Health Depends On It.

**The Oregon Nursing Leadership Council Strategic Plan:
Solutions to Oregon's Nursing Shortage
Strategic Goals for 2005-2007**

- Determine and support strategies for the recruitment and retention of nurses in the workplace.
- Achieve education reform and increased program capacity.
- Support the development and evaluation of innovative educational methodologies in nursing.
- Continue initiatives to diversify the nurse workforce to promote culturally competent care.
- Implement the ONLC competencies in practice settings.
- Promote leadership development in nursing.
- Enact nursing leadership for Oregon's health.
- Attain financial stability for the Oregon Center for Nursing.

METHODS

We analyzed existing data obtained from a variety of state and federal agencies and reviewed the current nursing and health services literature to comprehensively assess Oregon's registered nurse workforce. Additionally, the OCN gathered original data through a series of surveys where existing data were inadequate to describe the current and future supply of and demand for RNs in Oregon. These surveys targeted nurse employers, nursing education programs, and registered nurses licensed to practice in Oregon. Following is a detailed discussion of surveys conducted by the OCN and the methodology developed to project registered nurse supply.

Survey of Nurse Employers

The Oregon Center for Nursing conducted a Survey of Nurse Employers in 2004 to gather current data regarding vacancy and turnover rates and anticipated future demand for nursing personnel. The mail survey was sent to a cross section of nurse executives and directors of 329 nurse employers across the state representing the employment settings described below. A follow-up survey was sent to non-responders to strengthen the return rate. A total of 182 useable surveys were returned (response rate: 55 percent). Response rates by employer type are as follows:

Survey of Nurse Employers

EMPLOYER TYPE	Number of Surveys Mailed	Number of Responses	Response Rates
Health System/Hospital/Acute care	70	37	53%
Nursing home/Long term care facility	135	56	42%
Public health	35	29	83%
Home health/Hospice	69	52	75%
School health	20	8	40%
Total	329	182	55%

Health systems, hospitals and acute care settings: A cover letter and survey were mailed to nurse executives at all hospitals in Oregon (n=70). A hospital in southwest Washington that serves the Portland metropolitan area was also included in the survey. The mailing list was obtained from the Oregon Association of Hospitals and Health Systems. Where the hospital was part of a larger health system that included other levels of care included in the study (e.g., long-term care, hospice, home health) the employer was asked to respond for all levels of care.

Nursing home/Long-term care: A cover letter and survey were mailed to directors of nursing at all licensed nursing homes/long-term care facilities in Oregon except those included as part of the hospital employer group regardless of the number of nurses employed (n=135). The mailing list was obtained from the state agency responsible for licensing these facilities.

Public Health: A cover letter and survey were mailed to nursing directors at all public health departments in Oregon (n=35). Indian Health Service facilities, Federally Qualified Health Centers, and other community health centers were not surveyed. The mailing list was obtained from the Oregon Health Division.

Home Health/Hospice: A cover letter and survey were mailed to nursing directors at all licensed home health/hospice agencies in Oregon except those included as part of the hospital, long-term care or public health employer groups (n=69). The mailing list was obtained from the state agency responsible for licensing home health/hospice agencies.

Schools: A cover letter and survey were mailed to all Educational Service Districts and direct employers of K-12 school nurses (n=20). The mailing list was obtained from the Oregon Department of Education.

Survey Content

Respondents were asked to provide raw data necessary to calculate vacancy and turnover rates. Calculations were performed by the OCN using the following formulas:

Vacancy rate: Number of vacant RN positions ÷ Number of budgeted RN positions

Turnover rate: Number of RNs who left positions ÷ Number of RN positions

Number of RNs who left positions includes both voluntary and involuntary separations during most recent fiscal year; excludes employees who moved from one position to another within the organization.

Number of RN positions = (Number of RNs employed at start of year + Number of RNs employed at end of year) ÷ 2

Respondents were also asked to indicate if they anticipated the number of budgeted nursing positions for the following types of nursing personnel to increase, decrease, or remain unchanged over the following two years: Licensed Practical Nurse, RN-ADN, RN-BSN, Clinical Nurse Specialist, Certified Registered Nurse Anesthetist, Certified Nurse Midwife, and Nurse Practitioner. Additionally, health system/hospital/acute care employers were asked to report if they anticipated the number of budgeted RN positions for 17 specific practice specialties to increase, decrease, or remain unchanged over the following two years.

