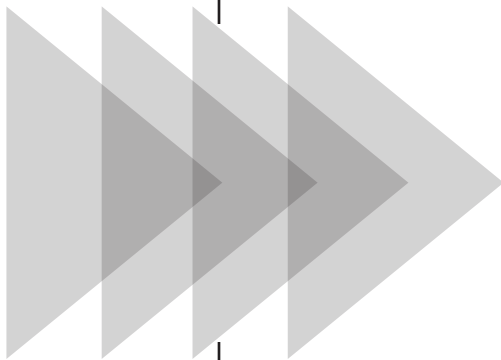


**Oregon Health Care
Workforce Needs Assessment
2006**



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Background

Recognizing the importance of a highly trained and available health care workforce, the 2005 Oregon Legislature passed Senate Bill 882 at the urging of the Governor's Healthcare Workforce Advisory Council. This bill calls upon the Oregon Employment Department (OED) to "perform a statewide and regional needs assessment for health care occupations to identify emerging occupations and occupations for which there is high demand or a shortage of workers."

As required in the Senate Bill, this assessment was conducted in consultation with representatives of the health care industry. The results of the assessment are to be used by education and other policy-makers in the development and coordination of health care education programs.

The Oregon Healthcare Workforce Institute is a newly created partnership between the private and public sectors to address the shortage of health care workers in the state. The institute's purpose is to develop a coordinated statewide response to critical needs in the health care workforce to ensure that Oregon has a highly competent, diverse health care workforce that matches the needs of Oregon businesses and citizens.

This needs assessment is the Employment Department's response to SB 882 and its contribution to the work of the institute.

In June 2006, a draft report was released for public comment. Thirty-seven comments were received, all of which were reviewed and considered by the Employment Department, and most of which were incorporated into this final report.

Employment in Oregon's Health Care Industry

Employment in Oregon's health care industry has grown steadily over the past 15 years. Ambulatory health care services (e.g., offices of physicians, dentists, and therapists; outpatient care centers; medical laboratories; home care services; ambulance services), hospitals, and nursing and residential care facilities together have added 49,600 jobs since 1990, reaching an employment level of 145,600 in 2005. The industry's demand for workers is driven in part by an aging patient population, by aging healthcare workers who must be replaced as they retire, by technological changes in the workplace, and by a growing emphasis on disease management.

By 2014, employment in Oregon's health care industry is projected to reach 178,500 (Graph 1).

The health care industry employs workers who provide direct health care services (e.g., physical therapists, nurses) and those who provide support services (e.g., janitors, human resources personnel). Health care industry employment is greater than the employment in health care occupations that provide direct care.

Health care occupations that provide direct health care services (Table 1) are among the

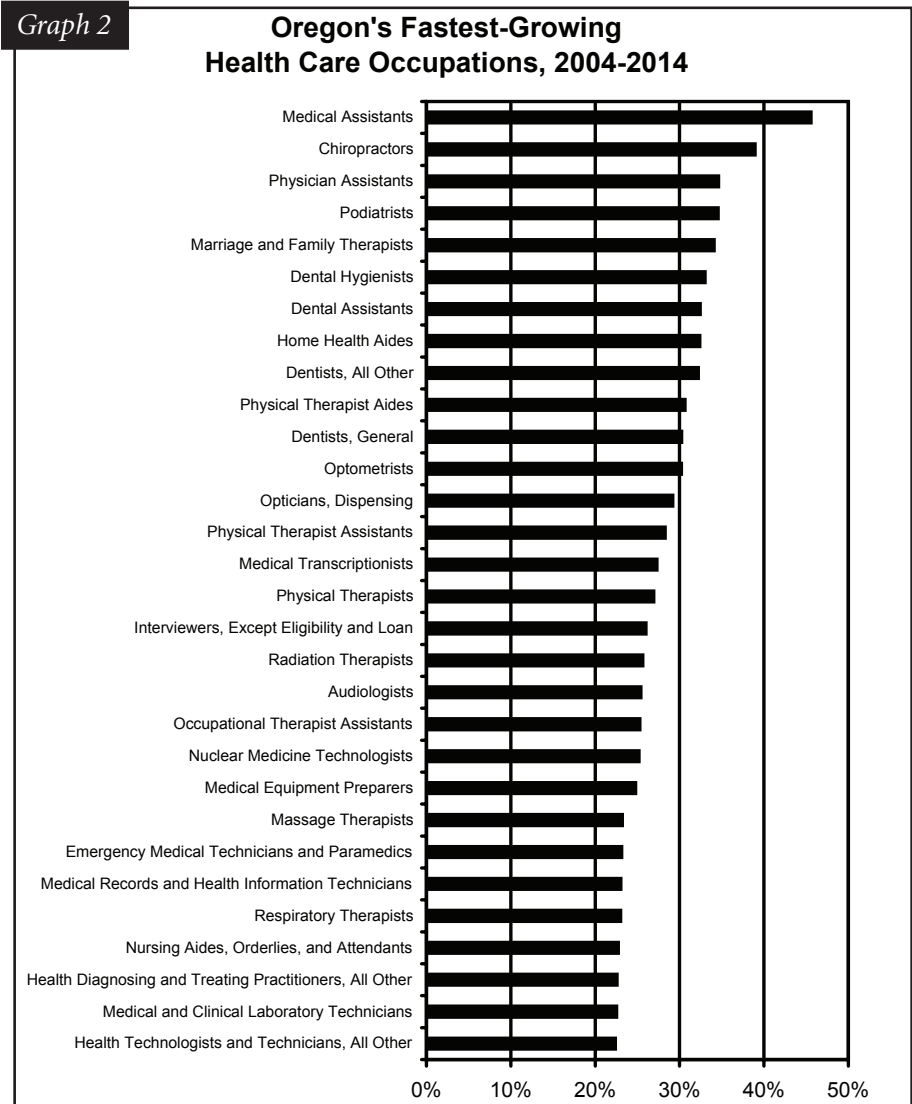
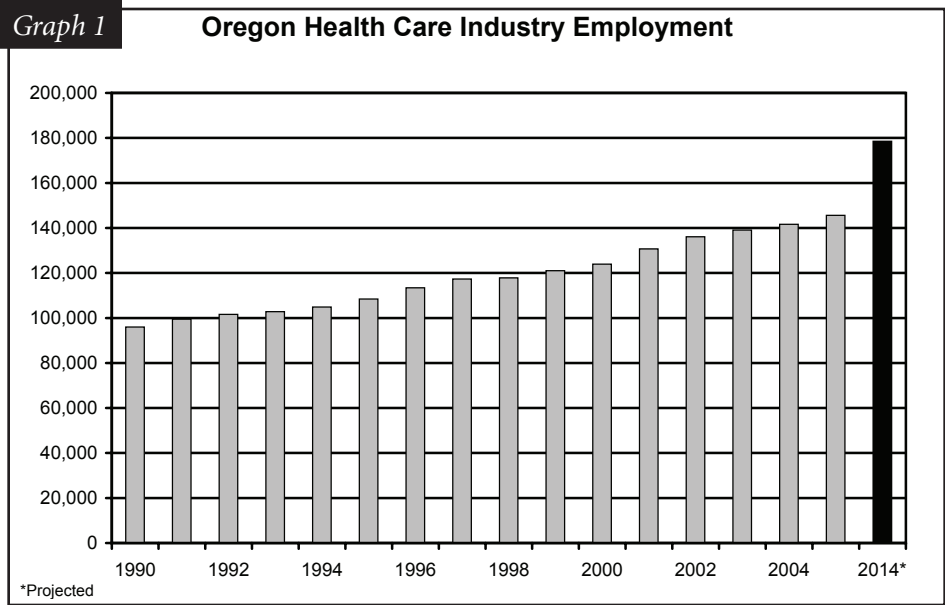


