



GOVERNOR'S COUNCIL ON WORKFORCE
AND ECONOMIC DEVELOPMENT

Oklahoma's Health Care Industry Workforce: 2006 Report

The preparation of this report was directed and supervised by:
The Oklahoma Department of Commerce Research and Economic Analysis Division

Kathleen Miller / Director **Steve Barker** / Senior Research Analyst

This report could not have been completed without the dedicated support, guidance and assistance of the following people:

Sheryl McLain, Oklahoma Hospital Association; **Mike Packnett**, Mercy Health System;
Dr. Debra Blanke and Dr. Jim Purcell, Oklahoma State Regents for Higher Education;
Dr. Belinda McCharen and Dr. Sheryl Hale, Oklahoma Department of Career and Technical Education;
Lynn Gray, Oklahoma Employment Security Commission; **Lesli Walsh**, Oklahoma Department of Commerce.

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The web address is <http://OKcommerce.gov/>

The Governor's Council for Workforce and Economic Development

Established in 2004, the goal of the Governor's Council for Workforce & Economic Development (GCWED) is to integrate Oklahoma's workforce and economic development efforts in order to give Oklahoma a competitive advantage as a desirable place to work and live. One of the Council's five broad-based goals "is to ensure that Oklahoma has a labor pool that is competitive, advances the economic objectives of the state and local communities, and meets the employment interest of industry clusters and employer groups".

Health Care Industry as a Pilot Study

The first industry in the state selected by the GCWED for comprehensive study of supply, demand, and gap analysis of current and future needs was health care because of its:

1. importance to the state in provision of essential services to Oklahoma citizens.
2. contribution as a major employer and economic engine in the state and local communities.
3. national significance and the important five years of initiatives in Oklahoma through collaborative partnerships of more than 20 private and public organizations.

Quantitative and qualitative research methods were utilized in the pilot study.

OKLAHOMA'S HEALTH CARE INDUSTRY WORKFORCE:



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EXECUTIVE SUMMARY

1. Situation

The health care industry is a major economic engine in Oklahoma and provides a key element to the state's efforts to recruit and retain new and expanding business. In 2004, health care was the second largest employing industry in Oklahoma, providing 198,636 jobs, or 14% of the state's total employment.¹ In 2003, health care provided \$6.5 billion in direct contributions to Oklahoma's Gross State Product, or 6.4% of the state's total GSP.²

To assess current and future workforce needs in Oklahoma's health care industry, a series of surveys were conducted in late 2005. These surveys, addressed to Oklahoma's hospitals, ambulatory care facilities, residential nursing homes, home health providers, and the Oklahoma State Department of Health, were then analyzed to reveal patterns of demand with regard to occupation, location, and expected trends over the next five to ten years.

Survey results indicate Oklahoma is experiencing a strong demand for several key nursing and allied health positions, with critical shortages of specialty registered nurses, certified nursing aides, physical therapists, and occupational therapists. More striking, the vacancies presented in this report represent only those employers who responded to the survey requests, so current vacancies in Oklahoma's health care professions are even more substantial.

Current workforce shortages are projected to steadily worsen until 2012 unless steps are undertaken today to greatly increase the number of nurses, therapists, and technicians entering health care professions in Oklahoma. Registered nursing jobs alone are projected to increase by 15% over the next six years, and radiologic technology jobs are projected to increase by 26% during this same time. Oklahoma must increase the number of professionals entering the state's health care workforce or it will be increasingly more difficult to fill those jobs and maintain current health care staffing levels.

Projected Shortage of Select Health Care Professionals		
Occupation	Projected Shortage In 2012	% of Projected Total Employment In 2012
Registered Nurses	3,135	12%
Medical and Lab Technicians and Technologists	606	15%
Occupational Therapists	171	16%
Physical Therapists	432	20%
Surgical Technicians	303	21%

Table 1 - Source: Oklahoma Department of Commerce

¹ Oklahoma Department of Commerce, Local Health Care Cluster Analysis, 2005.

² GSP data from U.S. Bureau of Economic Analysis.



2. Recommendations

Oklahoma's educators, employers, and economic development leaders must work together to ensure that health care workforce development is a high priority. To resolve current and projected workforce shortages, the following strategies and recommendations are made:

1. Education and its health care industry partners must increase the number of Oklahomans who enter and complete a health care education program in key priority areas by:

- a. Increasing capacity of Oklahoma's health care education pipeline by prioritizing allocation of education funds for high-demand professions and occupations.
- b. Developing solutions to limitations in clinical facilities in order to increase class size.
- c. Raising educator salaries to be competitive to increase recruitment and retention of faculty.
- d. Increasing retention and graduation rates in health care education programs.

2. The Oklahoma health care industry and their government and educational partners must develop new and innovative programs to recruit and retain a sufficient and quality workforce by:

- a. Identifying and distributing best practices that will help employers promote employee satisfaction and foster positive working environments, reduce vacancy rates, and reduce turnover rates.
- b. Developing solutions to lengthen the active work life for health care personnel.
- c. Implementing WorkKeys to help match applicant skills and position requirements.
- d. Increasing youth and adult awareness and exploration of health care career opportunities and future employment.

3. Oklahoma's economic development community and its partners must continue to promote the importance of the industry and monitor Oklahoma's health care workforce for adequate number of workers by:

- a. Coordinating comprehensive, consistent and ongoing health care workforce data collection and analysis.
- b. Engaging Oklahoma's workforce and economic development community in implementing plans that address the need for health care workers.
- c. Establishing an annual review process through the Governor's Council for Workforce and Economic Development to determine whether necessary action is being taken to avoid crisis situations, and ensure that Oklahoma maintains an adequate supply of health care workers.

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3. Issues in demand

According to a May 2005 report from The Change Foundation, primary drivers for health care are created by one or more of the following factors: demographic trends, technology, and consumer expectations. Oklahoma's population is aging and the percentage of Oklahomans over the age of 65 is growing as well. These are perhaps the most important demographic trends affecting future health workforce demand, with each trend responsible for increasing demand for health care services, altering the mix of services required, and generating profound economic implications that may affect future coverage policies and provider reimbursement systems.

Even though new technologies are becoming available to improve diagnosis, advance treatment, and reduce costs during recovery, the U.S. Government Accounting Office reports that increased use of new technology frequently offsets any anticipated cost savings. As consumer expectations push the health care industry to utilize the latest technology, the newest medications, and the best diagnostics to provide the highest level of care available, the

health care workforce must be adequate in number and in training to provide these services.

Data indicated some industry segments are experiencing high vacancy and turnover rates, disrupting service to patients and increasing the load for some workers.

4. Issues in supply

Oklahoma has pressing needs within both the nursing and allied health professions, but the good news is that qualified applicants exist. The Oklahoma State Regents for Higher Education reports that in 2004 there were 11,619 applicants to 113 postsecondary education programs in nursing and allied health available in the state. Seventy-nine percent (9,193) of those applicants were deemed to be qualified but only 57% of those deemed qualified were actually admitted.

The problem is not a lack of qualified applicants. The problem is a lack of capacity to accept those qualified applicants, educate and train them, and bring them into the professional health care workforce.

Many postsecondary nursing and allied health programs

Select Current Occupational Vacancies Among Survey Respondents		
Occupation	Number of Vacancies Reported	As % of Respondent Employment
Registered Nurses	1,160	10%
Licensed Practical Nurses	245	8%
Certified Nurses Aides	130	18%
Physical Therapists	109	18%
Occupational Therapists	57	22%

Table 2 - Sources: Survey data, collected Fall 2005, by the Oklahoma Department of Commerce and the Oklahoma Hospital Association



reported they are limited by the number of sites available for clinical experiences required by state and national accrediting boards. Many educators indicated it is difficult to find facilities in rural areas that meet all requirements necessary for establishing educational clinical experiences, and urban facilities are often perceived as operating at full capacity since they serve as clinical sites for students at all levels of education. Unless Oklahoma can successfully expand capacity for clinical opportunities within the state's health care education programs, professional accreditation requirements will continue to restrain the output of needed health care workers.

Many postsecondary programs also reported difficulty attempting to recruit and retain educators because health care employers outside of the educational arena offer higher salaries. Oklahoma's postsecondary nursing education programs reported a shortage of 17 faculty members at the time of the survey, with another 37 RN faculty planning to retire within the next five years. Accrediting boards have clear guidelines for student to faculty ratios, and in order to increase the number of qualified students accepted into the state's health care education programs, Oklahoma must do more to retain existing health care education faculty and recruit additional teaching staff.

Oklahoma's educational pipeline for health care occupations must exceed the state's actual need in order to compensate for a small but relevant number of students who choose not to complete the programs, or complete the programs and find employment outside of the state. More must also be done to attract students to health care careers at an earlier age. Recognizing that nationally an RN on average retires from bedside care between the ages of 53 and 56, and that the average age of students entering

Oklahoma's nursing programs is between 27 and 32 years old, Oklahoma loses a combined 20 to 25 years of productivity for the nursing workforce alone.