Survey of Nursing Education Programs

The Oregon Center for Nursing conducted a survey of nursing education programs to assess the characteristics of nursing school applicants, currently enrolled students and faculty. Deans and directors representing educational institutions in Oregon and southwest Washington were interviewed by phone. Fifteen associate degree and four baccalaureate nursing programs were invited to participate. Thirteen associate degree and all baccalaureate programs responded (response rate: 89 percent).

Respondents were asked to provide: the number of applicants, qualified applicants and accepted applicants for the most recent academic year; the actual number of nursing school graduates from 2002 through 2004; the number of graduates expected between 2005 and 2008; numbers of full-time and part-time faculty currently employed; the number of FTE faculty currently being recruited; and the number of FTE faculty expected to retire by 2010.

Survey of Registered Nurses

The OCN conducted a survey of registered nurses licensed by the State of Oregon between August and October 2004. A cover letter and questionnaire were sent to a sample of 4,751 RNs as part of the Oregon State Board of Nursing's (OSBN) relicensure packet mailed by the OSBN over a three month period. The one-page survey contained eight questions concerning current employment status, future career plans, and plans for retirement.

Respondents were directed to return the completed survey to the OSBN along with their renewal application. The OSBN offers licensees the option of renewing their license on-line, and for those RNs who chose this option we assumed they did not return the survey separately. Therefore, we sent on-line renewers a follow-up survey by mail to ensure that this group was represented in the survey results. No other follow-up mailings were conducted. A total of 1,957 usable surveys were returned (response rate: 41 percent).

Respondents were screened to determine if they were currently working in a position in Oregon requiring a current Oregon RN license. Those who were not were excluded from the analysis. RNs working in advanced practice positions were also excluded. The remaining 1,539 responses were used for the analysis. Respondents were representative of the population of licensed RNs with regard to age, educational background, and work setting.

Registered Nurse Supply Projections

The OCN developed a methodology to project registered nurse supply with the primary objective of keeping the model as simple as possible while maintaining methodological rigor based on valid, reliable and readily available data.

Annual projections of the number of licensed RNs between 2005 and 2025 were calculated using the following formula:

$$\begin{aligned} &\text{Number of Licensed RNs at start of fiscal year} + \text{New Licenses Issued} - \text{Licenses not Renewed} \\ &= \text{Number of Licensed RNs at start of next fiscal year} \end{aligned}$$

Number of Licensed RNs at start of fiscal year: Using the number of licensed RNs from Oregon State Board of Nursing records as of June 2004 as the base year, the number of licensed RNs as of June 2005 was calculated by multiplying the June 2004 figure by a growth factor of 2.0 percent which is the average annual licensee growth rate between 1990 and 2004.

New Licenses Issued: Includes additions for 1) RNs licensed by exam, 2) anticipated future increases in the number of RNs licensed by exam due to increasing enrollments in Oregon nursing programs, and 3) RNs licensed by endorsement.

Licenses by Exam: Oregon State Board of Nursing data were used to calculate the average annual number of licenses issued by exam between 1990 and 2002 (833.6 per year).

Increases to Licenses by Exam: The Oregon Nursing Leadership Council established a strategic goal to double enrollment in Oregon nursing programs by 2004. Recent increases in the numbers of Oregon nursing school graduates suggest that this goal has been realized to some extent, and if the trend continues, the desired increase in graduations will be in full effect by 2011. Key assumptions underlying these estimates are that 1) doubling enrollments will result in a two-fold increase in graduations, 2) graduations will increase through 2011 and remain constant thereafter, and 3) the proportion of Oregon nursing school graduates licensed by exam in Oregon will follow historical trends.

Licenses by Endorsement: Oregon State Board of Nursing data were used to calculate the average annual number of licenses issued by endorsement between 1990 and 2004, excluding 2002 figures (1380.6 per year). The number of licenses issued by endorsement in 2002 was unusually high due to an influx of registered nurses responding to a strike that occurred at a large Oregon medical center and was, therefore, omitted from the calculation.

Licenses not Renewed: Includes lapsed licenses due to 1) Retirement and 2) Other reasons.

Lapses due to Retirement: Data from the 2004 OCN Survey of Registered Nurses were used to estimate the number of licenses that will lapse due to retirement through 2025. Respondents were asked, "At what age do you expect to retire from nursing and not work for pay at all?"

Estimates of the number of RNs licensed as of June 2004 expecting to retire by 2010, 2015, 2020 and 2025 were calculated, and one-fifth of each estimate was used to approximate annual loss due to retirement during each 5-year period. Because retirement behavior is age-sensitive, estimates were calculated within 5-year age cohorts. Key assumptions underlying these estimates are that 1) retirement plans of survey respondents reflect those of licensed RNs, 2) retirement rates within age cohorts will remain constant through 2025, and 3) retiring RNs will allow their licenses to lapse in the year following retirement.