Table 1

Oregon's Health Care Occupations

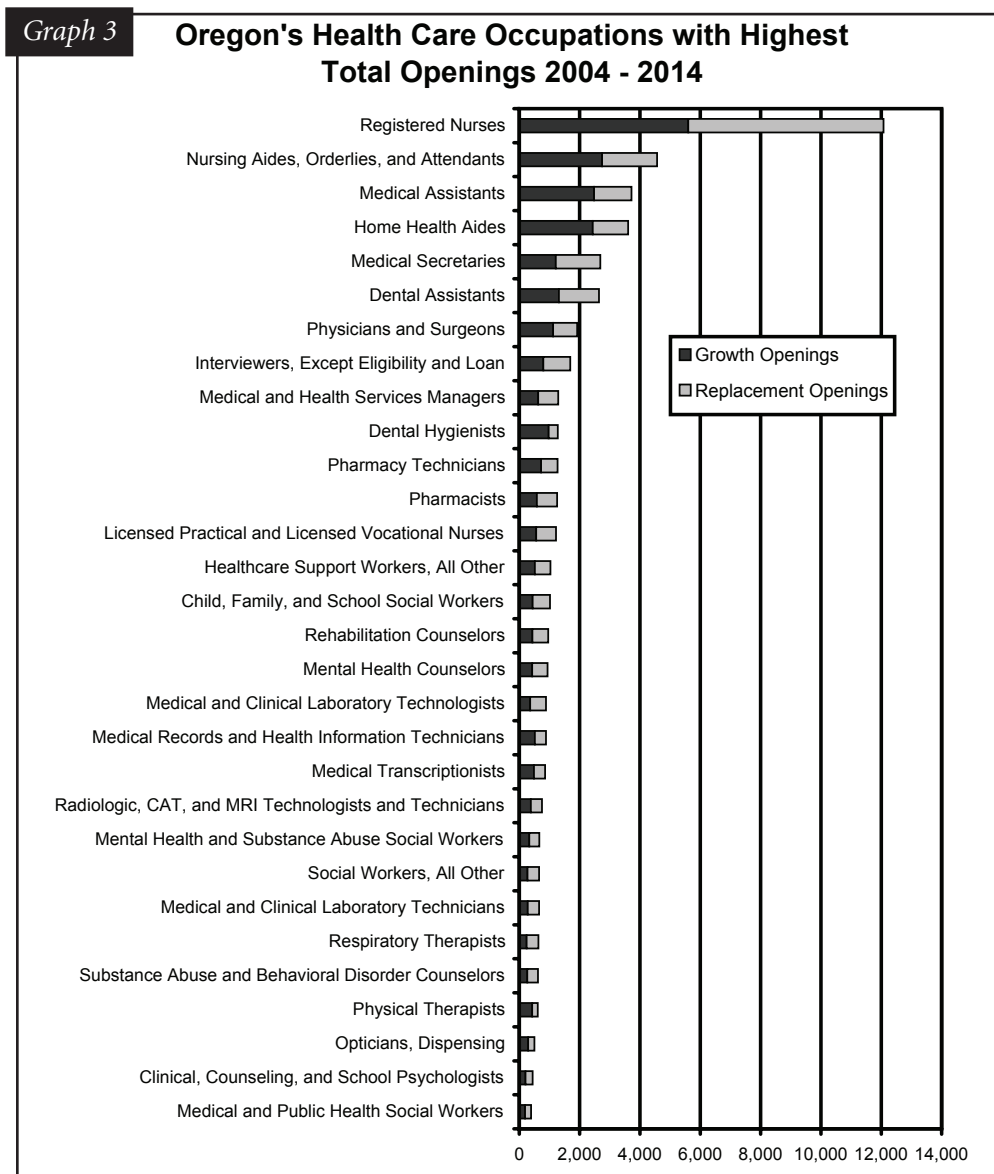
	2004 Employment	2005 Projected Employment	2014 Projected Employment	2004-14 % Growth	Annual Total Openings	Fall 2005 Vacancies	Fall 2005 Vacancy Rate	Minimum Education Required*
Medical and Health Services Managers	2,941	3,004	3,569	21.4%	130	95	3.1%	Bachelor's
Clinical, Counseling, and School Psychologists	997	1,018	1,204	20.8%	45	51	5.0%	Master's
Substance Abuse and Behavioral Disorder Counselors	1,395	1,422	1,660	19.0%	63	138	9.7%	Master's
Marriage and Family Therapists	196	203	263	34.2%	12	7	3.7%	Master's
Mental Health Counselors	1,982	2,025	2,408	21.5%	95	546	27.0%	Master's
Rehabilitation Counselors	2,055	2,098	2,487	21.0%	97	9	0.4%	Master's
Counselors, All Other	156	159	187	19.9%	7			Master's
Child, Family, and School Social Workers	3,023	3,067	3,463	14.6%	102	9	0.3%	Bachelor's
Medical and Public Health Social Workers	1,024	1,044	1,219	19.0%	40	19	1.8%	Master's
Mental Health and Substance Abuse Social Workers	1,695	1,728	2,028	19.6%	67	57	3.3%	Master's
Social Workers, All Other	2,064	2,091	2,335	13.1%	67	2	0.1%	Bachelor's
Health Educators	683	697	827	21.1%	28	2	0.3%	Bachelor's
Chiropractors	169	176	235	39.1%	11	11	6.5%	First Professional
Dentists, General	557	574	726	30.3%	28	31	5.4%	First Professional
Dentists, All Other	597	616	790	32.3%	32	21	3.4%	First Professional
Dietitians and Nutritionists	449	457	525	16.9%	20	12	2.7%	Bachelor's
Optometrists	264	272	344	30.3%	16			First Professional
Pharmacists	3,115	3,174	3,701	18.8%	126	34	1.1%	First Professional
Physicians and Surgeons	5,172	5,284	6,296	21.7%	193	253	4.8%	First Professional
Physician Assistants	530	548	714	34.7%	28	53	9.7%	Bachelor's
Podiatrists	75	78	101	34.7%	5			First Professional
Registered Nurses	26,796	27,356	32,397	20.9%	1,208	1,899	6.9%	Associate
Audiologists	145	149	182	25.5%	8	11	7.7%	Master's
Occupational Therapists	781	797	944	20.9%	29	61	7.6%	Master's
Physical Therapists	1,579	1,622	2,006	27.0%	62	346	21.4%	Master's
Radiation Therapists	167	171	210	25.7%	9	6	3.2%	Associate
Recreational Therapists	229	234	275	20.1%	11	10	4.4%	Bachelor's
Respiratory Therapists	1,064	1,089	1,310	23.1%	64	44	4.0%	Associate
Speech and Language Pathologists	501	510	591	18.0%	23	35	6.8%	Master's
Therapists, All Other	66	67	79	19.7%	3	20	30.4%	Bachelor's
Health Diagnosing and Treating Practitioners, All Other	714	730	876	22.7%	34	13	1.8%	First Professional
Medical and Clinical Laboratory Technologists	1,752	1,788	2,115	20.7%	89	56	3.1%	Bachelor's
Medical and Clinical Laboratory Technicians	1,255	1,283	1,539	22.6%	67	49	3.8%	Associate
Dental Hygienists	2,933	3,030	3,904	33.1%	129	121	4.0%	Associate
Cardiovascular Technologists and Technicians	515	526	629	22.1%	23	71	13.4%	Associate
Diagnostic Medical Sonographers and Ultrasound Technologists	304	311	371	22.0%	13	15	4.9%	Associate
Nuclear Medicine Technologists	174	178	218	25.3%	8	9	5.2%	Associate
Radiologic, CAT, and MRI Technologists and Technicians	1,768	1,806	2,149	21.5%	76	122	6.8%	Associate
Emergency Medical Technicians and Paramedics	981	1,004	1,209	23.2%	36	78	7.8%	Postsecondary
Dietetic Technicians	114	116	133	16.7%	4	10	8.9%	Moderate term OJT
Pharmacy Technicians	3,718	3,790	4,438	19.4%	127	17	0.4%	Moderate term OJT
Psychiatric Technicians	460	463	487	5.9%	9	117	25.4%	Postsecondary
Surgical Technologists	641	655	783	22.2%	24	47	7.1%	Postsecondary
Licensed Practical and Licensed Vocational Nurses	2,665	2,721	3,228	21.1%	123	249	9.1%	Postsecondary
Medical Records and Health Information Technicians	2,231	2,283	2,747	23.1%	89	90	3.9%	Associate
Opticians, Dispensing	1,017	1,047	1,315	29.3%	51	21	2.0%	Long term OJT
Orthotists and Prosthetists	61	62	72	18.0%	2			Bachelor's
Health Technologists and Technicians, All Other	832	851	1,019	22.5%	36	15	1.7%	Associate
Occupational Health and Safety Specialists	478	486	553	15.7%	19			Bachelor's
Occupational Health and Safety Technicians	319	322	348	9.1%	10			Bachelor's
Athletic Trainers	164	167	196	19.5%	7			Bachelor's
Healthcare Practitioner and Technical Workers, All Other	558	568	661	18.5%	22			Associate
Home Health Aides	7,492	7,735	9,926	32.5%	362	488	6.3%	Short term OJT
Nursing Aides, Orderlies, and Attendants	12,040	12,315	14,789	22.8%	457	1,343	10.9%	Short term OJT
Psychiatric Aides	393	398	447	13.7%	11	24	5.9%	Short term OJT
Occupational Therapist Assistants	130	133	163	25.4%	5	12	8.8%	Associate
Occupational Therapist Aides	14	14	16	14.3%	0			Moderate term OJT
Physical Therapist Assistants	412	424	529	28.4%	20	67	15.8%	Associate
Physical Therapist Aides	387	399	506	30.7%	20	15	3.8%	Moderate term OJT
Massage Therapists	309	316	381	23.3%	14	22	6.9%	Postsecondary
Dental Assistants	4,032	4,163	5,344	32.5%	265	193	4.6%	Moderate term OJT
Medical Assistants	5,429	5,677	7,908	45.7%	373	225	4.0%	Moderate term OJT
Medical Equipment Preparers	812	832	1,014	24.9%	37	23	2.8%	Short term OJT
Medical Transcriptionists	1,766	1,814	2,250	27.4%	86	39	2.2%	Postsecondary
Healthcare Support Workers, All Other	2,507	2,559	3,026	20.7%	104	87	3.4%	Short term OJT
Interviewers, Except Eligibility and Loan	3,061	3,141	3,860	26.1%	170	231	7.4%	Short term OJT
Medical Secretaries	6,893	7,014	8,102	17.5%	270	220	3.1%	Postsecondary
Medical Equipment Repairers	491	499	572	16.5%	23	4	0.7%	Postsecondary
Dental Laboratory Technicians	793	807	935	17.9%	34			Long term OJT
Medical Appliance Technicians	86	87	98	14.0%	3			Long term OJT
Ophthalmic Laboratory Technicians	522	530	597	14.4%	20	13	2.5%	Moderate term OJT
All Health Care Occupations	131,690	134,774	162,529	23.4%	5,898	7,889	5.9%	

*Most common minimum education requirement from Oregon Employment Department data. OJT is on-the-job training.

fastest growing in the state. They represent 10 of the 25 fastest-growing occupations in Oregon and will make up 13 percent of the state’s projected new jobs between 2004 and 2014.

During that 10-year period, health care employers will need to find 59,000 workers to fill the industry’s projected job openings, or an average of 5,900 workers per year. Slightly more than half of these projected openings (30,839) are attributed to growth in the industry. The rest will result from the need to fill positions vacated by individuals leaving their jobs permanently through, for example, retirement. This analysis does not include turnover – the churning that occurs as individuals move from one job to another within the same occupation – as our primary focus here is the need for new workers (i.e., newly trained individuals).

There are many ways to analyze the demand for an occupation (Graphs 2, 3, & 4). Each highlights a different set of health care occupations. Characteristics of demand include how fast an occupation is projected to grow, how many total job openings are projected (growth and replacement), the number of vacancies reported for an occupation, and its vacancy rate. All of these factors can help evaluate whether an occupation is expected to encounter shortages, but no one factor tells the entire story.



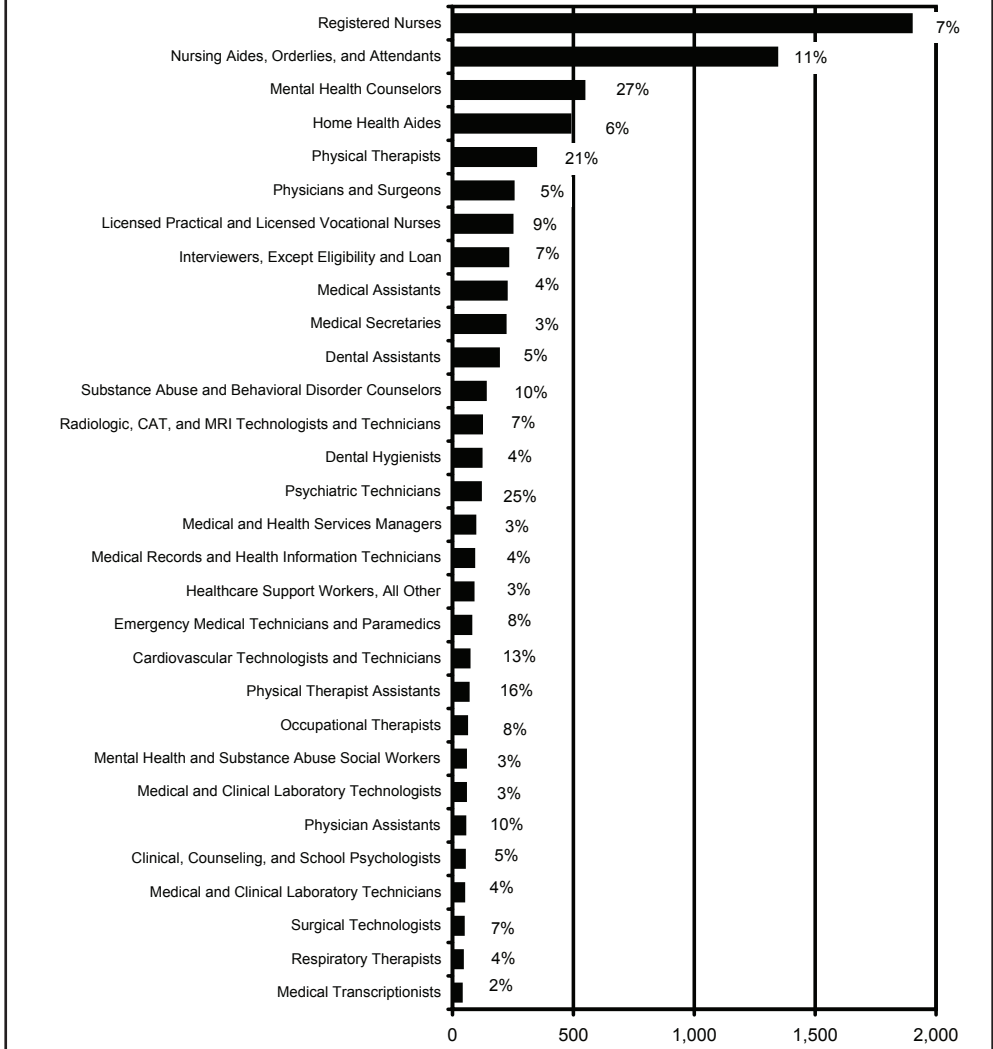
Direct care occupations with the highest growth rates include medical assistants, chiropractors, physician assistants, podiatrists, and marriage and family therapists (Graph 2). Occupations that are growing quickly are not necessarily in shortage.

Direct care occupations with the largest number of projected job openings include registered nurses, nursing aides, orderlies and attendants, medical assistants, home health aides, and medical secretaries (Graph 3). Occupations with the most job openings are also not necessarily in shortage.

Health care occupations with the largest number of vacancies, calculated from a fall 2005 Employment Department survey of health care employers,

include registered nurses, nursing aides, orderlies, and attendants, mental health counselors, home health aides, and physical therapists (Graph 4). Occupations with the highest vacancy rates (vacancies as a percentage of 2005 projected employment) include all other therapists, mental health counselors, psychiatric technicians, physical therapists, and physical therapist assistants. Occupations with large numbers of vacancies or high vacancy rates are not necessarily encountering a workforce shortage.

Graph 4 Oregon's Health Care Occupations with the Highest Number of Vacancies (with Vacancy Rates %), Fall 2005



Statewide Needs Assessment

The 2006 Oregon Health Care Workforce Needs Assessment evaluates the current and expected demand for and supply of workers in 71 health care occupations. It identifies those that are experiencing a high demand and determines whether a current or future shortage of workers is likely.

The 71 health care occupations studied (Table 1) make up 8.0 percent of Oregon's 2004 employment and 8.6 percent of the projected 2014 employment. Overall, employment in the health care occupations studied is expected to grow by 23.4 percent during this 10-year period, compared with a 15.0-percent projected growth rate for overall employment in the state. Only eight of the 71 occupations studied are growing more slowly than the statewide average of 15.0 percent.