Licensure data from the Oklahoma Nursing Board suggests that Oklahoma consistently has more RNs and LPNs leaving the state than entering, and a review of average hourly wages for professions and occupations in the health care industry indicates Oklahoma offers wages that are near or at the bottom of wages offered in the region. This makes it difficult to attract workers from outside of Oklahoma. In addition, some of the state's smaller health care employers are having difficulty obtaining workers because their offered compensation rates are not competitive with packages offered by larger health care employers.

Compensation and work environment issues must be addressed, but the key constraint within Oklahoma's health care workforce remains the size of the educational pipeline. Assuming no change in educational capacity between now and 2012, Oklahoma is conservatively projected to have a shortage of more than 5,800 health care workers within the selected professions and occupations examined in this report.

Vacancies used in the calculations represent only those actually reported from survey respondents and would be higher if a full measure of the industry were possible. Occupational growth rates are based on a national standard from the U.S. Department of Labor. The conservative estimates contained in this report do not take into consideration the expected growth in demand as a result of

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the aging of the Baby Boomer generation. Nor do they consider changes in health care services that would be required to improve the overall health of Oklahoma's citizens. A realistic number of new entrants into the workforce was obtained by using 2004 graduation rates.

Measures under consideration by the 2006 Oklahoma State Legislature offer an excellent start, but Oklahoma

cannot let the health care workforce situation continue as it exists. To do so would ultimately create a serious shortage in health care services to our citizens. But by investing now in the current and future health care workforce, Oklahoma will help ensure that the state preserves access to needed medical services, and Oklahoma will continue to be an attractive place to work, play and live.

Health Care Program Expansion Required to Meet Projected Demand in 2012	
Occupation	Average Annual Program Expansion
Nursing	
Registered Nurses	400
Licensed Practical Nurses	(166)
Allied Health	
Radiologic Technology	92
Medical and Clinical Lab Technologists and Technicians	76
Occupational Therapists	22
Physical Therapists	55
Speech Language Pathologists	26
Surgical Technologists	38
Health Care Support	
Occupational Therapy Assistants	20
Physical Therapy Assistants	30

Table 3 - Source: Oklahoma Department of Commerce



INTRODUCTION

1. Industry overview

The economic contribution from Oklahoma's health care industry is significant. Oklahoma's health care industry provided 198,636 jobs in 2004, or 14% of the state's total employment.³ With an estimated 141,032 additional jobs created indirectly in other industry sectors, Oklahoma's health care industry contributed 339,668 jobs to the state in 2004.⁴ In 2003 the health care industry's direct contribution to Oklahoma's Gross State Product (GSP) was \$6.5 billion (6.4%), with an indirect GSP impact estimated at \$5.2 billion.⁵ This equates to a net direct

and indirect GSP contribution of \$11.7 billion in 2003.

National trends in the health care industry include an ever increasing number of uninsured or underinsured patients; a growing number of Americans entering their "senior" years; Medicare and Medicaid outlays under pressure to consider reduced benefit levels, restricted eligibility, increased out of pocket expenditures, reduced reimbursements to health care providers; reduced benefits and increased health care insurance cost; soaring prescription drug costs; growing popularity of preventative care programs; increased availability of medical and insurance information

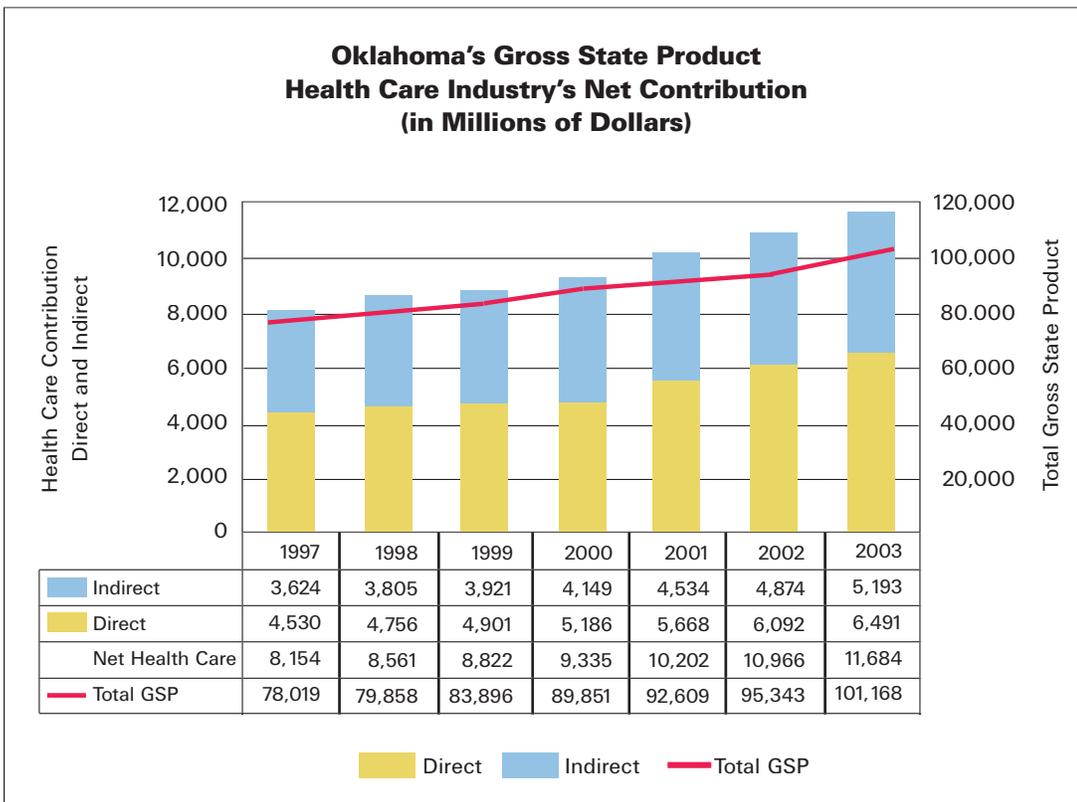


Figure 1 - Source: U.S. Department of Commerce, Bureau of Economic Analysis



over the internet; shifting sites of service, including a boom in surgery centers and clinics opening in retail settings; and a critical lack of qualified nurses.⁶

2. Study methodology

Research was limited to the four largest segments of Oklahoma's health care industry: hospitals, nursing facilities, home health care services, and ambulatory health care services - each with various sub groups.

Data was collected using primary sources from surveys, focus groups and interviews, and secondary sources from journals, articles, and a review of existing research. Surveys targeted member institutions of the Oklahoma Hospital Association; nursing homes through the Oklahoma Association of Homes and Services for the Aging and the Oklahoma Association of Health Care Providers; home health care agencies through the Oklahoma Association for Home Care; ambulatory care centers identified by the Oklahoma Department of Commerce; and Oklahoma's public colleges, universities, and career technology centers through the Oklahoma State Regents for Higher Education and the Oklahoma Department of Career and Technology Education.

³ Oklahoma Department of Commerce, Local Health Care Cluster Analysis, 2005.

⁴ Indirect employment impact based on implied multiplier of 0.71. Multiplier determined by Oklahoma Department of Commerce using IMPLAN model.

⁵ GSP data from U.S. Bureau of Economic Analysis. Indirect contribution based on implied multiplier of 0.80. Multiplier determined by Oklahoma Department of Commerce using IMPLAN model.

⁶ Plunkett's Health Care Industry Almanac 2006 as accessed at their website, <http://www.plunkettresearch.com/Industries/HealthCare/tabid/205/Default.aspx#IndustryTrends> on January 25, 2006.



1. Current demand

In 2004, Oklahoma's health care industry cluster provided 198,636 jobs, or 14% of Oklahoma's total employment.⁷ This includes all clinical and non-clinical jobs within health care, from nurses, physicians, and respiratory therapists to administrators, cafeteria workers, and house-keeping staff. To determine Oklahoma's demand for key health care positions, a series of surveys were conducted in late 2005 of the state's hospitals, ambulatory care facilities, residential nursing homes, home health providers, and the Oklahoma State Department of Health. The survey results were analyzed to reveal patterns of need in occupations, location, and expected trends over the next five to ten year period.



Survey results indicated clear evidence of statewide demand for nurses and certain allied health professionals across all health care industry sectors, with demand trends expected to increase in the future. Within the hospital segment, the existing vacancies were: 1,129 RNs, 221 LPNs, and 432 allied health professionals. Oklahoma's hospitals were actively engaged in recruitment to fill these 1,782 vacant positions. While the largest percentage of employment needs were concentrated in the Tulsa and Oklahoma City metro areas, these needs extended across the state into regional and local hospitals, nursing homes, ambulatory care facilities, public schools, and local health departments.

Rural health care workforce needs may be more critical as vacancies in key positions significantly impact the ability to provide necessary care with small staffing patterns. For example, staff shortages may force intensive care units or emergency departments in rural hospitals to temporarily divert patients to other facilities, which increases the distance patients must travel in order to receive care, and potentially places lives at risk.

⁷ Oklahoma Department of Commerce, Local Health Care Cluster Analysis, 2005.