Because of the complexity involved in adding licensees to the model by age cohort over time, RNs licensed by exam or endorsement between 2006 and 2025 were treated as though they will not retire during this period. This was done for the express purpose of model simplification. Some RNs licensed in the next 20 years will most certainly retire by 2025. Therefore, it is possible that retirement estimates may be underestimated which would result in supply projections that are overestimated.

Lapses due to other reasons: Data from the 2004 OCN Survey of Registered Nurses were used to estimate the number of licensees planning to exit the nursing profession and the number of licensees planning to leave Oregon. Estimates are based on the proportion of respondents indicating they plan to “leave Oregon, will work as a registered nurse elsewhere,” or “change careers, will not work as a registered nurse” when asked, “Do you plan to make any of the following changes in your professional practice/work within the next two years?” Key assumptions underlying these estimates are that 1) plans of survey respondents reflect those of licensed RNs, 2) RNs will carry through with plans to leave Oregon or change careers (or not to do so), and 3) RNs will allow their licenses to lapse after exiting the workforce.

Number of Licensed RNs at start of next fiscal year: The result is the projected number of licensed RNs at the start of the next fiscal year. This figure then becomes the base year and the calculation is performed again for each subsequent year.

Annual projections of the number of licensed RNs between 2005 and 2025 were used to calculate projected numbers of Active RNs and FTE RNs as follows.

Active RNs: Recent figures available for RNs working in Oregon estimate that 82 percent of licensees are working as registered nurses in Oregon. The number of licensed RNs was multiplied by this factor to predict the number of active RNs. The model assumes that an activity rate of 82 percent is a close approximation of the actual rate and that the activity rate will remain constant through 2025.

FTE RNs: Recent figures available for RNs working in Oregon estimate that 69 percent work full-time and 31 percent work part-time. Full-time RNs were assigned a weight of 1.0 FTE and part-time RNs were assigned a weight of 0.5 FTE. The number of FTE RNs was calculated as follows:

$$(\text{Number of Active RNs} \times 69\%) + (\text{Number of Active RNs} \times 31\% \times .5)$$

The model assumes that rates of full-time/part-time participation are close approximations of the actual rates and that the rates will remain constant through 2025.

REFERENCES & NOTES

- 1 Oregon Health & Science University Area Health Education Centers Program. (2002). *Registered Nurse Workforce 2002: A Sourcebook*. Portland, OR.
- 2 Endorsement average excludes 2002 value because it is believed to be inflated as a result of out-of-state RNs endorsing in response to a nurses strike at a large medical center in Oregon.
- 3 American Hospital Association. (2001). *The Healthcare Workforce Shortage and Its Implications for America's Hospitals*. Chicago, IL.
- 4 American Organization of Nurse Executives. (2002). *Acute Care Hospital Survey of RN Vacancies and Turnover Rates*. Washington, DC.
- 5 *Ibid.*
- 6 American Health Care Association. (2003). *Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes*. Washington, DC.
- 7 Hayes LJ, O'Brien-Pallas L, Duffield C, Shamian J, Buchan J, Hughes F, Spence Laschinger HK, North N, & Stone PW. (2005). Nurse turnover: A literature review. *International Journal of Nursing Studies*, in press, available at <http://www.sciencedirect.com>.
- 8 Decker F, Dollard K, & Kraditor K. (2001). Staffing of nursing services in nursing homes: *Present issues and prospects for the future*. Seniors Housing and Care Journal, 9(1), 1-26.
- 9 Vong J. (2004). *Nursing Occupations Among Oregon's Fastest Growing*. Oregon Employment Department.
- 10 National Center for Health Statistics, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. (2001). Available at <http://www.cdc.gov/nchs/fastats/lifexppec.htm>.
- 11 Northwest Environment Watch. (2004). *Scorecard Update: Why are the Joneses living longer?* Available at http://www.northwestwatch.org/publications/CS_news_604_health.asp.
- 12 National Center for Health Statistics. (2004). *Health, United States, 2004 with Chartbook on Trends in the Health of Americans*. Hyattsville, MD.
- 13 Allianace for Aging Research. (2003). *Medical Never-never Land: Ten reasons why America is not ready for the coming age boom*. Washington, DC.
- 14 Alzheimer's Association. (2005). Available at <http://www.alz.org/AboutAD/statistics.asp>.
- 15 Office for Oregon Health Policy and Research. (2004). *Oregon's Acute Care Hospitals: Capacity, utilization and financial trends 1995 to 2003*. Salem, OR.
- 16 Oregon Association of Hospitals and Health Systems. (2003). Available at <http://www.oahhs.org/data/bystate/adjadmu/htm>.
- 17 *Ob cit.* Decker et al.
- 18 Kowalski K. (2001). *Nursing workforce of the future: The administrative prospective*. *Journal of Perinatal & Neonatal Nursing*, 15(1), 8-15.
- 19 Aiken LH. (1995). Transformation of the nursing workforce. *Nursing Outlook*, 43, 201-9.
- 20 *Ibid.*
- 21 *Ibid.*
- 22 *Ibid.*
- 23 Aiken LH, Clarke SP, Cheung RB, Sloane DM, & Silber JH. (2003). Educational levels of hospital nurses and surgical patient mortality. *Journal of the American Medical Association*, 290(12), 1617-23.
- 24 Frontier Education Center. (2004). *Addressing the Nursing Shortage: Impacts and innovations in Frontier America*. New Mexico.
- 25 Buerhaus PI, Staiger DO & Auerback DI. (2004). New signs of a strengthening U.S. nurse labor market? *Health Affairs Web Exclusive*, available at <http://content.healthaffairs.org/webexclusives/index.dtl?year=2004>.
- 26 Rambur B, Macintosh B, Palumbo M, & Reinier K. (2005). Education as a determinant of career retention and job satisfaction among registered nurses. *Journal of Nursing Scholarship*, 37(2), 185-92.