Employment estimates and projections, along with results from a fall 2005 health care occupation vacancy survey, are used to represent the current and future demand for workers. The supply of new workers is represented by the number of students graduating from Oregon education programs. It is important to note that there are many other difficult-to-measure factors that affect the supply of health care workers. These include the work environment, pay rates, licensing and training requirements, availability of training, high job stress, and migration patterns. As a result, quantifying the gap between demand for workers and supply of workers in a particular occupation is fraught with unknowns and uncertainty.

There were **8,475** postsecondary health care program graduates in 2004-05 at Oregon's community colleges, private career schools, Job Corps, and public and private universities. There were an additional 1,064 graduates from programs that could lead only to postsecondary instruction in such health care programs as sports and fitness administration and general health and physical education.

Given the **5,898** projected average annual openings in health care occupations over the 2004-to-2014 period, the supply of workers from Oregon's educational programs may appear sufficient to cover the average annual demand for workers in the state's health care occupations. However, matching individual occupations to specific instructional programs that best match educational requirements reveals several mismatches between demand and supply. Also, the job vacancy rate and the duration of those vacancies provide additional information on the current employment surplus or deficit within an occupation.

Occupational Demand

Occupational Employment Projections and Average Annual Demand

The Oregon Employment Department surveys employers annually to collect occupational employment information. Employers are asked how many workers they have in each occupation. These survey data are used to develop employment estimates for more than 700 occupations. In addition, using a variety of factors (e.g., national employment projections, population and demographic trends), employment by occupation is projected 10 years into the future.

The Oregon Employment Department uses the Standard Occupational Code (SOC) structure to collect occupational data. This is the same structure used nationally and in each state, and allows comparison of occupational employment and projections data across the nation. As data is collected based on this structure, a limitation of the data presented in this report is the inability to break out the occupational employment and projections at finer levels of detail than the SOC structure allows.

Occupational employment data in this report are based on the Employment Department's 2004-2014 occupational estimates and projections. Average annual demand is equal to the average annual number of projected growth and replacement job openings projected for the 2004-2014 period.

Growth openings occur due to a new employer hiring workers or an existing employer expanding their workforce. Replacement openings are created when individuals permanently leave an occupation due to retirement, death, disability, or in some cases, due to an occupation's tendency to consistently have more people leaving the occupation than entering it.

Although Oregon's employment estimates are completed every two years, the most current being 2004 with projections to 2014, a projected 2005 employment level is used throughout the report to better align with other data collected in 2005. The 2005 employment cited is equal to the 2004 occupational employment plus one year's average annual growth for the 2004-2014 projections period.

Vacancy Survey

In November 2005, the Employment Department conducted a health care occupations job vacancy survey to determine the number of current vacancies in 71 health care occupations and to collect information regarding those vacancies. The department surveyed 1,434 employers in the health care industry (hospitals, ambulatory care, and nursing and residential care). Of those employers, 806 (56%) responded, including 614 ambulatory health care services employers, 38 hospitals, and 154 nursing and residential care facilities (Table 2). This surpassed the 50 percent response rate necessary for statistically reliable results.

Table 2

Health Care Job Vacancy Survey Sample Summary

	Total Firms	Sampled	Surveys Returned	Response Rate
Ambulatory Health Care Services	6,166	1,041	614	59%
Hospitals	86	63	38	60%
Nursing and Residential Care Facilities	1,731	330	154	47%
	7,983	1,434	806	56%

All 74 of Oregon's educational institutions offering programs during the 2003-04 year related to the 71 health care occupations were surveyed as well, to gain a picture of vacancies for health care instructors in the state. Over 90 percent of educational institutions surveyed responded (67 institutions).

Of the health care employers who responded to the job vacancy survey, 30 percent reported current job vacancies at their place of business. Of the 67 educational institutions that provided data, 39 percent reported vacancies in health care related instructional positions. Vacancies were coded into the 71 health care occupations in the Standard Occupational Classification (SOC) system, either by respondents or by Employment Department analysts.

Employers reported 7,889 job openings in health care occupations – an overall 5.9 percent vacancy rate for the 71 health care occupations studied.

Job vacancies exist for many reasons, and do not necessarily point to workforce shortages. Vacancies are always present at some level for every occupation. In times of economic growth, higher levels of vacan-

cies can be the result of a tightening labor market, while it can be expected that there will be lower levels of vacancies when the economy is contracting. Turnover is another cause of vacancies, and the reasons for and magnitude of turnover varies between occupations. For occupations that are emerging or on the cutting edge of technology, vacancies may exist (and persist) because certain skills preferred by employers are not widely held. Finally, workforce shortages – the lack of qualified, skilled applicants in the labor market – can be a cause of vacancies.

Educational Supply

Supply of Program Graduates

Most of the health care occupations studied require some level of postsecondary education. Training programs exist in the state for the majority of these occupations. Many programs, however, have limited capacity or are not training for the education levels that employers mentioned requiring when reporting their vacancies. In addition, completion of a postsecondary program does not necessarily lead to employment in one particular occupation. For example, some graduates from health care programs will become instructors or administrators. There is no guarantee that graduates enter directly into Oregon's labor force upon completion. They may choose to continue their education after receiving a certificate or degree, or not seek employment. Migration, both into and out of Oregon, is a factor that impacts the supply of graduates entering Oregon's labor force, especially for out-of-state students who have a higher tendency than in-state students to leave the state after completing their education. Given these limitations, the measure of educational program completers is considered a proxy for supply, but does not account for all the factors that may impact graduates entering Oregon's workforce.

This report's supply information for community colleges and universities is from the National Center for Educational Statistics' Interpostsecondary Educational Data System (IPEDS). Private career school graduate information is from the Oregon Department of Education's Private Career School Division. Job Corps program completer data was collected from Job Corps.

Each of Oregon's educational programs located at private career schools, community colleges, universities, and Job Corps are assigned a Classification of Instructional Program (CIP) code. Program completer (supply) data is available by CIP code. Each CIP code has one or more associated Standard Occupational Classification (SOC) codes, and therefore, each educational program has one or more occupations associated with it. Supply data (program graduates by CIP) and demand data (number of new workers demanded by SOC) are difficult to compare for some occupations where there are many SOCs associated with a single CIP or many CIPs associated with a single SOC. For example, the SOC titled medical assistant corresponds to several CIPs, including 1) medical insurance coding specialist/coder, 2) medical administrative/executive assistant and medical secretary, 3) and medical office assistant/specialist. And the CIP medical insurance coding specialist/coder also crosses to two other occupations, medical secretaries and medical records and health information technicians. Therefore, individuals graduating from the medical insurance coding specialist/coder CIP could become medical assistants, medical secretaries, or medical records and health information technicians. At the same time, graduates in other programs related to medical assistants could become medical assistants, or move into other related occupations. The relationship between occupations (SOCs) and programs of training (CIPs) is complex and determining the supply of graduates moving into an occupation can be problematic.

Education Pipeline

Another source of information regarding occupational supply is the size of the education pipeline – i.e., the number of individuals currently in training – for each occupation. As with the data on the supply of program graduates, education pipeline data is available from multiple sources. Each source collects the information under different reporting requirements, and therefore the data collected from institutions is not consistent. In addition, due to a number of unknowns about the relationship between the pipeline and completion data, the current pipeline data are not useful for quantifying future occupational supply. Even accurate data regarding the number of students enrolled in each health care related education program would need to be adjusted for dropouts and those changing majors. Without further research over time, it is impossible to know the size of an education pipeline that will lead to a certain number of graduates. In order to have reliable education pipeline data useful for this analysis, it would be necessary to improve data collection methods and reporting consistency, and conduct further research to examine the relationship between education pipeline and program completers. This will be a topic of discussion for the Health Care Workforce Institute.

In this report, known changes to the education pipeline for specific occupations are mentioned where analysts knew of their existence through direct institution contacts. That is, if a school has significantly altered its enrollment levels in a particular program in recent months, this information was included in the analysis whenever possible.

Health Care Regions

Regional analysis in this report is based on six health care regions (Table 3) specifically designated for the purpose of analyzing the health care workforce and possible health care worker shortages.

Table 3

Health Care Region	Counties
NW Oregon, including Portland Metro area	Clatsop, Columbia, Tillamook, Multnomah, Washington, Clackamas
Willamette Valley	Marion, Polk, Yamhill, Benton, Lincoln, Linn, Lane
Southwest Oregon	Douglas, Coos, Curry, Jackson, Josephine
Central Oregon	Crook, Deschutes, Jefferson, Klamath, Lake
Columbia Gorge	Gilliam, Hood River, Sherman, Wasco, Wheeler, Morrow, Umatilla
Eastern Oregon	Baker, Union, Wallowa, Grant, Harney, Malheur

Occupational Analysis

There are 716 SOCs used in Oregon. Of these, 71 are health care occupations. The 71 health care occupations include 8 residual 'all other' categories in which small occupations are grouped when they do not fit into other more detailed occupation categories available. Since these eight are not specific occupations, they are left out of the occupational analysis that identifies workforce shortages.

Health care faculty for all disciplines are grouped into a single SOC, Postsecondary Teachers. Therefore, specific demand data is not collected by the Oregon Employment Department.

Each of the 63 specific health care occupations was initially analyzed using a ranking system based on 1) vacancy rates reported in the employer vacancy survey, 2) length of time vacancies were open, and 3) the gap between annual supply of program completers and the projected average annual demand. Nineteen occupations with the lowest rankings (indicating they had few vacancies, vacancies were not open for significant periods of time, and/or the gap between openings and graduates was not significant) were not analyzed further.

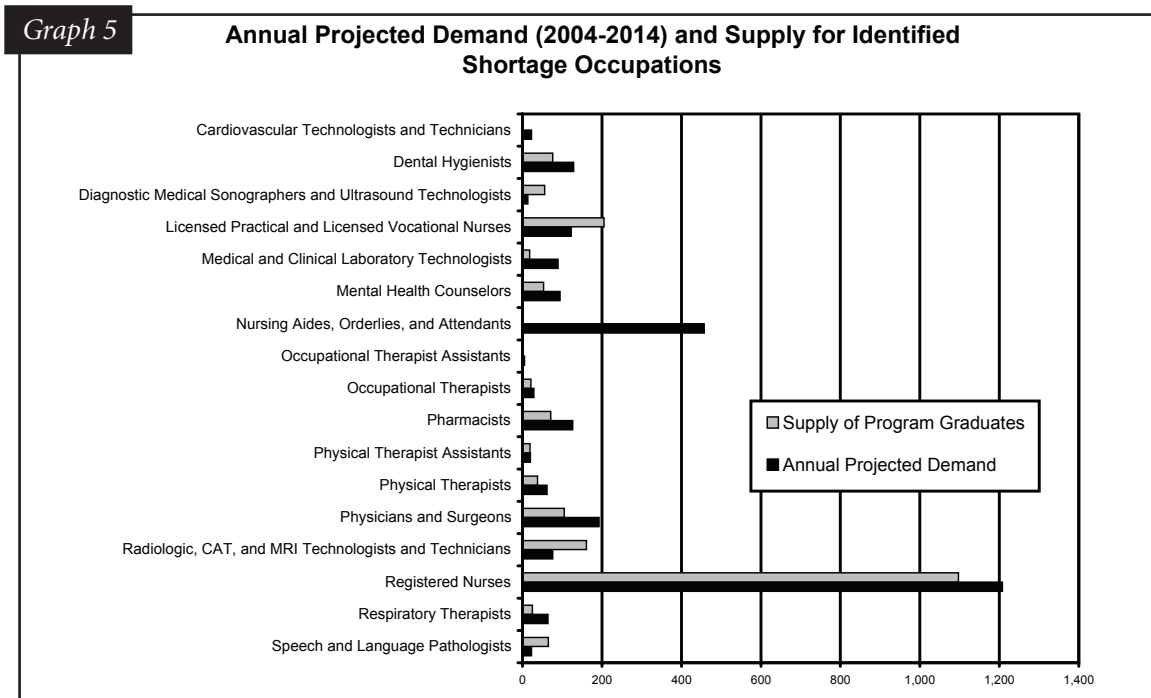
Forty-four occupations with the highest rankings were analyzed to determine if a shortage exists, using a combination of the factors listed below. Because the labor market for each occupation is unique, the weight given each factor for each occupation varied, based on analyst judgment.