⁸ Biviano, Marilyn; Fritz, Marshall; Spencer, William; "What is Behind HRSA's Projected Supply, Demand, and Shortage of Registered Nurses?"; National Center for Health Workforce Analysis, Bureau of Health Professions, Health Resources and Services Administration; September 2004; pgs. 25; 32-33



2. Demand projections

Government and industry sources have projected demands for nursing and allied health professionals in Oklahoma, and while projections may differ slightly, there is agreement that demand for these health care providers will increase in the coming years.

a. Government projections of job growth

Using guidelines defined by the U.S. Department of Labor, every two years, the Oklahoma Employment Security Commission (OESC) publishes an overview of the state's occupational level employment and projected growth over the next 10 years. Relevant 2005 Oklahoma Employment Outlook projections for 2002 through 2012 are included in Table 4. A more detailed table of information is found in Appendix 7.

According to OESC projections, by 2012 Oklahoma will employ nearly 43,000 RNs and LPNs, a 22% increase over the actual employment reported in 2004. OESC estimates

statewide average openings for nursing positions will be 1,490 each year until 2012. This figure represents openings from newly created jobs and openings that occur as workers retire or leave positions for other reasons. Interstate migration is also considered but only at the national average rate.

Between 2005 and 2015, the Health Resources and Services Administration (HRSA) projects demand for RNs in Oklahoma will increase at a 22% growth rate, outpacing the national projected growth rate of 19%. HRSA national growth projections include RN demands in nursing facilities (29%), short-term hospital inpatient (32%), and home health (44%).⁸

The allied health projections represent physical, occupational respiratory and other therapists, cardiovascular technologists, medical and clinical lab technicians, nuclear technologists, and other technologists and technicians occupations. Within the allied health professions and occupations, OESC projects 24% job growth between 2004 and 2012.

	Projected Annual Average Vacancies in Existing Jobs	Projected Net New Jobs Created Annually	Average Annual Openings
Nursing – RNs and LPNs	753	737	1,490
Allied Health – Therapists, Technologists, and Technicians	275	295	570
Health Care Support - Aides and Assistants	498	992	1,490
Health Educators	40	60	100
Total	1,566	2,084	3,650

Table 4 - Source: Oklahoma Employment Security Commission; Employment Outlook 2012; published in 2005

For health care support positions, OESC projects close to 30% job growth by 2012 over 2004 employment. This category represents home health aides, nursing aides, therapist aides and assistants, orderlies, and attendants among others.

OESC projections for postsecondary nursing and other health professionals and occupations indicate that these professions will grow by 23% by 2012. This increases the number of educators to from 1,870 to 2,300.

b. Industry projections of demand

In an effort to determine Oklahoma's demand for key health care positions, a series of surveys were conducted in late 2005 of Oklahoma's hospitals, ambulatory care facilities, residential nursing homes, home health providers, and the Oklahoma State Department of Health. The results were analyzed to reveal patterns of need with regard to occupation, location, and expected trends over the next five to 10 years.

Statewide hospital data were gathered by the Oklahoma Hospital Association represented 84% of all licensed hospital beds. Additional surveys were conducted by the statewide associations representing Oklahoma's nursing homes and home health employers who were repeatedly contacted via mailings, e-mails, faxes and phone efforts. Survey responses from Oklahoma's nursing homes represented only 11% of all licensed nursing home beds in the state. Responses from Oklahoma's home health agencies represented nearly 8% of the employers within the industry segment. Survey responses from Oklahoma's ambulatory care and outpatient care facilities resulted in a 33% response rate.

Low response rates in some populations of the study present limitations as to the level of generalization that can be used for those segments. Data from Oklahoma's hospitals yielded results that can easily be generalized.

i. Current industry demand by occupation

Cumulative survey results indicate strong demands all along the nursing career ladder – from certified medication and nurse's aides to licensed practical nurses and registered nurses. Survey findings indicate a significant need for occupational therapists, physical therapists, speech therapists, and related therapy assistants. Other key allied health professions in high demand are indicated in Table 5.

Survey results indicate vacancy rates are lowest in ambulatory care facilities, followed by hospitals, with the highest vacancy rates in nursing homes. Home health survey responses were insufficient for comparison with other industry segments. Nursing homes are under pressure to fill vacant positions because of mandated staffing requirements, while at the same time facing financial pressure because of low reimbursement rates for services provided. Consequently, nursing homes report significantly higher reliance on use of certified medication and certified nurse aides (CNAs), with use of CNAs more than double the use of LPNs and RNs combined.

Survey data indicated that ambulatory care vacancies were roughly half that of hospitals. Nationally there continues to be a trend towards creation of more ambulatory care centers. If Oklahoma follows the national trend and builds more ambulatory care centers, demand from these additional ambulatory care facilities will most likely increase the need for health care professionals.



ii. Current industry demand by geographic area

Survey data from the research study for the Health Care Industry Cluster Report indicated that Oklahoma City and the southwestern regions of Oklahoma are experiencing the

greatest shortage of radiologic technology personnel, which includes nuclear medicine technicians, radiation therapists, radiographers, vascular/interventional, CT and MR technologists, and sonographers. The greatest demand for medical and laboratory technicians, based on statewide

vacancies, were reported in northeastern Oklahoma and the Tulsa metropolitan areas. The shortage of respiratory therapists was found most prominent in the Oklahoma City and Tulsa areas.

Survey Results – Select FTEs and Vacancies Hospitals, Nursing Homes, Home Health, and Ambulatory Care			
Occupation	Reported FTE	Reported Vacancies	Vacancy Rates as %
Nursing	14,500	1,405	10
Registered Nurses	11,577	1,160	10
Licensed Practical Nurses	2,923	245	8
Allied Health	5,772	423	7
Radiologic Technology	1,610	90	6
Cardiovascular Technologists and Technicians	234	13	6
MR Technologists	100	13	13
Nuclear Medicine Technologists	118	4	3
Radiation Therapists	112	3	3
Radiographers	711	35	5
Ultrasound Technologists (Sonographers)	223	15	7
Vascular/Interventional Technologists	111	7	6
Medical Lab	1,763	65	4
Medical Lab Technologist (MLT)	319	17	5
Medical Technologists	1,444	48	3
Occupational Therapists	238	52	22
Physical Therapists	595	109	18
Respiratory Therapists	850	57	7
Speech-Language Pathologists	12	5	42
Surgical Technicians	714	45	6
Health Care Support – Aides and Assistants	968	167	17
Certified Medical Aides	204	24	12
Certified Nurses Aides	707	130	18
Home Health Aides	*	*	*
Occupational Therapy Assistants	16	7	43
Physical Therapy Assistants	41	6	14
Total	21,240	1,1995	9

Table 5 - Sources: Survey data collected Fall 2005 by the Oklahoma Department of Commerce and the Oklahoma Hospital Association
* Low response rates resulted in insufficient data

Cumulative Survey Response Rates by Region							
Response Rates	NE OK	NW OK	OKC Metro	SE OK	SW OK	Tulsa Metro	Total
Hospitals (by bed)	88.2%	80.6%	88.3%	75.5%	87.1%	79.4%	84.3%
Ambulatory Care (by facility)	40.0%	16.7%	35.0%	46.2%	50.0%	18.2%	33.3%
Nursing Homes (by bed)	9.5%	14.0%	18.8%	11.3%	5.0%	7.6%	11.0%
Home Health (by employer)	9.7%	10.0%	8.3%	4.0%	7.4%	4.0%	6.5%
Select Workforce Vacancies by Region							
Occupation	NE OK	NW OK	OKC Metro	SE OK	SW OK	Tulsa Metro	Total
Nursing	185	73	472	135	125	415	1,405
Registered Nurses	143	51	403	101	79	383	1,160
Licensed Practical Nurses	42	22	69	34	46	32	245
Allied Health	47	22	175	53	57	69	423
Radiologic Technology	8	4	48	11	11	8	90
Cardiovascular Technologists and Technicians	1	0	8	1	1	2	13
MR Technologists	1	0	7	1	1	3	13
Nuclear Medical Technologists	1	0	1	1	1	0	4
Radiation Therapists	0	0	2	0	1	0	3
Radiographers	4	2	21	4	3	1	35
Ultrasound Technologists (Sonographers)	1	2	6	3	2	1	15
Vascular/Interventional Technologists	0	0	3	1	2	1	7
Medical Lab	14	2	13	7	13	16	65
Medical Lab Technologists (MLT)	2	1	3	0	5	6	17
Medical Technicians	12	1	10	7	8	10	48
Occupational Therapists	4	2	26	6	4	10	52
Physical Therapists	17	3	45	12	15	17	109
Respiratory Therapists	2	5	16	11	9	14	57
Speech-Language Pathologists	0	0	5	0	0	0	5
Surgical Technicians	2	6	22	6	5	4	45
Health Care Support – Aides and Assistants	27	31	19	21	44	25	167
Certified Medical Aides	9	11	3	0	0	1	24
Certified Nurses Aides	17	19	11	18	41	24	130
Home Health Aides	0	0	0	0	0	0	0
Occupational Therapy Assistants	0	0	2	3	2	0	7
Physical Therapy Assistants	1	1	3	0	1	0	6
Total	259	126	666	209	226	509	1,995

Table 6 - Sources: Survey data, collected Fall 2005, by the Oklahoma Department of Commerce and the Oklahoma Hospital Association



iii. Current industry turnover rates by occupation

It is difficult to find directly comparable national turnover rates by occupation. However, Oklahoma compares favorably when measured against turnover rates that are available. For example, the national turnover rate for RNs was 16.8% in 2004⁹ but survey respondents indicated the turnover rate for RNs in Oklahoma was 15.7% in 2005.