- 27 Bureau of Health Professions. (2000). *The Registered Nurse Population: Findings from the national sample survey of registered nurses*. Rockville, MD.
- 28 Oregon State Board of Nursing. (2004). Statistic provided upon request.
- 29 Burtt K. (1998). Male nurses still face bias. *American Journal of Nursing*, 98(9), 64-5.
- 30 Chung V. (2000). *Men in Nursing*. Available at http://www.minoritynurse.com/features/nurse_emp/08-30-00c.html.
- 31 Kleinman C. (2004). Understanding and capitalizing on men's advantages in nursing. *Journal of Nursing Administration*, 34(2), 78-82.
- 32 Porter-O'Grady T. (2003). Nursing and the challenge of gender inequity. Available at www.nursingsociety.org/about/diversity_art4.html.
- 33 Bernard-Hodes Group. (2005). *Men in Nursing Survey*. New York, NY.
- 34 Brewer CS. (1996). The roller coaster supply of registered nurses: Lessons from the eighties. *Research in Nursing & Health*, 19(4), 345-57.
- 35 Buerhaus, PI. (1991). Economic determinants of annual hours worked by registered nurses. *Medical Care*, 29(12), 1181-94.
- 36 Chiha YA & Link CR. (2003). The shortage of registered nurses and some new estimates of the effects of wages on registered nurses labor supply: A look at the past and a preview of the 21st Century. *Health Policy*, 64, 349-75.
- 37 Schumacher, EJ. (1997). Relative wages and exit behavior among registered nurses. *Journal of Labor Research*, 18(4), 581-92.
- 38 Aiken LH. (2001). *The Hospital Nurse Workforce: Problems and prospects*. Available at <http://sihp.brandeis.edu/council/pubs/hospstruct/Council-Dec-14-2001-Aiken-paper.pdf>.
- 39 Federation of Nurses and Health Professionals, AFT. (2001). *The Nurse Shortage: Perspectives from current direct care nurses and former direct care nurses*. Washington, DC.
- 40 Office of Rural Health Primary Care. (2003). *Findings from the Minnesota Registered Nurse Workforce Survey*. St. Paul, MN.
- 41 U.S. General Accounting Office. (2001). *Nursing Workforce: Emerging nurse shortages due to multiple factors*. GAO-01-944, July 2001, Washington, DC.
- 42 Oregon Center for Nursing calculations based on data from the Bureau of Labor Statistics available at www.bls.gov.
- 43 National Center for Health Workforce Analysis, Bureau of Health Professions. (2004). *What is Behind HRSA's Projected Supply, Demand, and Shortages of Registered Nurses*. Rockville, MD.



The mission of the Oregon Center for Nursing is to advance evidence-based decisions about the nursing workforce, and the recruitment and retention of nurses in Oregon.

Because Oregon's Health Depends On It.