In determining workforce shortages, analysts considered the following:

- The size of the occupation in 2004 and the average annual projected openings for 2004-2014.
- Oregon's current 2004-2005 educational program completers as reported by institutions to IPEDS, Private Career Schools, and Job Corps. Additional program information was collected by contacting educational institutions directly.
- The award levels (e.g., associate degree, bachelor degree) of Oregon graduates in programs related to health care occupations. This relationship is based primarily on the federal program-to-occupation (CIP to SOC) crosswalk.
- Additional information, for some occupations, collected from educational faculty and department heads regarding program capacity, pipeline, enrollment, graduate rates, employment situation of recent graduates and shortages.
- The ratio and numerical difference of the projected average annual demand to program graduates.
- The number of vacancies reported for the occupation on the employer vacancy survey.
- The occupational vacancy rate from the employer vacancy survey.
- The length of time vacancies reported on the employer vacancy survey were open.
- The ratio of vacancies to projected average annual openings.

- The minimum education level generally required – according to the Oregon Employment Department – compared with the education level required for vacant positions in the vacancy survey and in Oregon Employment Department job listings.
- The share of employers noting their vacancies being difficult to fill on the vacancy survey, and the reasons cited for the difficulty.
- Occupation-specific employer comments regarding the vacancy survey question, “Are there any technical skills or certifications for which you would like to see training offered in order to maintain or grow your business?”
- Regional differences between where the employment lies and where the vacancies were reported.
- The share of self-employment by occupation at the national level.
- Other surveys and reports, including those from Oregon Health Science University’s (OHSU) Area Health Education Centers, the Oregon Association of Hospitals and Health Systems, the Oregon Center for Nursing, the Oregon Health Career Center, and the U.S. Department of Health and Human Services Administration’s Health Resources and Services Administration.
- Various news reports, press releases, and publications of professional organizations.
- Information from iMatchSkills job orders placed with the Oregon Employment Department.
- Occupational licensing requirements and the number of licenses held in the state.

Of the 44 health care occupations analyzed, 17 were identified as shortage occupations. Average annual demand and supply of program graduates for the 17 shortage occupations appears in Graph 5, and the analysis for individual occupations follows.



**Shortage Analysis
for Individual Occupations**

Cardiovascular Technologists and Technicians

Description: Conducts tests on pulmonary or cardiovascular systems of patients for diagnostic purposes. May conduct or assist in electrocardiograms, cardiac catheterizations, pulmonary-functions, lung capacity, and similar tests. Includes vascular technologists.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 114 new cardiovascular technologists and technicians due to industry growth and 111 due to replacement needs. This equates to an average of 23 new cardiovascular technologists and technicians per year.

Supply: There are currently no cardiovascular technologist or technician programs in Oregon, and therefore no program completers. Some individuals with radiologic technology training fill cardiovascular technologist positions.

Demand-Supply Gap: The estimated gap between the average annual demand of 23 and the annual supply (represented by the 2004-05 reported completers) is 23, given that there are no educational programs in the state.

Vacancy: Employers reported 71 vacancies statewide for a 13 percent vacancy rate. Two percent of vacancies required postsecondary education and 40 percent required an associate degree. Thirty-nine percent required previous experience and 5 percent had been open for 60+ days or were open continuously.

Pipeline: Education pipeline data do not exist due to the lack of training programs for this occupation.

Regional:

Table 4

	Cardiovascular Technologists and Technicians						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	526	233	175	78	63	12	7
Annual Projected Demand ¹	23	8	8	4	3	1	0
Supply of 2004-05 Program Graduates ²	0						
Supply/Demand Gap	(23)						
Employer-Reported Vacancies	71	65	2	2	1	0	0
Vacancy Rate	13%	28%	1%	3%	2%	N/A	N/A
Vacancies Open 60+ Days	5%	6%	0%	0%	0%	N/A	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

² No educational programs exist in Oregon.

Other information: This occupational category includes both technologists and technicians. The educational requirements of technologist positions (a certificate or associate degree) are higher than that of technicians.

Given the lack of Oregon training programs, the demand for cardiovascular technologists and technicians is not being met with in-state program graduates.

Dental Hygienists

Description: Cleans teeth and examines oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop X-rays, or apply fluoride or sealants.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 971 new dental hygienists due to industry growth and 316 due to replacement needs. This equates to an average of 129 new dental hygienists per year.

Supply: During the 2004-05 program year, there were 76 graduates reported from dental hygiene programs in Oregon.

Table 5

Dental Hygienist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Lane Community College	Eugene	Associate	17
Mt Hood Community College	Gresham	Associate	16
Oregon Institute of Technology	Klamath Falls	Associate	1
Oregon Institute of Technology	Klamath Falls	Bachelor's	23
Portland Community College	Portland	Associate	19
			76

¹ Program completers for dental hygienists also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 129 and the annual supply (represented by the 2004-05 reported completers) is 53.

Vacancy: Employers reported 121 vacancies statewide for a 4 percent vacancy rate. Twenty-nine percent of vacancies required postsecondary education, 35 percent required an associate degree, and 36 percent required a bachelor's degree. Eighty-two percent required previous experience and 29 percent had been open for 60+ days or were open continuously.

Forty-four vacant positions reported on the vacancy survey required a bachelor's degree while only 23 bachelor's level students graduated in 2004-2005.

Pipeline: Oregon Institute of Technology is offering an associate degree dental hygiene program in conjunction with Oregon Dental Service in La Grande. The program started in Fall 2005 with a capacity of 27 students. Graduates may go on to complete a bachelor's degree program through OIT's on-line degree completion program. Pacific University has begun a bachelor's degree program with a capacity of 32 students.

Regional:**Table 6**

	Dental Hygienists						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	3,030	1,039	617	243	130	53	40
Annual Projected Demand ¹	129	42	26	11	5	2	2
Supply of 2004-05 Program Graduates	76						
Supply/Demand Gap	(53)						
Employer-Reported Vacancies	121	46	0	31	35	9	0
Vacancy Rate	4%	4%	N/A	13%	27%	17%	N/A
Vacancies Open 60+ Days	29%	50%	N/A	0%	33%	0%	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: A large share (82%) of vacancies require previous experience, which could be a barrier to entry. Many hygienists work part-time. All job vacancies reported by employers were for part-time work, ranging from eight to 32 hours per week.

A shortage of dental hygienists appears to exist, with a focus in Southwest Oregon, Central Oregon, and the Columbia Gorge. Additional research into new programs that may be under development and expansion plans for existing programs would be valuable.

Diagnostic Medical Sonographers and Ultrasound Technologists

Description: Produces ultrasonic recordings of internal organs for use by physicians.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 67 new diagnostic medical sonographers and ultrasound technologists due to industry growth and 66 due to replacement needs. This equates to an average of 13 new diagnostic medical sonographers and ultrasound technologists per year.

Supply: During the 2004-05 program year, there were 56 graduates reported from diagnostic medical sonographer and ultrasound technologist programs in Oregon.

Table 7

Diagnostic Medical Sonographer and Ultrasound Technologist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers²
Oregon Institute of Technology	Klamath Falls	Bachelor's	48
Portland Community College	Portland	Associate	8
			56

¹ Program completers for diagnostic medical sonographers and ultrasound technologists also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: Supply (represented by the 2004-05 reported completers) appears to exceed average annual demand. However, the impact of the elimination of a training program at Portland Community College (PCC) in fall 2005 has not yet been fully realized in the workforce. Even without the PCC graduates, supply appears adequate. However, without PCC, there are no programs leading to an associate degree – the most common education level demanded by employers.

Vacancy: Employers reported 15 vacancies statewide for a 5 percent vacancy rate. Nineteen percent of the vacancies required postsecondary education, 44 percent required an associate degree, and 12 percent required a bachelor's degree. Sixty-four percent required previous experience and 33 percent had been open for 60+ days or were open continuously.

Pipeline: PCC is no longer offering an associate degree in sonography.

Regional:

Table 8

Diagnostic Medical Sonographers and Ultrasound Technologists

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	311	159	90	45	20	13	9
Annual Projected Demand ¹	13	6	4	2	1	0	0
Supply of 2004-05 Program Graduates	56						
Supply/Demand Gap	43						
Employer-Reported Vacancies	15	11	2	0	1	0	1
Vacancy Rate	5%	7%	2%	N/A	7%	N/A	13%
Vacancies Open 60+ Days	33%	33%	0%	N/A	100%	N/A	0%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Eighteen of the 22 hospitals surveyed by the Oregon Association of Hospitals and Healthcare Systems in 2005 indicated recruitment is somewhat or very difficult for this occupation.

With the loss of the only associate degree program in the state in the fall of 2005, there are no Oregon training programs leading to an associate degree. Postsecondary education or an associate degree was required for 63 percent of vacancies. A shortage likely exists for associate degree completers in this occupation, and may increase due to the closing of PCC's training program.

Licensed Practical Nurses

Description: Cares for ill, injured, convalescent, or disabled persons in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 563 new licensed practical nurses due to industry growth and 662 due to replacement needs. This equates to an average of 123 new licensed practical nurses per year.

Supply: During the 2004-05 program year, there were 205 graduates reported from licensed practical nurse programs in Oregon.

Table 9

Licensed Practical Nurse 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Blue Mountain Community College	Pendleton	1-2 Year Certificate	24
Central Oregon Community College	Bend	1-2 Year Certificate	53
Chemeketa Community College	Salem	1-2 Year Certificate	63
Clackamas Community College	Oregon City	1-2 Year Certificate	None Reported
Clatsop Community College	Astoria	1-2 Year Certificate	22
Columbia Gorge Community College	The Dalles	1-2 Year Certificate	19
Lane Community College	Eugene	1-2 Year Certificate	68
Oregon Coast Community College	Newport	1-2 Year Certificate	1
Rogue Community College	Grants Pass	1-2 Year Certificate	14
Treasure Valley Community College	Ontario	2-4 Year Certificate	27
Umpqua Community College	Roseburg	1-2 Year Certificate	54
			205

¹ Program completers for licensed practical nurses relate only to this occupation.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: Based only on the number of graduates completing programs, supply (represented by the 2004-05 reported completers) exceeds average annual demand.

Vacancy: Employers reported 249 vacancies statewide for a 9 percent vacancy rate. Sixty-six percent of the vacancies required postsecondary education, and 25 percent required an associate degree. Fifty-nine percent required previous experience and 64 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:**Table 10**

	Licensed Practical Nurses						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	2,721	950	913	465	199	93	82
Annual Projected Demand ¹	123	42	45	22	10	4	3
Supply of 2004-05 Program Graduates	205						
Supply/Demand Gap	82						
Employer-Reported Vacancies	249	83	111	27	1	0	26
Vacancy Rate	9%	9%	12%	6%	1%	N/A	31%
Vacancies Open 60+ Days	64%	39%	80%	76%	0%	N/A	67%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: An above-average vacancy rate of 9 percent, coupled with the extended period employers reported their vacancies open, indicates employers are having difficulty filling licensed practical nurse (LPN) positions.

Although there were 205 LPN program completers in 2004-05, many graduates continued on to registered nurse training rather than entering the workforce. Three LPN programs in Oregon are stand-alone programs that award a certificate and eight associate degree programs have a practical nurse curriculum during the first year, which allows students to take the LPN exam upon completion.

Previous experience was required for 59 percent of vacancies, which could be a barrier to graduates who haven't worked in health care. On the vacancy survey, several employers cited LPN shortages as a reason their openings were difficult to fill.

Employers suggested that more flexibility in nursing programs would help working nurse aides to become LPNs.

With many students moving to an RN program after receiving their LPN certification, and the above-average vacancy rate reported for LPNs, there do not appear to be enough graduates moving into and staying in LPN positions to meet demand for workers in the state.

Medical and Clinical Laboratory Technologists

Description: Performs complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 363 new medical and clinical laboratory technologists due to industry growth and 529 due to replacement needs. This equates to an average of 89 new medical and clinical laboratory technologists per year.

Supply: During the 2004-05 program year, there were 18 graduates reported from medical and clinical laboratory technologists programs in Oregon.

Table 11

Medical and Clinical Laboratory Technologist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Oregon Institute of Technology	Klamath Falls	Bachelor's	18
			18

¹Some program completers (18) for medical and clinical laboratory technologists also relate to postsecondary instructors.

²Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 89 and the annual supply (represented by the 2004-05 reported completers) is 71.

Vacancy: Employers reported 56 vacancies statewide for a 3 percent vacancy rate. Six percent of vacancies required postsecondary education, 12 percent required an associate degree, 42 percent required a bachelor's degree, and 3 percent required a graduate degree. Fifty-eight percent required previous experience and 22 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 12

Medical and Clinical Laboratory Technologists

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	1,788	995	440	255	130	62	63
Annual Projected Demand ¹	89	45	25	14	7	3	3
Supply of 2004-05 Program Graduates	18						
Supply/Demand Gap	(71)						
Employer-Reported Vacancies	56	48	5	0	3	0	0
Vacancy Rate	3%	5%	1%	N/A	2%	N/A	N/A
Vacancies Open 60+ Days	22%	23%	0%	N/A	50%	N/A	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: None

At the current level of graduates, Oregon's educational institutions do not appear to be producing enough medical and clinical laboratory technologists to meet demands. Further data must be collected on new or expanding programs.