Ambulatory care facilities reported the lowest turnover rates. Responses from Oklahoma's nursing homes indicated a significantly higher turnover rate as a group, with metropolitan areas and nearby communities having the highest turnover rates. Surveys indicate that turnover rates for certified medical aides and certified nurse aides are extremely high.

⁹ National data from J. Walter Thompson, a specialized communications company, as provided by the Oklahoma Hospital Association.

Occupation	Reported FTE	Reported Turnover	Turnover Rates as %
Nursing	14,500	2,383	16
Registered Nurses	11,577	1,818	16
Licensed Practical Nurses	2,923	809	28
Allied Health	5,772	693	12
Radiologic Technology	1,610	192	12
Cardiovascular Technologists and Technicians	234	27	12
MR Technologists	100	15	15
Nuclear Medicine Technologists	118	11	9
Radiation Therapists	112	8	7
Radiographers	711	82	12
Ultrasound Technologists (Sonographers)	223	25	11
Vascular/Interventional Technologists	111	24	22
Medical Lab	1,763	129	7
Medical Lab Technologist (MLT)	319	56	18
Medical Technologists	1,444	73	5
Occupational Therapists	238	40	17
Physical Therapists	595	103	17
Respiratory Therapists	850	109	13
Speech-Language Pathologists	12	1	8
Surgical Technicians	714	119	17
Health Care Support – Aides and Assistants	968	990	102
Certified Medical Aides	204	149	73
Certified Nurses Aides	707	816	115
Home Health Aides	.	.	.
Occupational Therapy Assistants	16	11	19
Physical Therapy Assistants	41	14	12
Total	21,240	4,066	12



Table 7 - Sources: Survey data collected Fall 2005 by the Oklahoma Department of Commerce and the Oklahoma Hospital Association
 * Low response rates resulted in unreliable data for this occupation

3. Drivers of demand

Many factors create health care workforce demand. According to a May 2005 report from The Change Foundation, primary drivers are created by one or more of the following factors: demographic trends, technology, and consumer expectations.¹⁰

a. Demographic trends

An aging population and the subsequent increase in the size of the elderly population are perhaps the most important demographic trends that will affect future health workforce demand. Each will increase demand for health care services, the mix of services demanded, and will have profound economic implications that may affect future coverage policies and the provider reimbursement system.

Over the next 25 years, Oklahoma’s population is projected to grow at roughly half the growth rate for the rest of the nation, with the state’s population growing from 3.5 million in 2005 to 3.9 million by 2030. As Baby Boomers age, Oklahoma’s population age 65 and over is expected to grow from 465,000 in 2005 to 758,000 in 2030, a 63%

increase. By 2030 nearly one in five Oklahomans will be over the age of 65. This age group is projected to grow from 13.2% to 19.4% of the state’s population between 2005 and 2030. During this same time period, Oklahoma’s population aged 85 and over is expected to grow from 62,700 to 99,600, a 59% increase. By 2030, this age group will grow from 1.8% of the state’s population to 2.5%.

Growth patterns in an aging population will directly influence demands on Oklahoma’s health care system and the workers who provide their care. The age 65 plus population spends nearly four times more on health care (\$11,089 per capita) than those under 65 years of age (\$2,793).¹¹ On a per capita basis, the elderly incur more hospital inpatient days, more outpatient services, more emergency department and home health visits, and are more likely to be in a long-term care facility.¹² In 2000, physicians spent an estimated 32 percent of patient care hours providing services to the age 65 and older population, and if current consumption patterns continue this percentage could increase to 39 percent by 2020.¹³ As average patient health care awareness and general knowledge is expected to increase, higher nurse and physician staffing levels may become necessary in order to answer more informed questions from patients.

There are downward pressures on workforce demand as well. Medicaid, Medicare, and private insurers will continue

Age Group	Estimated 2005	Forecast 2030	Change
17 and under	25%	25%	0%
18 to 44 years	37%	34%	-3%
45 to 64 years	25%	22%	-3%
65 and over	13%	19%	+6%

Table 8 - Source: U.S. Census Bureau



striving to control escalating health care costs. State and federal funding limitations will force health care providers to increase worker productivity while cutting overall expenses. In some sectors, this may restrict growth for higher paid health care professionals while increasing demand for lower paid workers. Finally, as tomorrow's elderly benefit from better economic resources, higher education levels, more active lifestyles, and improved medical technology, it is possible they may have lower disability rates than the elderly of today. This could postpone or reduce the severity of some age related health issues and slow the demand growth for health care workers.¹⁴

A second important demographic trend relates to the number of Oklahoma residents who speak English as a second language, or perhaps not at all. In 2004, approximately 7.5% of the population - 237,000 Oklahoma residents - over the age of five spoke a language other than English in their home.¹⁵ The majority of those residents spoke some version of Spanish, but other prevalent languages include Vietnamese, Korean, and Chinese.¹⁶ First generation immigrants often have the greatest difficulty understanding the language and cultural differences of their new home communities and anxieties can become more pronounced when dealing with a health care encounter or crisis.

These same anxieties may exist among entry-level health care workers. Newly immigrated Oklahomans often find work in the health care industry as health care maintenance workers and dietary aides. These workers can benefit from educational training in basic math, literacy, and language skills through programs like English as a Second Language. Once they have these basic skills, they may have better opportunities to advance up the health care occupational ladder.

¹⁰ Dr. Jiahui Wong, Dr. Julie Gilbert, Maria Fara-On, all of the Change Foundation; *Rising Tide – Understanding Demand in Health Care*; May 2005; page 1; as accessed on November 10, 2005 at [http://www.changefoundation.com/tcf/TCFBul.nsf/dea2e13875b9d7cb052565e4007faaa0/289bd74bb25d2f2185257012004506dc/\\$FILE/Rising%20Tide%20-%20Understanding%20Demand%20in%20Health%20Care%20%20Final.pdf](http://www.changefoundation.com/tcf/TCFBul.nsf/dea2e13875b9d7cb052565e4007faaa0/289bd74bb25d2f2185257012004506dc/$FILE/Rising%20Tide%20-%20Understanding%20Demand%20in%20Health%20Care%20%20Final.pdf)

¹¹ U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions; *Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers*; Spring 2003 as accessed on January 24, 2006 at <http://bhpr.hrsa.gov/healthworkforce/reports/changedemo/Content.htm#2>

¹² U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions; *Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers*; Spring 2003 as accessed on January 24, 2006 at <http://bhpr.hrsa.gov/healthworkforce/reports/changedemo/Content.htm#2>

¹³ Biviano, Marilyn; Fritz, Marshall; Spencer, William; "What is Behind HRSA's Projected Supply, Demand, and Shortage of Registered Nurses?"; National Center for Health Workforce Analysis, Bureau of Health Professions, Health Resources and Services Administration; September 2004; p. 12

¹⁴ U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions; *Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers*; Spring 2003 as accessed on January 24, 2006 at <http://bhpr.hrsa.gov/healthworkforce/reports/changedemo/Content.htm#2>

¹⁵ U.S. Census Bureau; 2004 American Community Survey as accessed at http://factfinder.census.gov/servlet/ADPTTable?_bm=y&-context=adp&ds_name=ACS_2004_EST_G00_&-tree id=304&-all geo types=N&- caller=geoselect&-geo id=04000US40&-format=&- lang=en

¹⁶ U.S. Census Bureau; 2004 American Community Survey as accessed at http://factfinder.census.gov/servlet/ADPTTable?_bm=y&-context=adp&ds_name=ACS_2004_EST_G00_&-tree id=304&-all geo types=N&- caller=geoselect&-geo id=04000US40&-format=&- lang=en

DEMAND

According to the 2000 Census, only 1.7% of registered nurses in Oklahoma were Hispanic, well below the state's 5.2% overall Hispanic population.¹⁷ At a time when one of every two individuals added to the nation's population is Hispanic¹⁸, it is vital that Oklahoma's health care workforce today and in the future be as representative as possible of the community as a whole.

Through better cultural understanding, a more diverse workforce may improve the state's ability to reach the medically underserved and allow for a sharper focus on the health issues relevant to specific demographic groups in Oklahoma's population. As an example of how this diversity may be useful, the Oklahoma State Department of Health reports that diabetes-related deaths among African Americans and Native Americans are nearly twice that of Whites. The presence of a diverse health care workforce may improve the cultural knowledge and resources available to address this and similar issues as health care executives and government leaders craft solutions and effective health care policy intended to improve the health of Oklahoma citizens.

b. Technology

Outcomes from using technology as a demand driver are mixed. The GAO reports increased use of new technologies frequently offset any anticipated cost savings, creating a dampening effect on new technology investment.¹⁹ Technological advances may more clearly impact demand

for some areas of health care but not others. For example, obstetric services will likely be driven more by demographics than by technological changes in that field.

Some technologic changes have been identified as having great potential to change health care in the near future. Advances in the fields of biotechnology, nanotechnology, and genetic research are expected to have a tremendous impact on demand for health care related occupations. Consequently, more needs to be done to prepare today's students for these scientifically demanding areas of tomorrow. Some providers have been successful in utilizing labor saving technologies, such as patient transfer equipment to decrease strain on the existing workforce which extends their expected work life. Researchers have also begun adding sensors to personal medical equipment such as canes, walkers, cell phones and other devices that allow patients to live more independently and go about normal routines, all while transmitting data to doctors remotely. With such technology, doctors make earlier and better informed diagnoses of potential health issues.

Technology is already being used to meet some specific needs of Oklahoma's rural communities. For example,



telemedicine programs and distance learning initiatives like those coordinated through the Oklahoma State University Rural Health Policy and Research Center and the University of Oklahoma Health Sciences Center have joined diagnostic equipment, physicians, and trained technicians in Oklahoma's rural areas with diagnostic professionals in the state's urban centers. In this way, patients receive more timely assessments, health care professionals extend the geographic area they may serve, and the health needs of rural Oklahoma are more effectively addressed.



c. Consumer expectations

Generally, consumer expectations push the health care industry to utilize the latest technology, the newest medications, and the best diagnostics to provide the highest level of care available, even though these expectations are somewhat tempered by a region's ability to sustain such services on a longer term scale. A recent study indicates that the availability of a given technology or specialist trained in a certain procedure will do more to determine what health care procedures are demanded by the public and ultimately utilized.²⁰ Regardless, it is clear that Oklahomans have high health care expectations, and workforce shortages looming on the horizon could threaten the industry's ability to sufficiently meet those expectations.

¹⁷ U.S. Census Bureau; Statistical Abstract of the United States: 2004-2005; Table 597. Employed Civilians by Occupation, Sex, Race, and Hispanic Origin: 2003.

¹⁸ U.S. Census Bureau; Hispanic Population Passes 40 Million; Press Release dated June 9, 2005.

¹⁹ GAO Forum: Health Care, Unsustainable Trends Necessitate Comprehensive and Fundamental Reforms to Control Spending and Improve Value; May 2004; page 22

²⁰ GAO Forum: Health Care, Unsustainable Trends Necessitate Comprehensive and Fundamental Reforms to Control Spending and Improve Value; May 2004; page 19



4. Forecast for occupational demand

Oklahoma's health care industry will need nurses and allied health professionals at all levels of career ladders in all segments of the industry. While nursing assistive personnel and licensed practical nurses will likely be in demand by the home health and nursing home communities, highly trained nurses will likely be in high demand in Oklahoma hospitals and ambulatory care facilities. Allied health technicians and technologists from multiple disciplines will be required to support the increasing demand in diagnostic testing and imaging that will be created by Oklahoma's aging population.

Demands for therapists are expected to increase as more Oklahomans experience age-related illnesses as well as injuries that require their specialized services.

Table 9 forecasts Oklahoma's demand for health care workers in selected professions and occupations, based on an analysis of OESC projections, results from the research study conducted specifically for this Health Care Industry Cluster Report, as well as other relevant factors that are outlined in more detail in Appendix 4. Demand projections in Table 9 represent the estimated demand for 2005, and the cumulative demand between 2005 and 2012.

Occupation	2005		2005 thru 2012	
	New Job Creation	Replacement Hires	New Job Creation	Replacement Hires
Nurses	737	2,310	5,896	13,916
Registered Nurses	535	1,746	4,280	9,033
	202	564	1,616	4,883
Allied Health	283	420	2,264	2,852
	66	90	528	1,168
Medical and Clinical Technologists and Technicians	56	65	448	723
	25	52	200	157
Physical Therapists	49	109	392	256
	33	57	264	246
Speech-Language Pathologists	24	5	192	187
	30	45	240	115
Health Care Support – Aides and Assistants	992	169	7,936	3,653
	230	24	1,840	584
Certified Nurses Aides	449	130	3,592	2,237
	249	0	1,992	567
Occupational Therapy Assistants	20	7	160	77
	44	6	352	188
Total	2,012	2,899	16,096	20,421

Table 9 - Source: Oklahoma Employment Security Commission and surveys conducted for this study



1. Current supply

Health care services are delivered as close to the population needing the service as is economically feasible, nevertheless it is sometimes difficult to maintain cost effectiveness when the population base is small or distributed over a wide area. Many communities are successful at making a variety of health care services available and easily accessible. Several of these communities offer unique specialty care close to home via shared service agreements with other providers, whereby various specialists travel between hospitals and satellite clinics. Under this arrangement, the provider covers a greater geographic area and provides services to more individuals, making it more efficient and cost effective. Consequently, this allows the community to promote the availability of certain health care services that may assist economic development efforts by attracting new business and expanding existing business opportunities.

Limited employment opportunities and available lifestyle choices for spouses may present challenges to rural communities seeking to recruit or retain health care providers. Nevertheless, rural communities may promote these same lifestyle opportunities unique to the area and focus on “growing their own” health care workers

through scholarship programs that result in direct benefits to health care delivered locally and indirect benefits of economic strength for the community.

Economic feasibility is an important factor that both urban and rural health care service providers consider when making decisions about offering and expanding services. The existence of a large, more geographically concentrated population base, and therefore a large patient base, makes it more likely more specialized health care services will be available. Clustering of health care providers in a particular geographic area creates a stronger market for related ancillary services. However, the existence of a quality health care infrastructure may be of more value as a recruiting tool for other industries rather than as a specific target for economic development.

Oklahoma’s health care industry cluster provided 198,636 jobs in 2004, or 14% of Oklahoma’s total employment.²¹ By definition, this figure includes all jobs within the health care industry - from nurses, physicians, and allied health personnel to administrators, cafeteria workers, and housekeeping staff. Hourly wages for many health care industry positions are better than Oklahoma’s November 2004 average hourly wage of \$14.97 (or \$31,150 per year).²²

a. Nursing

By far, the largest single occupational group within Oklahoma’s health care industry is nursing. The Oklahoma Board of Nursing (Nursing Board) reports that in FY 2004 there were 33,050 RNs licensed in the State of Oklahoma, of whom 24,189 (73.2%) were residing and employed within the state. An additional 5,060 (15.3%) were residing in Oklahoma, but not employed. The remaining 3,801 (11.5%) Oklahoma RN licenses were held by RNs residing outside the state.²³



Occupation	National Average	Oklahoma	Oklahoma's Rank
Registered Nurses	780.2	634.1	44th
Licensed Practical Nurses	240.8	389.6	3rd
Nurse Practitioners	33.7	17.5	43rd

live in communities bordering Oklahoma who commute into the state for regular employment, and those who reside outside the state but maintain their Oklahoma license for unknown reasons.

Table 10 - Source: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professionals; National Council of State Boards of Nursing, Inc.; U.S. Census Bureau

The Nursing Board also licensed 16,900 LPNs in FY 2004, of who 12,136 (71.8%) were employed and residing in Oklahoma. An additional 3,818 (22.6%) licenses were held by LPNs residing in Oklahoma but not employed, with 946 (5.6%) licenses granted to LPNs residing outside the state of Oklahoma.²⁴

An additional measure of cross-state nursing migration is found in the number of applications for licensure based on endorsement. Endorsement, like reciprocity, is the process whereby a state may issue a nursing license without requiring a repeat of the licensing examination, provided the applicant has been duly licensed

Licenses held in 2004 by 3,801 RNs and 946 LPNs residing outside of Oklahoma represent three categories of nurses: those in the process of leaving the state, those who

²¹ Oklahoma Department of Commerce, 2005 Local Health Care Cluster Analysis.

²² U.S. Department of Labor, Bureau of Labor Statistics; Occupational Employment Statistics (OES) Survey, November 2004

²⁵ & ²⁴ Oklahoma Board of Nursing; FY 2004 Annual Report.

Workplace Setting	Registered Nurses		Licensed Practical Nurses	
	Number	Percent	Number	Percent
Hospital	14,606	44.2	3,838	22.7
Home Health	1,577	4.8	1,209	7.2
Long Term Care	1,272	3.8	3,644	21.6
Community Health	1,215	3.7	475	2.8
Private Care	925	2.8	1,185	7.0
Ambulatory Care	876	2.7	521	3.1
School of Nursing	551	1.7	24	0.1
Care Management	530	1.6	81	0.5
School Health	419	1.3	139	0.8
Occupational Care	151	0.5	110	0.7
Other	2,067	6.3	910	5.4
Total Employment	24,189	73.2	12,136	71.8
Reside in State, Not Employed	5,060	15.3	3,818	22.6
Residing out of State	3,801	11.5	946	5.6
	33,050	100.0	16,900	100.0

Table 11 - Source: Oklahoma Board of Nursing; FY 2004 Annual Report

SUPPLY

under the laws of another state, territory, or the District of Columbia. In FY 2004, there were 851 RNs and 195 LPNs who applied for Oklahoma licensure by endorsement from other states, with most coming from Texas (146 RNs and 54 LPNs) and Kansas (76 RNs and 19 LPNs). Conversely there were 1,437 RNs and 514 LPNs applying for licensure to other states based on an Oklahoma endorsement, with most going to Texas (312 RNs and 175 LPNs) and California (127 RNs and 23 LPNs).²⁵

Because the number of endorsements *from* Oklahoma is higher than the number of endorsements *to* Oklahoma, it is possible to conclude that the state is a net exporter of nurses. Because nurses may be licensed in multiple states at one time, and may choose to maintain licensure in multiple states “just in case” they might seek to work in another state at some point in the future, the conclusion of net migration patterns is not an absolute certainty but is an inference drawn from the data. However, since 2001, the number of RN endorsements *out* of Oklahoma are more than double the endorsements *into* the state, and LPN endorsements *out* of Oklahoma are nearly three times the endorsements *into* the state. From this data, it may be inferred that many nurses are leaving the state.