Mental Health Counselors

Description: Counsels with emphasis on prevention. Works with individuals and groups to promote optimum mental health. May help individuals deal with addictions and substance abuse; family, parenting, and marital problems; suicide; stress management; problems with self-esteem; and issues associated with aging and mental and emotional health. Excludes Social Workers, Psychiatrists, and Psychologists.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 426 new mental health counselors due to industry growth and 519 due to replacement needs. This equates to an average of 95 new mental health counselors per year.

Supply: During the 2004-05 program year, there were 53 graduates reported from mental health counseling programs in Oregon.

Table 13

Mental Health Counselor 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Central Oregon Community College	Bend	1-2 Year Certificate	1
Chemeketa Community College	Salem	1-2 Year Certificate	None Reported
Chemeketa Community College	Salem	Associate	4
Northwest Christian College	Eugene	Masters	9
Portland Community College	Portland	Less Than 1 Year Certificate	4
Portland Community College	Portland	Associate	9
Portland State University	Portland	Post Bachelor's	5
Rogue Community College	Grants Pass	Associate	6
Southwestern Oregon Community College	Coos Bay	Associate	2
George Fox University	Newberg	Post Master's	None Reported
Mt Hood Community College	Gresham	1-2 Year Certificate	0
Mt Hood Community College	Gresham	Associate	13
			53

¹ Some program completers (31) for mental health counselors also relate to substance abuse and behavioral disorder counselors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 95 and the annual supply (represented by the 2004-05 reported completers) is 42.

Vacancy: Employers reported 546 vacancies statewide for a 27 percent vacancy rate. Forty-six percent of vacancies required a bachelor's degree and 20 percent required a graduate degree. Seventy-seven percent required previous experience and 58 percent of vacant positions had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 14

	Mental Health Counselors						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	2,025	981	755	267	117	58	71
Annual Projected Demand ¹	95	49	37	13	6	3	3
Supply of 2004-05 Program Graduates	53						
Supply/Demand Gap	(42)						
Employer-Reported Vacancies	546	454	76	0	0	0	17
Vacancy Rate	27%	46%	10%	N/A	N/A	N/A	24%
Vacancies Open 60+ Days	58%	53%	100%	N/A	N/A	N/A	0%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: This occupation has one of the highest vacancy rates among health care occupations. Employers reported nearly two-thirds of vacant positions required a bachelor's degree or higher, yet the most common award level for mental health counseling programs in the state is an associate degree. In fact, all but 14 of the 53 students completing related programs in 2004-05 received either certificates or associate degrees. The high number of vacancies and the extended length of time most vacancies are open is likely impacted by the requirement of previous work experience for 77 percent of vacant jobs.

Given the high vacancy rate, the low number of program graduates at the level demanded by employers, and the length of time most vacancies are open, it appears that Oregon educational institutions are not producing enough mental health counselors to meet demands.

Nursing Aides, Orderlies, and Attendants (CNAs)

Description: Provides basic patient care under direction of nursing staff. Performs duties, such as feed, bathe, dress, groom, or move patients, or change linens. Excludes Home Health Aides and Psychiatric Aides.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 2,749 new CNAs due to industry growth and 1,825 due to replacement needs. This equates to an average of 457 new CNAs per year.

Supply: The number of completers from CNA programs is not available. According to the Oregon State Board of Nursing (OSBN), there were a total of 3,002 new certificates awarded in 2005. It is not known how many of these certificate recipients are working, and of those who are working, whether they are CNAs, home health aides, or in other occupations.

Demand-Supply Gap: It is not possible to compute a gap given the lack of program completer data.

Vacancy: Employers reported 1,343 vacancies statewide for an 11 percent vacancy rate. Ten percent of the vacancies did not have educational requirements, 14 percent required a high school diploma, 7 percent required on-the-job training, and 57 percent required postsecondary education. Thirty percent required previous experience and 42 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 15

Nursing Aides, Orderlies, and Attendants

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	12,315	4,594	4,074	1,947	684	524	381
Annual Projected Demand ¹	457	173	158	78	28	19	12
Supply of 2004-05 Program Graduates	NA						
Supply/Demand Gap	NA						
Employer-Reported Vacancies	1,343	460	478	104	108	13	181
Vacancy Rate	11%	10%	12%	5%	16%	2%	47%
Vacancies Open 60+ Days	42%	23%	40%	27%	46%	100%	98%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: This occupation is plagued with turnover, probably more than any other health care occupation. A National Health Resources and Services Administration report on nursing aides, home health aides and related health care occupations cites numerous reasons for vacancies and high turnover, including:

- nature of the job (difficult work, low pay and benefits),
- lack of respect from management (“supervision nearly nonexistent”, aide has significant knowledge and insight but is “often ignored” and “treated as invisible by the rest of the health care system”),

- better job alternatives (many entry-level positions in fast-food and retail offer jobs that are safer and less demanding than direct care, and they pay as well or better), and
- baby boom demographics (number requiring care is growing, population that usually serves this need – women between the ages of 25 and 54 – is not).

There are currently 18,000 CNAs in Oregon according to OSBN, far exceeding the 12,000 CNA jobs in 2004. But some of these may not be working at all or may be working in another occupation, such as home health aides. Chronic vacancies and turnover rates facing employers are not necessarily due to the lack of available training programs, but other factors specific to this occupation.

Three related occupations, psychiatric aide, psychiatric technician, and home health aides, were determined not to be shortage occupations.

Stabilizing the CNA workforce appears to have more to do with such environmental factors as addressing retention and turnover issues than increasing the availability of certified workers.

Occupational Therapist Assistants

Description: Assists occupational therapists in providing occupational therapy treatments and procedures. May, in accordance with State laws, assist in development of treatment plans, carry out routine functions, direct activity programs, and document the progress of treatments. Generally requires formal training.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 33 new occupational therapist assistants due to industry growth and 19 due to replacement needs. This equates to an average of five new occupational therapist assistants per year.

Supply: There are currently no occupational therapist assistant programs in Oregon, and therefore no program completers.

Demand-Supply Gap: The estimated gap between the average annual demand of five and the annual supply (represented by the 2004-05 reported completers) is five, given that there are no educational programs in the state.

Vacancy: Employers reported 12 vacancies statewide for a 9 percent vacancy rate. Eighty-four percent of vacancies required postsecondary education and 16 percent required an associate degree. Eighty-four percent required previous experience and 84 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 16

Occupational Therapist Assistants

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	133	122	29	7	6	8	4
Annual Projected Demand ¹	5	5	1	0	0	0	0
Supply of 2004-05 Program Graduates ²	0						
Supply/Demand Gap	(5)						
Employer-Reported Vacancies	12	2	10	0	0	0	0
Vacancy Rate	9%	2%	35%	N/A	N/A	N/A	N/A
Vacancies Open 60+ Days	84%	0%	100%	N/A	N/A	N/A	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

² No educational programs exist in Oregon.

Other information: Employers report a higher-than-average vacancy rate for occupational therapy assistants, which is one of the smallest health care occupations. Vacancies are highly concentrated in the Willamette Valley, which has 84 percent of the state's vacancies, far exceeding the area's 16 percent share of employment.

Without training programs in Oregon, the state is not producing enough occupational therapy assistants to meet demands. Creating a supply of trained occupational therapy assistants would help meet the state's current and future demand for these workers.

Occupational Therapists

Description: Assesses, plans, organizes, and participates in rehabilitative programs that help restore vocational, homemaking, and daily living skills, as well as general independence, to disabled persons.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 163 new occupational therapists due to industry growth and 122 due to replacement needs. This equates to an average of 29 new occupational therapists per year.

Supply: During the 2004-05 program year, there were 21 graduates reported from occupational therapy programs in Oregon.

Table 17

Occupational Therapist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Pacific University	Forest Grove	Bachelor's	3
Pacific University	Forest Grove	Master's	18
			21

¹ Program completers for occupational therapists also relate to postsecondary

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 29 and the annual supply (represented by the 2004-05 reported completers) is 8.

Vacancy: Employers reported 61 vacancies statewide for an 8 percent vacancy rate. Twenty-four percent of the vacancies required a bachelor's degree and 29 percent required a graduate degree. Forty-one percent required previous experience and 68 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 18

Occupational Therapists

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	797	538	209	75	60	30	12
Annual Projected Demand ¹	29	19	8	3	3	1	1
Supply of 2004-05 Program Graduates	21						
Supply/Demand Gap	(8)						
Employer-Reported Vacancies	61	45	13	2	0	0	1
Vacancy Rate	8%	8%	6%	3%	N/A	N/A	10%
Vacancies Open 60+ Days	68%	67%	63%	100%	N/A	N/A	100%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Demand for occupational therapists may be slightly understated due to self-employment, which averages 6 percent nationally. With 1,116 occupational therapists licensed in Oregon in January 2006, there appear to be enough trained workers to fill the 800 occupational therapy jobs in the state. However, employers noted an above-average vacancy rate (8%) among occupational therapy positions, with a majority of the vacancies open for a long period of time.

The Oregon Occupational Therapy Licensing Board often receives comments regarding the need for therapists, especially on the coast and in small cities.

At the level of graduates realized in 2004-05, Oregon's educational institutions do not appear to be producing enough occupational therapists to meet demands. The need to fill about 29 openings per year will not be met by Oregon programs if the number of graduates is not increased. Future research into new or expanding programs should be conducted.

Pharmacists

Description: Dispenses drugs prescribed by physicians and other health practitioners and provides information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 586 new pharmacists due to industry growth and 675 due to replacement needs. This equates to an average of 126 new pharmacists per year.

Supply: During the 2004-05 program year, there were 71 graduates reported from pharmacy programs in Oregon.

Table 19

Pharmacist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Oregon State University	Corvallis	First Professional	64
Oregon State University	Corvallis	Doctorate	5
Oregon State University	Corvallis	Master's	2
			71

¹ Program completers for pharmacists also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 126 and the annual supply (represented by the 2004-05 reported completers) is 55.

Vacancy: Employers reported 34 vacancies statewide for a 1 percent vacancy rate. Although the reported vacancy rate is low, the survey did not cover pharmacist employment in retail businesses, which account for at least 50 percent of total pharmacist employment. Twenty percent of the vacancies with health care employers required a bachelor's degree and 34 percent required a graduate degree. Twenty percent required previous experience and 68 percent had been open for 60+ days or were open continuously.

Pipeline: A new three-year program beginning in fall 2006 at Pacific University has 66 admitted students and will eventually increase the state's internal supply of pharmacists.

Regional:

Table 20

	Pharmacists						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	3,174	1,507	849	379	164	109	88
Annual Projected Demand ¹	126	56	33	15	8	4	4
Supply of 2004-05 Program Graduates	71						
Supply/Demand Gap	(55)						
Employer-Reported Vacancies	34	20	3	7	4	0	0
Vacancy Rate	1%	1%	0%	2%	2%	N/A	N/A
Vacancies Open 60+ Days	68%	55%	50%	100%	100%	N/A	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Several of the career satisfaction ratings reported by pharmacists working for large chain or grocery stores in the *OHSU Pharmacist Workforce 2002: A Sourcebook* indicate these workers have slightly less satisfaction with their jobs than pharmacists working in other industries. In addition to retail vacancies not captured in the survey, retail employers may be dealing with higher turnover than other pharmacist employers.

A survey of community pharmacies (not including independent pharmacies) conducted in 2006 by Wayne Kradjan, Dean and Professor, Oregon State University College of Pharmacy, indicated there were 68 current openings and 275 projected new positions or attrition over the next five years.

Current graduates from Oregon programs do not meet demand. Even with the increase in the number of graduates from Pacific University's new program, the state may continue to see a pharmacist shortage.

Physical Therapist Assistants

Description: Assists physical therapists in providing physical therapy treatments and procedures. May, in accordance with State laws, assist in the development of treatment plans, carry out routine functions, document the progress of treatment, and modify specific treatments in accordance with patient status and within the scope of treatment plans established by a physical therapist.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 117 new physical therapist assistants due to industry growth and 80 due to replacement needs. This equates to an average of 20 new physical therapist assistants per year.

Supply: During the 2004-05 program year, there were 19 graduates reported from physical therapist assistants programs in Oregon.