According to 2004 data from the U.S. Department of Labor’s Bureau of Labor Statistics (BLS), only North Dakota, Wyoming, and Iowa have average hourly wages for RNs that are lower than the wages paid to Oklahoma RNs. Texas has the most RN and LPN endorsements *out* of Oklahoma, on average paying their RNs \$3.50 more

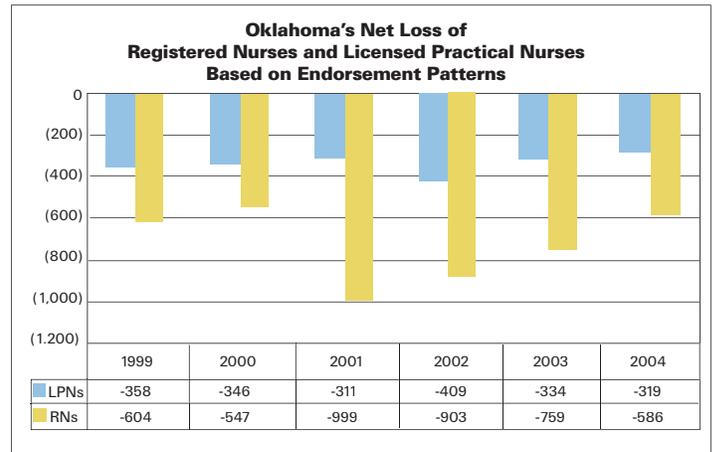


Figure 2 - Source: Oklahoma Board of Nursing; FY 2003 Annual Report and FY 2004 Annual Report

an hour and paying their LPNs on average \$2.06 more an hour. California, with the second most RN endorsements *out* of Oklahoma, on average paid their RNs \$10.81 more an hour than did Oklahoma. Arkansas, with the second most LPN endorsements *out* of Oklahoma, paid on average \$0.29 less an hour than Oklahoma.

In fall 2005, the Oklahoma’s State Regents for Higher Education conducted a survey of Oklahoma’s postsecondary health care related educational programs. Respondents indicated 156 (11%) of their current budgeted full-time faculty positions were vacant, with the largest vacancy rate for RN nursing faculty. Oklahoma’s postsecondary nursing programs reported a shortage of 17 faculty members, with an additional 37 RN faculty planning to retire within the next five years.²⁶

Low faculty salaries compared to wages available in practice settings was reported as a common challenge encountered by nursing programs when attempting to recruit and retain RN educators. The U.S. Department of Labor’s Bureau of Labor Statistics reports November 2004 average annual wages for

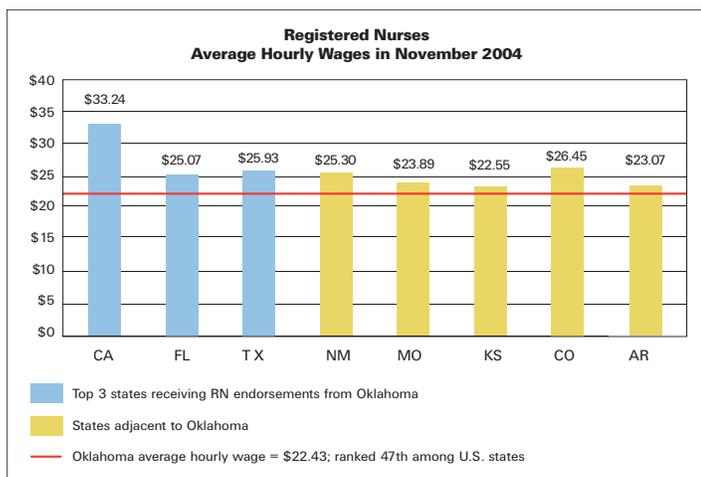


Figure 3 - Source: U.S. Dept of Labor, Bureau of Labor Statistics; November 2004 Occupational Employment Statistics Survey

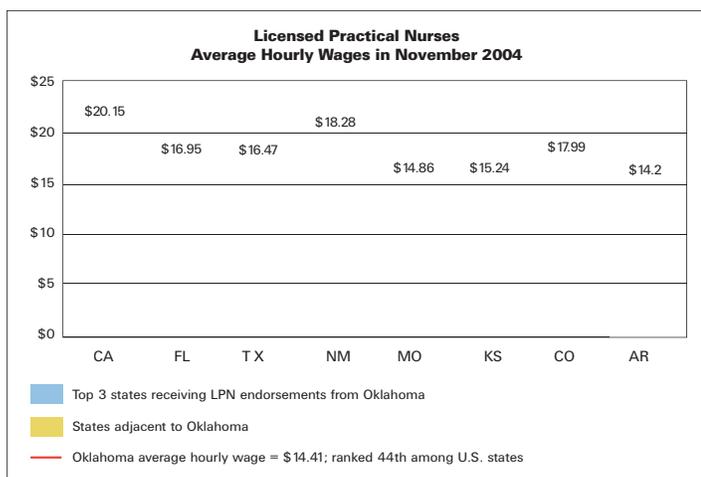


Figure 4 - Source: U.S. Dept of Labor, Bureau of Labor Statistics; November 2004 Occupational Employment Statistics Survey

postsecondary nursing instructors and teachers were \$45,140 while the average annual wages were \$46,660 for RNs and \$29,980 for LPNs. Data from surveys conducted in 2005 indicated RN wages exceeded \$53,000 in some cases.²⁷

School nurses are increasingly rare in Oklahoma's public school system, with an estimated 456 more school nurses needed statewide in order to achieve a ratio of 750 students per nurse. Because 15.3% of Oklahoma children are uninsured, tied for 46th worst state in the nation²⁸, Oklahoma's public schools have inherited the responsibility of primary health care provider for nearly one in every six Oklahoma children. Many schools utilize school secretaries and/or school counselors to provide health education and administer medications because they have no school nurse.

Entry level nursing occupations of certified medication aide, certified nurse aide, and home health aide are certified through the Oklahoma State Department of Health (OSDH). As of March 20, 2006, there were 71,473 individuals certified by OSDH, with many holding more than one certification. However, data indicate that while the supply is high in number, supply is also often transitory. Surveys conducted for this report revealed 18% vacancy rates and 115% turnover rates for certified nurse aides, with similar results for certified medication aides. Such high rates likely come from three factors: jobholders continue their education and advance to careers as LPNs, RNs, or other health care

²⁵ Oklahoma Board of Nursing; FY 2004 Annual Report

²⁶ The survey included a 56% response rate from the various CareerTech programs and a 90% response rate from Oklahoma's public colleges and universities. Respondents indicated 1,365 full-time faculty, with 156 current full-time faculty openings and 80 full-time faculty retiring within 5 years.

²⁷ U.S. Department of Labor, Bureau of Labor Statistics; Occupational Employment Statistics (OES) Survey, November 2004

²⁸ Oklahoma Institute for Child Advocacy, Inc.; *Oklahoma Kids Count Factbook 2005*; p 13

Occupation	Employment	Average Hourly Wage*
Registered Nurses	23,550	\$22.43
Licensed Practical Nurses	13,260	\$14.41
Nurse Educators	710	**
Nursing Aides, Orderlies and Attendants	20,990	\$8.68
Home Health Aides	7,270	\$9.19

Table 12 - Source: U.S. Department of Labor, Bureau of Labor Statistics; Occupational Employment Statistics (OES) Survey, November 2004

* Hourly wage is based on 52 week/40 hour workweek schedules.

** Since the 52-week /40 hour workweek assumption is not uniformly applicable to nurse educators, an hourly wage for this occupational category is not available.

professions; jobholders drop out of the health care workforce after discovering that working in that environment is not what they expected; or as salaries for these occupations remain below Oklahoma's average hourly wage, workers sometimes find better paying jobs in other employment settings.

b. Allied health

Allied health professions and occupations include diagnostic and therapeutic services such as radiologic technologists, speech therapists, surgical technicians and others. Some allied health professions and occupations, like respiratory care practitioners, occupational therapists,

physical therapists, and their respective assistants, are licensed by the Oklahoma State Board of Medical Licensure and Supervision (OSBMLS). In November 2004, OSBMLS reported 659 occupational therapists were licensed in Oklahoma, with 573 active and practicing in the state. OESC reported 740 occupational therapist jobs in Oklahoma for the same time period. OESC's reported job total exceeds OSBMLS's number of licensed, active therapists practicing in the state by 167, indicating that a significant number of Oklahoma's occupational therapists work more than one job. A similar situation exists for Oklahoma's physical therapists.