Table 21

Physical Therapist Assistant 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Mt Hood Community College	Gresham	Associate	19
			19

¹ Program completers for physical therapist assistants also relate to physical therapist aides.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 20 and the annual supply (represented by the 2004-05 reported completers) is 1.

Vacancy: Employers reported 67 vacancies statewide for a 16 percent vacancy rate. Fifteen percent of the vacancies required postsecondary education and 69 percent required an associate degree. Twenty-four percent required previous experience and 55 percent had been open for 60+ days or were open continuously.

Pipeline: Pipeline data are not available.

Regional:

Table 22

Physical Therapist Assistants

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	424	295	86	57	38	26	8
Annual Projected Demand ¹	20	13	4	3	2	1	1
Supply of 2004-05 Program Graduates	19						
Supply/Demand Gap	(1)						
Employer-Reported Vacancies	67	26	15	0	25	0	1
Vacancy Rate	16%	9%	17%	N/A	65%	N/A	14%
Vacancies Open 60+ Days	55%	86%	89%	N/A	0%	N/A	100%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: None

Oregon educational institutions are graduating roughly the number of students needed to meet demand. However, a high vacancy rate and the length of time vacancies are open indicate employers are having difficulty in filling positions despite the supply of graduates. Therefore, a shortage of physical therapist assistants appears to exist.

Physical Therapists

Description: Assesses, plans, organizes, and participates in rehabilitative programs that improve mobility, relieve pain, increase strength, and decrease or prevent deformity of patients suffering from disease or injury.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 427 new physical therapists due to industry growth and 192 due to replacement needs. This equates to an average of 62 new physical therapists per year

Supply: During the 2004-05 program year, there were 38 graduates reported from physical therapy programs in Oregon.

Table 23

Physical Therapist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Pacific University	Forest Grove	Doctorate	38
			38

¹ Program completers for physical therapists also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 62 and the annual supply (represented by the 2004-05 reported completers) is 24.

Vacancy: Employers reported 346 vacancies statewide for a 21 percent vacancy rate. Thirty-seven percent of the vacancies required a bachelor's degree as a minimum requirement, 42 percent required a graduate degree. Seventy-one percent required previous experience and 78 percent had been open for 60+ days or were open continuously.

Employers listed a bachelor's degree as the minimum requirement for 37 percent of the physical therapist openings, but all of Oregon's physical therapy program graduates are receiving doctoral degrees.

Employers who reported that their vacant positions were difficult to fill commonly cited a shortage of trained workers as a factor.

Pipeline: Pipeline data are not available.

Regional:

Table 24

Physical Therapists

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	1,622	928	466	207	142	58	33
Annual Projected Demand ¹	62	34	18	9	6	3	1
Supply of 2004-05 Program Graduates	38						
Supply/Demand Gap	(24)						
Employer-Reported Vacancies	346	155	42	77	68	1	4
Vacancy Rate	21%	17%	9%	37%	48%	2%	11%
Vacancies Open 60+ Days	78%	68%	74%	87%	96%	0%	100%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: In an Oregon Association of Hospitals and Health Systems 2005 member survey, 15 of the 22 hospital respondents noted current recruitment for physical therapists was very difficult, two reported it was somewhat difficult, and one indicated no difficulty.

According to the American Physical Therapy Association (APTA), standards for accreditation have shifted. Sixty-five percent of current physical therapy programs are doctorate programs. There is an apparent disconnect between the educational requirements cited by businesses and the educational levels being emphasized by the professional accrediting body and by educational establishments. It will likely be difficult, especially for small employers, to recruit and retain physical therapists looking for higher-paying jobs given their high debt loads from completing a doctorate.

According to the Oregon Physical Therapy Licensing Board, some recruiters are not only recruiting qualified physical therapists from outside of Oregon, they're also seeking candidates abroad. This is much different than just a few years ago, when there were more physical therapists than jobs in Oregon.

As of December 31, 2005, there were 2,959 PTs licensed in Oregon. During the period from April 1, 2005 to March 31, 2006, 230 new PT licenses were issued; 170 by endorsement and 60 by examination.

At the current level of graduates, Oregon's educational institutions do not appear to be producing enough physical therapists to meet future demand. Further data must be collected on new programs that may be under development and expansion plans for existing programs. In addition, given the disconnect between the education levels emphasized by the accrediting bodies and the level industry is looking to hire, further investigation is required to see if there is a future demand for both a bachelor and doctoral level training program.

Physicians and Surgeons

Description: Diagnoses, treats, and helps prevent diseases and injuries that commonly occur in the general population.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 1,124 new physicians and surgeons due to industry growth and 802 due to replacement needs. This equates to an average of 193 new physicians and surgeons per year. This is an understated estimate for demand, given that about 12 percent of physicians and surgeons nationwide are self-employed and not included in this data.

The OHSU Center for Rural Health shows 8,632 active, licensed physicians in Oregon in 2005.

Supply: During the 2004-05 program year, there were 105 graduates reported from physician and surgeon programs in Oregon.

Table 25

Physician and Surgeon 2004-2005 Program Completers¹

<u>Institution</u>	<u>Location</u>	<u>Program Type</u>	<u>2004-05 Completers²</u>
Oregon Health & Science University	Portland	First Professional	105
			105

¹ Program completers for physicians and surgeons relate only to this occupation.
² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 193 and the annual supply (represented by the 2004-05 reported completers) is 88.

Vacancy: Employers reported 253 vacancies statewide for a 5 percent vacancy rate. All of the vacancies required a graduate degree. Eighty-six percent required previous experience and 75 percent had been open for 60+ days or were open continuously.

Pipeline: OHSU has increased the size of its entering class to 120 as of fall 2006, and is planning and starting the initial phases of a program of regional medical education. If funded by the legislature, they would increase their capacity to 160 students per year.

Regional:

Table 26

	Physicians and Surgeons						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	5,284	3,688	1,155	543	269	172	109
Annual Projected Demand ¹	193	127	47	22	11	6	4
Supply of 2004-05 Program Graduates	105						
Supply/Demand Gap	(88)						
Employer-Reported Vacancies	253	96	55	46	47	9	0
Vacancy Rate	5%	3%	5%	8%	17%	5%	N/A
Vacancies Open 60+ Days	75%	67%	82%	100%	75%	0%	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Fifteen of the 19 hospitals responding to the physician section of the 2005 Oregon Association of Hospitals and Health Systems survey indicated it was very difficult to find at least one type of physician for their hospital.

In the OHSU Center for Rural Health report *Physician Workforce in Oregon 2004: A Snapshot*, authors note that “a convergence of individual observations appears to point to a looming shortage of physicians.” Some causes cited include:

- Oregon’s population is growing faster than its number of physicians,
- Oregon’s rural areas are less well served by the current physician workforce than urban areas, pointing to increased risk for rural Oregonians,
- Oregon’s physician workforce is aging, and younger physicians are not being recruited quickly enough to fill our needs, and
- Oregon is already experiencing shortages in several specialties (including rheumatology, nephrology, gastroenterology, cardiology, allergy-immunology and pediatrics).

According to the *2004 Oregon Physician Workforce Survey*, completed by Oregon’s Medicare Quality Improvement Organization, 22 percent of Oregon physicians responding to the survey indicated they plan to retire some time in the next five years. A higher percentage of physicians in surgical specialties (33%) reported they plan to retire within five years.

In addition, parts of rural Oregon are remote and have few health care establishments, even over large geographic areas. Given their rural location and low patient concentration, it may be difficult to attract and retain physicians at rates these communities can afford.

Given that average annual demand far exceeds the current and the projected future physician and surgeon graduate levels, Oregon educational institutions do not appear to be meeting current or future demand in Oregon.

Radiologic, CAT, and MRI Technologists and Technicians

Description: Takes X-rays and CAT scans or administers nonradioactive materials into patient's blood stream for diagnostic purposes. Includes technologists who specialize in other modalities, such as computerized tomography and magnetic resonance. Includes workers whose primary duties are to demonstrate portions of the human body on X-ray film or fluoroscopic screen.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 381 new radiologic, CAT, and MRI technologists and technicians due to industry growth and 381 due to replacement needs. This equates to an average of 76 new radiologic, CAT, and MRI technologists and technicians per year.

Supply: During the 2004-05 program year, there were 161 graduates reported from radiologic, CAT, and MRI technologist and technician programs in Oregon. Some individuals with radiologic technology training fill cardiovascular technologist positions.

Table 27

Radiologic, CAT, and MRI Technologist and Technician 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Allied Medical X-Ray Institute	Eugene	Private Career School	40
Linn-Benton Community College	Albany	1-2 Year Certificate	22
Oregon Institute of Technology	Klamath Falls	Bachelor's	37
Portland School of Radiography	Portland	Private Career School	62
			161

¹ Program completers for radiologic, CAT, and MRI technologists and technicians relate only to this occupation.
² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: Based only on the number of graduates completing programs, supply (represented by the 2004-05 reported completers) exceeds average annual demand.

Vacancy: Employers reported 122 vacancies statewide for a 7 percent vacancy rate. Twenty-nine percent of the vacancies required postsecondary education, 31 percent required an associate degree, and 2 percent required a bachelor's degree. Forty percent required previous experience and 49 percent of vacant positions had been open for 60+ days or were open continuously. Several employers noted their openings were difficult to fill with reasons including lack of CT techs, skills or experience, low pay, and location.

Pipeline: Pipeline data are not available.

Regional:

Table 28

Radiologic, CAT, and MRI Technologists and Technicians

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	1,806	810	452	285	124	59	48
Annual Projected Demand ¹	76	31	22	13	6	3	2
Supply of 2004-05 Program Graduates	161						
Supply/Demand Gap	85						
Employer-Reported Vacancies	122	95	13	9	1	4	0
Vacancy Rate	7%	12%	3%	3%	1%	7%	N/A
Vacancies Open 60+ Days	49%	55%	25%	25%	0%	33%	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Supply appears to be meeting demand, with 161 graduates for 76 average annual openings. However, in addition to the vacancy survey results which indicate a shortage of workers may exist, hospitals surveyed by the Oregon Association of Hospitals and Healthcare Systems indicated it was somewhat or very difficult to fill vacancies, particularly for specialty areas.

The Oregon Institute of Technology's medical imaging technology department offers training for radiologic, CAT, and MRI technologists and technicians. The program does not, however, cover EKG or invasive procedures.

Although it appears Oregon' educational institutions are producing an adequate supply of graduates, a slight shortage likely exists for this occupation.

Registered Nurses

Description: Assesses patient health problems and needs, develops and implements nursing care plans, and maintains medical records. Administers nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes advance practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 5,601 new registered nurses due to industry growth and 6,479 due to replacement needs. This equates to an average of 1,208 new registered nurses per year. This does not include demand for instructors.

Supply: During the 2004-05 program year, there were 1,097 graduates reported from registered nursing programs in Oregon. This includes all award levels. Master's and doctoral program completers possibly move into administration, faculty, or advanced practice nursing positions.

Demand-Supply Gap:

The estimated gap between the average annual demand of 1,208 and the annual supply (represented by the 2004-05 reported completers) is 111.

Vacancy: Employers reported 1,899 vacancies statewide for a 7 percent vacancy rate. Eleven percent of the vacancies required postsecondary education, 51 percent required an associate degree, 7 percent required a bachelor's degree, and 3 percent required a graduate degree. Sixty-one percent required previous experience and 33 percent had been open for 60+ days or were open continuously.

Table 29

Registered Nurse 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
Blue Mountain Community College	Pendleton	Associate	47
Central Oregon Community College	Bend	Associate	35
Chemeketa Community College	Salem	Associate	55
Clackamas Community College	Oregon City	Associate	23
Clatsop Community College	Astoria	Associate	22
Columbia Gorge Community College	The Dalles	Associate	17
Lane Community College	Eugene	Associate	57
Linfield College-Adult Degree Program	McMinnville	Bachelor's	5
Linfield College-Portland Campus	Portland	Bachelor's	131
Linn-Benton Community College	Albany	Associate	53
Mt Hood Community College	Gresham	Associate	50
Oregon Health & Science University	Portland	Bachelor's	238
Oregon Health & Science University	Portland	Doctorate	4
Oregon Health & Science University	Portland	Master's	56
Oregon Health & Science University	Portland	Post Master's	6
Portland Community College	Portland	Associate	93
Rogue Community College	Grants Pass	Associate	24
Southwestern Oregon Community College	Coos Bay	Associate	26
Treasure Valley Community College	Ontario	Associate	20
Umpqua Community College	Roseburg	Associate	51
University of Portland	Portland	Bachelor's	78
University of Portland	Portland	Master's	6
			1,097

¹ Program completers for registered nurses also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Pipeline: A new program at Oregon Coast Community College, with a capacity of 20, will add to the supply of RNs over time. George Fox University is now offering a bachelor in nursing program with a capacity of 40 students and will graduate its first class in April 2008. Mt. Hood Community College recently increased its program capacity from 40 to 160.