While persons employed in these professions earn more than the average Oklahoma worker, wage comparisons based on a November 2004 sampling by the U.S. Department of Labor Bureau of Labor Statistics (BLS) indicate certain allied health care personnel in Oklahoma are, on average, paid less

Comparison Between Jobs Reported and Licenses Issued		
	2003	2004
Occupational Therapist		
Reported Jobs	700	740
Active Licenses Practicing in Oklahoma	588	573
Difference	112	167
Physical Therapist		
Reported Jobs	1,510	1,670
Active Licenses Practicing in Oklahoma	1,395	1,408
Difference	115	262

Table 13 - Source: U.S. Department of Labor, Bureau of Labor Statistics and Oklahoma State Board of Medical Licensure and Supervision



than their counterparts in neighboring states. This cross-state wage differential undoubtedly causes some existing and newly graduated allied health professionals to leave the state for better pay, creating a slow but steady decline in the state's allied health workforce.

The BLS survey does not take into account cost of living adjustments. However, inclusion of such adjustments does not fully account for the existing interstate wage differentials.

Figures 5 through 7 present wage comparisons between Oklahoma and the surrounding states for select allied health personnel. The BLS data represents statewide average wages and wages may be higher in isolated geographic areas or industry sub-sectors. Statewide wage differences in some cases are significant and give weight to the idea that some allied health professionals may leave Oklahoma for better pay. Additional wage comparisons may be found in Appendix 5.

Oklahoma Wages and Employment 2004 Averages for Select Occupations		
Occupation	Employment	Average Hourly Wage*
Allied Health		
Radiologic Technology		
Cardiovascular Technologists and Technicians	520	\$13.96
Diagnostic Medical Sonographers	460	\$27.37
Nuclear Medicine Technologists	220	\$26.86
Radiologists	**	**
Radiologic Technologists and Technicians	1,950	\$19.00
Ultrasound Technologists (Sonographers)	**	**
Vascular and Interventional Technologists	**	**
Medical Lab		
Medical and Clinical Laboratory Technicians	1,690	\$13.04
Medical and Clinical Laboratory Technologists	1,580	\$20.19
Occupational Therapists	740	\$29.57
Physical Therapists	1,670	\$30.58
Respiratory Therapists	1,000	\$19.53
Speech-Language Pathologists	1,370	\$25.42
Surgical Technologists	1,360	\$13.70
Health Care Support – Aides and Assistants		
Physical Therapist Assistants	1,060	\$18.77
Physical Therapist Aides	650	\$9.59
Occupational Therapist Assistants	480	\$18.17
Occupational Assistants	60	\$10.00

Table 14 - Source: U.S. Department of Labor, Bureau of Labor Statistics; Occupational Employment Statistics (OES) Survey, November 2004

* Hourly wage is based on 52 week/40 hour workweek schedules.

** Occupational data is not available for this job title.

SUPPLY

According to the BLS:

- Cardiovascular technologists and technicians in Oklahoma earn 31% less on average than they would receive in Texas or Arkansas. Oklahoma is ranked 46th in the country for pay within this occupation.
- Radiographic imagers in Oklahoma earn 27% less than they would receive in Missouri. Oklahoma is ranked 43rd in the country for pay within this occupation.
- Nuclear medical technologists in Oklahoma earn less than they would receive in Texas, New Mexico, Colorado, and Kansas. Oklahoma is ranked 24th in the country for pay within this occupation.

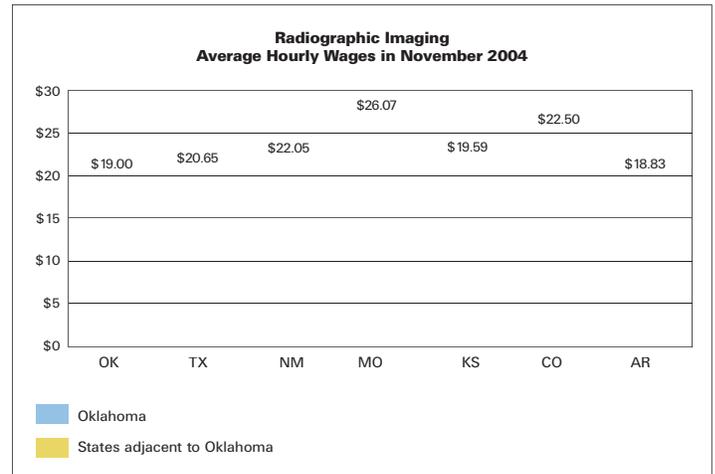


Figure 6 - Source: U.S. Dept of Labor, Bureau of Labor Statistics; Occupational Employment Statistics Survey November 2004

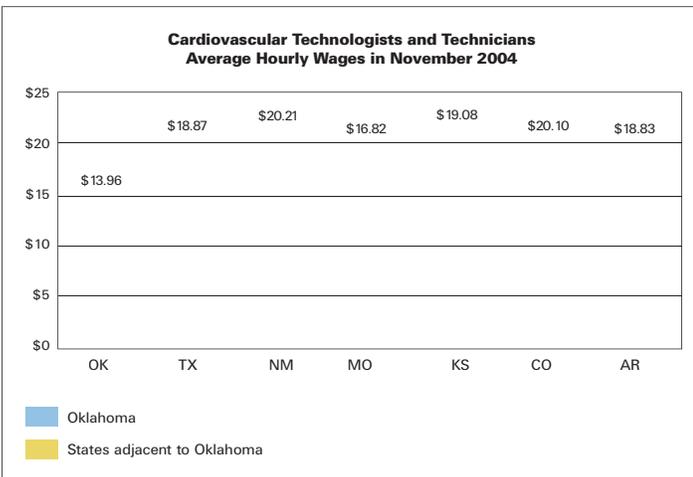


Figure 5 - Source: U.S. Dept of Labor, Bureau of Labor Statistics; Occupational Employment Statistics Survey November 2004

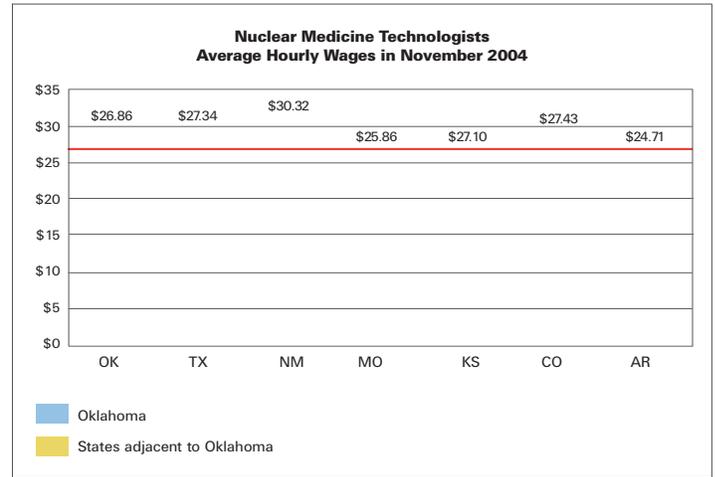


Figure 7 - Source: U.S. Dept of Labor, Bureau of Labor Statistics; Occupational Employment Statistics Survey November 2004



Despite these significant differences in wages, compensation alone does not fully explain some shortages in allied health professionals in Oklahoma. An excellent example may be found in the examination of wage differentials for occupational therapists in Oklahoma and the surrounding states. Hourly wages for occupational therapists in Texas are \$29.87, followed by Oklahoma at \$29.57 and Arkansas at \$27.53. Texas occupational therapists earn \$0.30 more per hour on average than they would in Oklahoma, and Oklahoma occupational therapists earn \$2.04 more per hour than they would in Arkansas. Oklahoma is ranked 7th in the country for wages in this profession.

2. Education system

With the educational requirements needed by the health care workforce, clearly the strength and response of today's educational pipeline plays an important role in the production of a well-trained and adequate supply of tomorrow's health care workforce. Awareness of the health industry cluster and the many career opportunities within that cluster must begin in the elementary grades. It is critical to help students understand the role of work, one's own unique interests and strengths, and basic knowledge about clusters or groups of different professions and occupations. Improving awareness in the elementary and middle schools helps increase the number of high school students interested in exploring and pursuing a health care career.

Many students in eighth and tenth grades are provided structured career exploration activities based upon interest assessments, such as the ACT Educational Planning Assessment System (EPAS) program. In the state summary of the 2004-2005 PLAN²⁹ tests scores for Oklahoma sophomores, 8,429 (22%) of approximately 38,000 students assessed indicated an interest in some type of health care career. Currently, Oklahoma is in the lower half of all U.S.

states in the percent of high school students who enter and remain in college. Thirty-five percent of first time college freshmen were enrolled in remedial courses in 2004. Efforts to strengthen the K-12 curriculum will need to continue, with an increased emphasis on math and science skills.

Oklahoma's K-12 educational system will benefit from recently increased high school graduation standards and new cooperative alliances between the state's CareerTech and higher educational systems. These alliances enable high school students to earn college credit while in high school. Further industry outreach efforts, like job shadowing and career exploration programs, give students exposure to health care career options at points when they can select academic courses that will best prepare them for the rigors of a postsecondary health care education program.

²⁹ PLAN Oklahoma Statewide profile summary, 2004-2005, ACT Inc.

Most high-demand health care professions occupations require a certification, license and/or associate degree as a minimal educational requirement. Certification is a voluntary credentialing process; licensure is a governmental credentialing process and the degree is an educational program in a public or private college or university. For example, postsecondary education is mandatory for a registered nurse, radiologic technologist, respiratory care assistant, or medical laboratory technician, while other health professions, such as a physical therapist or pharmacist, require a graduate professional-entry degree. Certain allied health professions continue to elevate the educational level for entry into the professions. For example, the Council on Accreditation of Physical Therapy Education adopted a new educational standard of a clinical doctorate for entry into the profession of physical therapy. As a result, all physical therapy education programs must now move from the current graduate Masters degree to the clinical doctorate level.

Health care industry associations and employers have developed strong partnerships with Oklahoma educational institutions to identify and meet the ongoing educational needs of new entrants and existing members of Oklahoma's health care workforce. However, some health care employers appear unaware of how to actively participate in educational programs designed to train tomorrow's health care providers and workers. Nursing home operators and home health care providers are among those who have openly expressed the desire for greater involvement in the development of specific training.

a. Workforce credentialing

Credentialing health care providers, whether nurses, allied health or support staff, may include mandatory licensure or voluntary registration or certification requirements. Oklahoma requires licensure in nursing, physical therapy, occupational therapy, and respiratory care. Some health care occupations do not require licensure in Oklahoma but may have a national credential available for graduates of accredited education programs in that occupation.

Examples of these occupations include surgical technology and medical assisting. While these occupations do not have a practice act for licensure within the state, these workers must work under the license of a supervising physician or other professional. Certification or registration is typically available through a recognized national professional credentialing agency. These agencies require applicants for examinations or national board exams to be graduates of an accredited program that meets specific education standards such as the existence of:

- A defined, specific set of entry level professional practice goals and objectives that must be achieved by all graduates
- Financial, human, and physical resources necessary to deliver the curriculum and meet those goals
- Sufficient clinical resources to provide adequate clinical experiences for each student enrolled in the accredited program.
- A curriculum that includes content to meet the professional-entry clinical outcomes defined by the profession for successful entry-level credentialing examination



b. Transferring skills from other industries

There are professions in health care that are very specialized and require a great deal of education and training, but there are also occupations or professions where a minimal amount of new or additional education and training would enable individuals to transition into a health care career. For example, an individual with good communication skills, the ability to follow instructions, a physical capacity to perform the work, and a compassion for others will be able to perform much of the work carried out by home health aides with a relatively small degree of formal education. Home health aides are expected to be in high demand over the coming years, so ease of entry will be an important factor in helping to meet that demand.

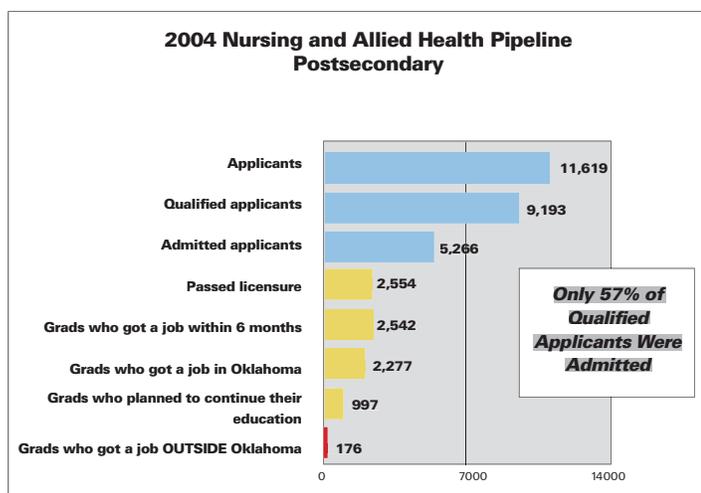


Figure 8 - Source: Oklahoma State Regents for Higher Education

3. Education pipeline capacity

Within Oklahoma's public colleges and universities, a bottleneck has developed in nursing and allied health programs. In 2004, Oklahoma's 113 postsecondary education programs in nursing and allied health had 11,619 applicants, of which 9,193 (79%) were judged to be qualified. Yet only 5,266 (57%) were actually admitted.⁵⁰ According to a 2005 survey conducted by the Oklahoma State Regents for Higher Education, only 68% of qualified applicants were admitted to bachelor of science nursing programs, with only 43% of qualified applicants admitted to associate degree nursing programs.

A significant number of qualified applicants were not admitted to Oklahoma's postsecondary nursing and allied health programs due to faculty shortages. The study found that of 1,521 health care faculty positions identified by CareerTech and Oklahoma State Regents for Higher Education (OSRHE) institutions, 156 (10%) were vacant. Some careers were more adversely affected than others. For example, RN programs reported that 17 of the 148 positions (15%) were vacant. In addition, study participants reported that 43 allied health and 37 nursing faculty plan to retire within the next five years. Consequently, Oklahoma may expect the current faculty shortage to continue. Static low faculty salaries, when compared with wages offered by other sectors of the health care industry, also have a negative effect on an educational institution's ability to attract and retain faculty. According to study respondents, lack of an adequate number of faculty in Oklahoma's postsecondary nursing and allied health programs is perhaps the biggest obstruction in the state's educational pipeline for needed health care workers.

⁵⁰ Data provided by Oklahoma State Regents for Higher Education

SUPPLY

External factors also contribute to the health care faculty shortage. For example, statewide appropriations declined in the early to mid 1990s, and additional budget cuts prompted many CareerTech and OSRHE institutions to reduce costs by not filling vacant faculty positions. The unstable nature of Oklahoma's public higher education funding and a funding mechanism for colleges and universities that is a credit-hour driven formula based on historical design, which does not transition to higher cost lower enrollment health care education programs, make it difficult to respond quickly to a new or emerging shortage.

CareerTech and OSRHE based health care education programs with high demands for graduates are constrained by a limited number of clinical facilities available to assign students for clinical practice experiences required by the curriculum as well as state and national accrediting and credentialing organizations. For example, a surgical technology student or physical therapy student must meet a number and variety of clinical cases or operative procedures prior to graduation.

Health care educators in focus groups reported that it was difficult to find facilities in rural areas that meet all accreditation requirements necessary to use as a partner for clinical education experiences. Further, they indicated that urban facilities are often perceived as operating at full

capacity since they serve as clinical sites for students from several programs at all levels of education. Capacity is based on accreditation requirements, regulatory requirements, clinical requirements or space limitations. Some health care employers/providers have suggested use of non-traditional times and methods as ways to increase student capacity in clinical education in order to move beyond current accreditation constraints.

A recent comparison between OESC's measured job growth rate for registered nurses and annual graduation rates in Oklahoma's nursing degree programs and universities demonstrated that Oklahoma colleges and universities produce more graduates annually than would be necessary to meet the expected growth needs of the health care industry. However, graduation rates do not appear sufficient to fill anticipated new jobs and ongoing nursing vacancies. A recent survey of Oklahoma Hospital Association member and non-member institutions, representing 84% of all of Oklahoma's hospital beds, revealed that 1,129 RN vacancies exist before considering OESC's future job growth projections. Existing vacancies coupled with OESC's expected job growth and the net outflow of licensed nurses as evidenced by the Oklahoma Nursing Board's reported endorsement numbers exceed Oklahoma's annual graduation rates for nursing degree programs.

Additionally, Oklahoma's education pipeline for health care personnel must exceed the state's actual need in order to compensate for a small but relevant level of supply outflow during the educational process. Students who leave health care education programs before completion of their training create vacancies in the education pipeline that cannot be filled until a class completes the progression through its



coursework. The loss of these students reduces the class size at graduation. In addition, loss of Oklahoma graduates who seek and find employment outside of the state further reduces the available workforce supply for Oklahoma's health care industry.

4. Forecast for occupational supply

With the Baby Boomer generation nearing retirement, Oklahoma must be prepared to meet their needs with enough new health care industry personnel in the pipeline, particularly for high demand professions and occupations.

Based on 2004 statewide graduation numbers, Oklahoma is not producing enough registered nurses, physical therapists, occupational therapists, respiratory therapists, surgical technicians, speech pathologists, or radiologic technology professionals to meet future demands.

Survey results provided a forecast of 2005 health care graduates and the aggregate number of graduates between 2005 and 2012, detailed in Table 15. The data provides an estimate of supply that may be used to potentially offset cumulative demand found on Table 9.

Current and Projected Supply		
Selected Graduates from OSRHE and CareerTech Health Care Programs		
Occupation	2005*	2005* thru 2012
Registered Nurses	1,368	10,944
	1,053	8,424
Allied Health	370	2,960
	130	1,040
Medical and Clinical Lab Technologists and Technicians	76	608
	25	200
Physical Therapists	29	232
	80	640
Speech-Language Pathologists	23	184
	7	56
Health Care Support - Aides and Assistants	6,337	50,696
	1,303	10,424
Certified Nurses Aides	2,444	19,552
	119	952
Dual Certification - Home Health and Nurse Aide	2,419	19,352
	11	88
Physical Therapy Assistants	41	328
	9,128	73,024

Table 15 - Source: Oklahoma State Regents for Higher Education and Oklahoma Department of Career and Technology Education * If 2005 graduation numbers were not available, most recent graduation figure is used.