Regional:

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	27,356	14,658	6,652	3,591	1,658	885	626
Annual Projected Demand ¹	1,208	608	326	165	86	39	25
Supply of 2004-05 Program Graduates	1,097						
Supply/Demand Gap	(111)						
Employer-Reported Vacancies	1,899	1,260	371	145	63	26	34
Vacancy Rate	7%	9%	6%	4%	4%	3%	5%
Vacancies Open 60+ Days	33%	24%	45%	63%	59%	16%	51%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: The National Center for Health Workforce Analysis in 2002 reported a growing nursing shortage in Oregon. In 2005, the Oregon Center for Nursing (OCN) also predicted a future shortage in *When, Not If ... A Report on Oregon's Registered Nurse Workforce*. This report also mentions that nearly one-half of Oregon's RNs are 50 years of age or older and that the proportion of nurses over 50 has more than doubled over the past 20 years.

Oregon's education community has increased RN capacity. Between 2001 and 2004, the number of graduates increased by 45 percent, according to the OCN. But as of 2005, the supply (1,097) still hasn't quite met the demand (1,208).

A closer look at licensing statistics from the Oregon State Board of Nursing shows that over half of the new RN licenses issued since 1995 have been issued by endorsement (i.e., to RNs who have held a license in a state or jurisdiction other than Oregon).

Many individuals holding current Oregon RN licenses are not working as RNs. There were 27,356 RN jobs in the state in 2005 compared with more than 39,000 active licenses. According to an Oregon Health and Science University's Area Health Education Center report, *Registered Nurse Workforce 2002: A Sourcebook*, 82 percent of registered nurses licensed by the Oregon State Board of Nursing are working in the profession in Oregon.

RN specialties that are emerging include nurse practitioners and clinical nurse specialists, both of which are classified as RNs in the Standard Occupational Classification system.

According to the OCN, there is an excess supply of associate degreed RNs and an undersupply of those with a bachelor's or above. However the education level emphasized by employer vacancies is an associate degree with only a few employers requiring a bachelor's or higher level. Three percent of employers require a graduate degree for vacant positions, compared to 6.6 percent of Oregon's graduates who received a graduate degree in 2004-2005.

A shortage of registered nurses in the labor force currently exists in Oregon. Given the recent efforts to increase the supply of registered nurses, further data should be collected regarding new and expanded programs.

Respiratory Therapists

Description: Assesses, treats, and cares for patients with breathing disorders. Assumes primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technicians. Initiates and conducts therapeutic procedures; maintains patient records; and selects, assembles, checks, and operates equipment.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 246 new respiratory therapists due to industry growth and 397 due to replacement needs. This equates to an average of 64 new respiratory therapists per year.

Supply: During the 2004-05 program year, there were 25 graduates reported from respiratory therapy programs in Oregon.

Table 31

Respiratory Therapist 2004-2005 Program Completers¹

<u>Institution</u>	<u>Location</u>	<u>Program Type</u>	<u>2004-05 Completers²</u>
Lane Community College	Eugene	Associate	10
Mt Hood Community College	Gresham	Associate	15
			<u>25</u>

¹ Program completers for respiratory therapists also relate to postsecondary instructors.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: The estimated gap between the average annual demand of 64 and the annual supply (represented by the 2004-05 reported completers) is 39.

Vacancy: Employers reported 44 vacancies statewide for a 4 percent vacancy rate. Nine percent of vacancies required postsecondary education as a minimum requirement, 30 percent required an associate degree, and 17 percent required a bachelor's degree. Forty percent required previous experience and 36 percent had been open for 60+ days or were open continuously.

Pipeline: Oregon Institute of Technology offers an associate and bachelor preparatory program at Rogue Community College in Medford. While there were no graduates during the 2004-05 academic year as the program transitioned from OIT to RCC, there were 24 graduates in Spring 2006; 21 at the associate degree level and three with bachelor's. This program is expected to continue, with graduates every year, adding to the annual supply of therapists.

Regional:

Table 32

	Respiratory Therapists						
	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	1,089	568	248	190	68	31	22
Annual Projected Demand ¹	64	33	16	12	4	2	1
Supply of 2004-05 Program Graduates	25						
Supply/Demand Gap	(39)						
Employer-Reported Vacancies	44	33	0	7	4	0	0
Vacancy Rate	4%	6%	N/A	3%	6%	N/A	N/A
Vacancies Open 60+ Days	36%	22%	N/A	67%	100%	N/A	N/A

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: Mt. Hood Community College increased its respiratory therapist program's capacity from 25 to 30 students this year in response to increased demand for the program.

Oregon's educational institutions do not appear to be meeting demands for respiratory therapists. At this time, there appears to be a shortage of trained workers in Oregon, though the increased program capacity at Mt. Hood Community College and the start of the OIT/RCC collaboration will soon help to narrow the gap.

Speech and Language Pathologists

Description: Assesses and treats persons with speech, language, voice, and fluency disorders. May select alternative communication systems and teach their use. May perform research related to speech and language problems.

Demand: Between 2004 and 2014, the Oregon Employment Department projects that Oregon will need 90 new speech and language pathologists due to industry growth and 138 due to replacement needs. This equates to an average of 23 new speech and language pathologists per year.

Supply: During the 2004-05 program year, there were 65 graduates reported from speech and language pathologist programs in Oregon.

Table 33

Speech and Language Pathologist 2004-2005 Program Completers¹

Institution	Location	Program Type	2004-05 Completers ²
University of Oregon	Eugene	Bachelor's	20
University of Oregon	Eugene	Post Bachelor's	19
University of Oregon	Eugene	Master's	26
			65

¹ Some (46) program completers for speech and language pathologists also relate to audiologists.

² Community Colleges and University completers for 2004-05 school year; Private Career School completers based on most recent year data was reported (most are for 2004-05); and Job Corps completers based on calendar year 2005.

Demand-Supply Gap: Based only on the number of graduates completing programs, supply (represented by the 2004-05 reported completers) exceeds average annual demand.

Vacancy: Employers reported 35 vacancies statewide for a 7 percent vacancy rate. Seven percent of the vacancies required a bachelor's degree and 67 percent required a graduate degree. Twenty-four percent required previous experience and 84 percent had been open 60+ days or were open continuously.

However, as the vacancy survey focused almost exclusively on employment in the health care industry, results do not adequately reflect vacancies in local education (see discussion under Other Information).

Pipeline: Pipeline data are not available.

Regional:**Table 34****Speech and Language Pathologists**

	Oregon	NW Oregon	Willamette Valley	Southwest Oregon	Central Oregon	Columbia Gorge	Eastern Oregon
2005 Projected Employment ¹	510	297	175	41	25	40	20
Annual Projected Demand ¹	23	15	7	2	2	2	1
Supply of 2004-05 Program Graduates	65						
Supply/Demand Gap	42						
Employer-Reported Vacancies	35	28	3	0	3	0	1
Vacancy Rate	7%	9%	2%	N/A	10%	N/A	6%
Vacancies Open 60+ Days	84%	80%	100%	N/A	100%	N/A	100%

¹ Due to estimation procedures, regional employment does not sum to statewide employment. Statewide employment is more reliable than regional employment, as it makes use of a larger employer survey sample.

Other information: To become licensed by the state of Oregon, individuals need to possess a master's degree.

Demand, at an average of 23 new pathologists per year, is apparently being met with in-state graduates, even if the bachelor's and post-bachelor's degree recipients are not included in the supply.

School districts and educational service districts were not included in the health care vacancy survey, though they are significant employers of speech and language pathologists.

According to a 2005 survey of education service districts and school districts conducted by the Oregon Speech-Language and Hearing Association and the Willamette Education Service District, nearly two-thirds of educational service districts had speech-language pathologist openings for the 2004-05 school year, and some positions were filled with workers who did not hold the minimally required master's degree. The survey found that barriers adding to recruitment problems included rural locations, cost of housing, level of pay, and competition between school districts, with those unable to offer a high pay levels losing out in recruitment. Chronic vacancies occur in education for speech and language pathologists.

A shortage of speech and language pathologists exists in the education sector as well as in health care. Specific data should be collected from this sector to further analyze the supply/demand situation.

Emerging Occupations

The workforce is constantly changing. Many occupations evolve over time as duties are added to better meet the needs of businesses and customers. New occupations emerge and, over time, become more commonplace in the labor market. Some of these evolve out of existing occupations where an unmet need has developed. Others are essentially new and fill a void in the health care system. Two emerging health care occupations in Oregon are physician assistant and polysomnographer.

Physician assistant training began in Oregon in the late 1990s. The two training programs in the state have slowly increased capacity but are limited by the availability of clinical training slots. Physician assistant is the fastest-growing health care occupation and one that is spreading across the state, including in rural areas where a physician assistant can provide services that may otherwise not be available.

At this time, there does not appear to be a shortage of physician assistants or nurse practitioners in Oregon. However, the use of physician assistants and nurse practitioners (advanced practice RN's with a similar role to physicians assistants) is expected to increase over time with the increased awareness of the occupation and increased use to reduce the strain on physicians.

Employers noted vacancies for polysomnographers. This occupation appears to be very small but growing. Growth is fueled by the increase of sleep disorder studies in recent years.

Conclusion

Seventeen occupations with certain or likely worker shortages have been identified in this needs assessment. In most cases, strong data support the assessment.

However, the solution to these shortages may not always be as simple as increasing training capacity for the particular occupation. Other barriers include funding, difficulty in hiring qualified instructors for health care disciplines, and finding employers willing to accept students for the clinicals that are an indispensable part of many health care training programs.

The degree to which migration helps or hinders these shortages is largely unknown. Graduates who leave Oregon after completing their training obviously reduce the supply of workers to the state's labor force, and in some programs, half or more of the graduates leave Oregon. On the other hand, graduates from other states are regularly entering Oregon's labor force.

In some occupations – nursing aides, orderlies and attendants, for example – training is probably not the major challenge. Increasing retention and addressing issues such as the nature of the work, a lack of respect from management, increasing wages, and attracting more men to the occupation may be more important.

This report is one critical piece that can be used to determine health care demand and supply, but additional research is needed in specific occupational areas to better understand the dynamics of the shortages and recommend appropriate solutions. This research may include:

- an analysis of the demand for skills within each occupation in various work settings,
- educational requirements,
- migration of license-holders,
- improvement of licensing and educational supply data, and
- improvement of educational pipeline data.

Appendix: Health Care Occupation Descriptions

Athletic Trainers: Evaluates, advises, and treats athletes to assist recovery from injury, avoid injury, or maintain peak physical fitness.

Audiologists: Assesses and treats persons with hearing and related disorders. May fit hearing aids and provide auditory training. May perform research related to hearing problems.

Cardiovascular Technologists and Technicians: Conducts tests on pulmonary or cardiovascular systems of patients for diagnostic purposes. May conduct or assist in electrocardiograms, cardiac catheterizations, pulmonary functions, lung capacity, and similar tests. Includes vascular technologists.

Child, Family, and School Social Workers: Provides social services and assistance to improve the social and psychological functioning of children and their families and to maximize the family well-being and the academic functioning of children. May assist single parents, arrange adoptions, and find foster homes for abandoned or abused children. In schools, they address such problems as teenage pregnancy, misbehavior, and truancy. May also advise teachers on how to deal with problem children.

Chiropractors: Adjusts spinal column and other articulations of the body to correct abnormalities of the human body believed to be caused by interference with the nervous system. Examines patient to determine nature and extent of disorder. Manipulates spine or other involved area. May utilize supplementary measures, such as exercise, rest, water, light, heat, and nutritional therapy.

Clinical, Counseling, and School Psychologists: Diagnoses and treats mental disorders; learning disabilities; and cognitive, behavioral, and emotional problems using individual, child, family, and group therapies. May design and implement behavior modification programs.

Counselors, All Other: All counselors not listed separately.

Dental Assistants: Assists dentist, sets up patient and equipment, and keeps records.

Dental Hygienists: Cleans teeth and examines oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop X-rays, or apply fluoride or sealants.

Dental Laboratory Technicians: Constructs and repairs full or partial dentures or dental appliances. Excludes Dental Assistants.

Dentists, All Other: All dentists not listed separately.

Dentists, General: Diagnoses and treats diseases, injuries, and malformations of teeth and gums and related oral structures. May treat diseases of nerve, pulp, and other dental tissues affecting vitality of teeth. Excludes Prosthodontists, Orthodontists, Oral and Maxillofacial Surgeons and Dentists, all other specialists.

Diagnostic Medical Sonographers and Ultrasound Technologists: Produces ultrasonic recordings of internal organs for use by physicians.

Dietetic Technicians: Assists dietitians in the provision of food service and nutritional programs. Under the supervision of dietitians, may plan and produce meals based on established guidelines, teach principles of food and nutrition, or counsel individuals.

Dietitians and Nutritionists: Plans and conducts food service or nutritional programs to assist in the promotion of health and control of disease. May supervise activities of a department providing quantity food services, counsel individuals, or conduct nutritional research.

Emergency Medical Technicians and Paramedics: Assesses injuries, administers emergency medical care, and extricates trapped individuals. Transports injured or sick persons to medical facilities.

Health Diagnosing and Treating Practitioners, All Other: All health diagnosing and treating practitioners not listed separately.

Health Educators: Promotes, maintains, and improves individual and community health by assisting individuals and communities to adopt healthy behaviors. Collects and analyzes data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies and environments. May also serve as a resource to assist individuals, other professionals, or the community, and may administer fiscal resources for health education programs.

Health Technologists and Technicians, All Other: All health technologists and technicians not listed separately.

Healthcare Practitioner and Technical Workers, All Other: All healthcare practitioners and technical workers not listed separately.

Healthcare Support Workers, All Other: All healthcare support workers not listed separately.

Home Health Aides: Provides routine, personal healthcare, such as bathing, dressing, or grooming, to elderly, convalescent, or disabled persons in the home of patients or in a residential care facility.

Interviewers, Except Eligibility and Loan: Interviews persons by telephone, mail, in person, or by other means for the purpose of completing forms, applications, or questionnaires. Asks specific questions, records answers, and assists persons with completing forms. May sort, classify, and file forms.

Licensed Practical and Licensed Vocational Nurses: Cares for ill, injured, convalescent, or disabled persons in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse.

Marriage and Family Therapists: Diagnoses and treats mental and emotional disorders, whether cognitive, affective, or behavioral, within the context of marriage and family systems. Applies psychotherapeutic and family systems theories and techniques in the delivery of professional services to individuals, couples, and families for the purpose of treating such diagnosed nervous and mental disorders. Excludes Social Workers and Psychologists.

Massage Therapists: Massages customers for hygienic or remedial purposes.

Medical and Clinical Laboratory Technicians: Performs routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.

Medical and Clinical Laboratory Technologists: Performs complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.

Medical and Health Services Managers: Plans, directs, or coordinates medicine and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations.

Medical and Public Health Social Workers: Provides persons, families, or vulnerable populations with the psychosocial support needed to cope with chronic, acute, or terminal illnesses, such as Alzheimer's, cancer, or AIDS. Services include advising family care givers, providing patient education and counseling, and making necessary referrals for other social services.

Medical Appliance Technicians: Constructs, fits, maintains, or repairs medical supportive devices, such as braces, artificial limbs, joints, arch supports, and other surgical and medical appliances.

Medical Assistants: Performs administrative and certain clinical duties under the direction of physician. Administrative duties may include scheduling appointments, maintaining medical records, billing, and coding for insurance purposes. Clinical duties may include taking and recording vital signs and medical histories, preparing patients for examination, drawing blood, and administering medications as directed by physician.

Physician Assistants: Provides healthcare services typically performed by a physician, under the supervision of a physician. Conducts complete physicals, provides treatment, and counsels patients. May, in some cases, prescribe medication. Must graduate from an accredited educational program for physician assistants. Excludes Emergency Medical Technicians and Paramedics, Medical Assistants, and Registered Nurses.

Medical Equipment Preparers: Prepares, sterilizes, installs, or cleans laboratory or healthcare equipment. May perform routine laboratory tasks and operate or inspect equipment.

Medical Equipment Repairers: Tests, adjusts, or repairs biomedical or electromedical equipment.

Medical Records and Health Information Technicians: Compiles, processes, and maintains medical records of hospital and clinic patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system. Processes, maintains, compiles, and reports patient information for health requirements and standards.

Medical Secretaries: Performs secretarial duties utilizing specific knowledge of medical terminology and hospital, clinic, or laboratory procedures. Duties include scheduling appointments, billing patients, and compiling and recording medical charts, reports, and correspondence.

Medical Transcriptionists: Uses transcribing machines with headset and foot pedal to listen to recordings by physicians and other healthcare professionals dictating a variety of medical reports, such as emergency room visits, diagnostic imaging studies, operations, chart reviews, and final summaries. Transcribes dictated reports and translates medical jargon and abbreviations into their expanded forms. Edits as necessary and returns reports in either printed or electronic form to the dictator for review and signature, or correction.

Mental Health and Substance Abuse Social Workers: Assesses and treats individuals with mental, emotional, or substance abuse problems, including abuse of alcohol, tobacco, and/or other drugs. Activities may include individual and group therapy, crisis intervention, case management, client advocacy, prevention, and education.

Mental Health Counselors: Counsels with emphasis on prevention. Works with individuals and groups to promote optimum mental health. May help individuals deal with addictions and substance abuse; family, parenting, and marital problems; suicide; stress management; problems with self-esteem; and issues associated with aging and mental and emotional health. Excludes Social Workers, Psychiatrists, and Psychologists.

Nuclear Medicine Technologists: Prepares, administers, and measures radioactive isotopes in therapeutic, diagnostic, and tracer studies utilizing a variety of radioisotope equipment. Prepares stock solutions of radioactive materials and calculates doses to be administered by radiologists. Subjects patients to radiation. Executes blood volume, red cell survival, and fat absorption studies following standard laboratory techniques.

Nursing Aides, Orderlies, and Attendants: Provides basic patient care under direction of nursing staff. Performs duties, such as feed, bathe, dress, groom, or move patients, or change linens. Excludes Home Health Aides and Psychiatric Aides.

Occupational Health and Safety Specialists: Reviews, evaluates, and analyzes work environments and designs programs and procedures to control, eliminate, and prevent disease or injury caused by chemical, physical, and biological agents or ergonomic factors. May conduct inspections and enforce adherence to laws and regulations governing the health and safety of individuals. May be employed in the public or private sector. Includes environmental protection officers.

Occupational Health and Safety Technicians: Collects data on work environments for analysis by occupational health and safety specialists. Implements and conducts evaluation of programs designed to limit chemical, physical, biological, and ergonomic risks to workers.

Occupational Therapist Aides: Under close supervision of an occupational therapist or occupational therapy assistant, performs only delegated, selected, or routine tasks in specific situations. These duties include preparing patient and treatment room.

Occupational Therapist Assistants: Assists occupational therapists in providing occupational therapy treatments and procedures. May, in accordance with State laws, assist in development of treatment plans, carry out routine functions, direct activity programs, and document the progress of treatments. Generally requires formal training.

Occupational Therapists: Assesses, plans, organizes, and participates in rehabilitative programs that help restore vocational, homemaking, and daily living skills, as well as general independence, to disabled persons.

Ophthalmic Laboratory Technicians: Cuts, grinds, and polishes eyeglasses, contact lenses, or other precision optical elements. Assembles and mounts lenses into frames or processes other optical elements. Includes precision lens polishers or grinders, centerer-edgers, and lens mounters. Excludes Opticians, Dispensing.

Opticians, Dispensing: Designs, measures, fits, and adapts lenses and frames for client according to written optical prescription or specification. Assists client with selecting frames. Measures customer for size of eyeglasses and coordinates frames with facial and eye measurements and optical prescription. Prepares work order for optical laboratory containing instructions for grinding and mounting lenses in frames. Verifies exactness of finished lens spectacles. Adjusts frame and lens position to fit client. May shape or reshape frames. Includes contact lens opticians.

Optometrists: Diagnoses, manages, and treats conditions and diseases of the human eye and visual system. Examines eyes and visual system, diagnoses problems or impairments, prescribes corrective lenses, and provides treatment. May prescribe therapeutic drugs to treat specific eye conditions.

Orthotists and Prosthetists: Assists patients with disabling conditions of limbs and spine or with partial or total absence of limb by fitting and preparing orthopedic braces or prostheses.

Pharmacists: Dispenses drugs prescribed by physicians and other health practitioners and provides information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.

Pharmacy Technicians: Prepares medications under the direction of a pharmacist. May measure, mix, count out, label, and record amounts and dosages of medications.

Physical Therapist Aides: Under close supervision of a physical therapist or physical therapy assistant, performs only delegated, selected, or routine tasks in specific situations. These duties include preparing the patient and the treatment area.

Physical Therapist Assistants: Assists physical therapists in providing physical therapy treatments and procedures. May, in accordance with State laws, assist in the development of treatment plans, carry out routine functions, document the progress of treatment, and modify specific treatments in accordance with patient status and within the scope of treatment plans established by a physical therapist.

Physical Therapists: Assesses, plans, organizes, and participates in rehabilitative programs that improve mobility, relieve pain, increase strength, and decrease or prevent deformity of patients suffering from disease or injury.

Physician Assistants: Provides healthcare services typically performed by a physician, under the supervision of a physician. Conducts complete physicals, provides treatment, and counsels patients. May, in some cases, prescribe medication. Must graduate from an accredited educational program for physician assistants. Excludes Emergency Medical Technicians and Paramedics, Medical Assistants, and Registered Nurses.

Physicians and Surgeons: Diagnoses, treats, and helps prevent diseases and injuries that commonly occur in the general population.

Podiatrists: Diagnoses and treats diseases and deformities of the human foot.

Postsecondary Teachers, Except Graduate Teaching Assistants: All postsecondary teachers not listed separately.

Psychiatric Aides: Assists mentally impaired or emotionally disturbed patients, working under direction of nursing and medical staff.

Psychiatric Technicians: Cares for mentally impaired or emotionally disturbed individuals, following physician instructions and hospital procedures. Monitors patients' physical and emotional well-being and reports to medical staff. May participate in rehabilitation and treatment programs, help with personal hygiene, and administer oral medications and hypodermic injections.

Radiation Therapists: Provides radiation therapy to patients as prescribed by a radiologist according to established practices and standards. Duties may include reviewing prescription and diagnosis; acting as liaison with physician and supportive care personnel; preparing equipment, such as immobilization, treatment, and protection devices; and maintaining records, reports, and files. May assist in dosimetry procedures and tumor localization.

Radiologic, CAT, and MRI Technologists and Technicians: Takes X-rays and CAT scans or administers nonradioactive materials into patient's blood stream for diagnostic purposes. Includes technologists who specialize in other modalities, such as computerized tomography and magnetic resonance. Includes workers whose primary duties are to demonstrate portions of the human body on X-ray film or fluoroscopic screen.

Recreational Therapists: Plans, directs, or coordinates medically approved recreation programs for patients in hospitals, nursing homes, or other institutions. Activities include sports, trips, dramatics, social activities, and arts and crafts. May assess a patient condition and recommend appropriate recreational activity.

Registered Nurses: Assesses patient health problems and needs, develops and implements nursing care plans, and maintains medical records. Administers nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes advance practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.

Rehabilitation Counselors: Counsels individuals to maximize the independence and employability of persons coping with personal, social, and vocational difficulties that result from birth defects, illness, disease, accidents, or the stress of daily life. Coordinates activities for residents of care and treatment facilities. Assesses client needs and designs and implements rehabilitation programs that may include personal and vocational counseling, training, and job placement.

Respiratory Therapists: Assesses, treats, and cares for patients with breathing disorders. Assumes primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technicians. Initiates and conducts therapeutic procedures; maintains patient records; and selects, assembles, checks, and operates equipment.

Social Workers, All Other: All social workers not listed separately.

Speech and Language Pathologists: Assesses and treats persons with speech, language, voice, and fluency disorders. May select alternative communication systems and teach their use. May perform research related to speech and language problems.

Substance Abuse and Behavioral Disorder Counselors: Counsels and advises individuals with alcohol, tobacco, drug, or other problems, such as gambling and eating disorders. May counsel individuals, families, or groups or engage in prevention programs. Excludes Social Workers, Psychologists, and Mental Health Counselors providing these services.

Surgical Technologists: Assists in operations, under the supervision of surgeons, registered nurses, or other surgical personnel. May help set up operating room, prepare and transport patients for surgery, adjust lights and equipment, pass instruments and other supplies to surgeons and surgeon's assistants, hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments.

Therapists, All Other: All therapists not listed separately.



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