WYOMING DEPARTMENT OF EMPLOYMENT

Occupational Outlook: 2010

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Occupational Outlook: 2010

Wyoming Department of Employment
Cynthia A. Pomeroy, Director

Research & Planning
Tom Gallagher, Manager
Internet address - http://doe.state.wy.us/LMI/

Prepared by:
Tony Glover
Mark Harris, Ph.D.
Sara Saulcy

Desktop Publishing by:
Susan J. Murray
Krista R. Shinkle

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Research & Planning
P.O. Box 2760
Casper, WY 82602
Phone: (307) 473-3807
Fax: (307) 473-3834

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Appendix A presents long-term statewide and regional occupational projections (2000 to 2010).

Appendix B includes methodological notes regarding the method by which the projections were produced.

Chapter 1. Occupational Projections -- A Decision-Making Tool

by: Mark Harris, Ph.D.

The following document represents the second part of employment projections to 2010. This segment specifically presents occupational employment projections for Wyoming statewide and sub-state areas. An earlier document, (Gallagher, Harris, Leonard, Liu, & McVeigh, 2003) provides industry employment projections for statewide and sub-state areas.

Projections are Not Deterministic

Employment projections, in large part, reflect a continuation of past trends. Past trends, although important, are not necessarily deterministic of future employment levels. Projections by themselves can affect the future by stimulating thought and discussion on the likelihood and alterability of the baseline forecast.

Among other factors, significant social effort may alter undesirable projected employment trends. For example, concerted effort in developing well-paying industries and their associated occupations, and providing qualified applicants for those positions may change the projected outcomes. Thus, even occupations projected to decline by time series methods may actually experience growth over the projected time line.[1] Additionally, we cannot completely predict how the development of, as yet unknown, technology will create, eliminate, reduce, or expand occupational categories.[2]

Policy makers and developers need not feel constrained from pursuing increased employment in high-wage, high-skill occupations regardless of whether projections indicate future growth. If policy makers are to achieve the goal "...to diversify and strengthen Wyoming's per capita income and job creation base" (Wyoming Office of Workforce Development, 1999), they will need to break with past trends and alter projected outcomes.

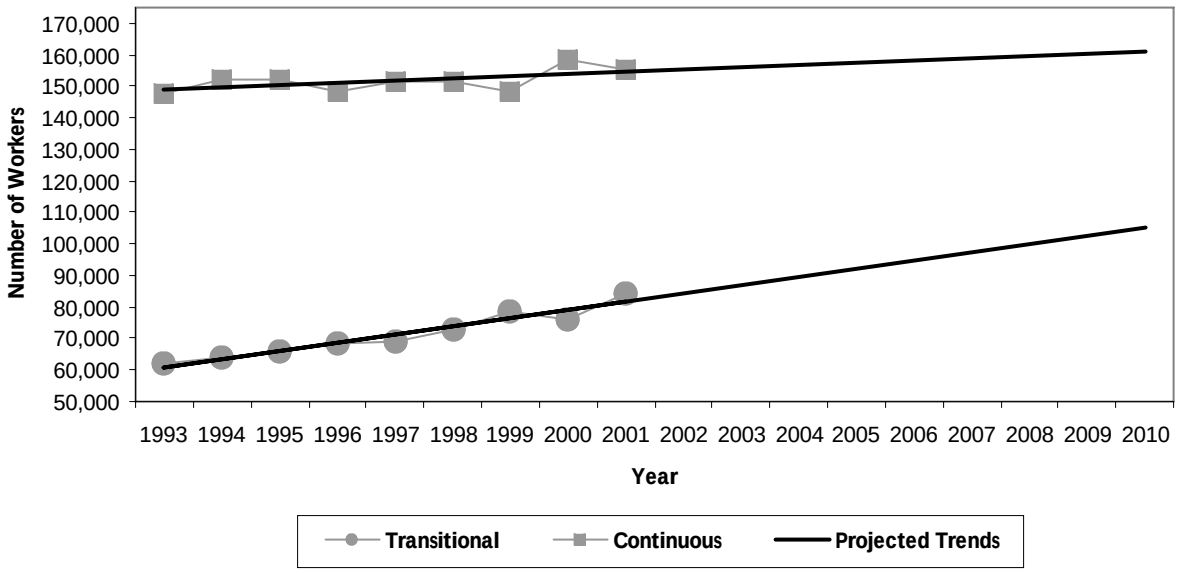
Wyoming's Economy in Broad Context

With the exception of a downturn during mid-decade, Wyoming's employment and population grew slowly during the 1990s while the nation was experiencing the most impressive 10-year period of economic growth in its history (Gallagher et al., 2003, pp. 1-4). Evidence would seem to indicate, therefore, that Wyoming's economy can grow (albeit in a limited manner) within the context of stiff external competition.

However, during this time period of relatively slow growth in Wyoming, a significant segment of younger workers (25 to 39) left Wyoming presumably in pursuit of attractive economic opportunities (Gallagher et al., 2003, pp. 41-46). The decrease in this demographic segment may affect employee shortages in Wyoming as older workers reach retirement age over the coming decades. Such shortages may hinder economic development if individuals age 25 to 39 cannot be retained or attracted back into the state.

Generally speaking, Wyoming's economy is more strongly tied to circumstances surrounding the worldwide mineral commodities markets rather than to national economic developments. Given that Wyoming's

Figure 1.1: Projected Employment Trends of Transitional and Continuous Workers in Wyoming, 1993 to 2010



Mining employment is proportionately overrepresented relative to the rest of the nation (Harris, 2002), the economy is vulnerable to swings in commodities prices and global price competition. When the U.S. is doing well, the state has more economic difficulties. Because of stiff external competition, workers tend to disproportionately leave the state to take advantage of more promising opportunities elsewhere.

The Link Between Occupational Growth and Industry

Occupational growth in Wyoming will always be defined by industry growth. For example, the state will not increase the number of electrical engineers unless growth takes place in industries that typically employ electrical engineers. Growth in high-wage, full-time employment providing insurance and retirement benefits will not take place in the state unless firms in industries that typically provide these types of jobs also increase. Economic development must first and foremost be industry directed in order to obtain desired occupational growth.

Unfortunately, over the last decade, the norm has been growth in industries with a general concentration of low-wage occupations (Gallagher et al., 2003; Harris, 2002) that provide limited or no benefits (Cowan, 2003; Harris, 2003a) and typified by short employment tenure and high employee turnover (Murray, 2002). As seen in Figure 1.1, the proportion of transitional employment has increased from 1993 to 2000 and, left unchecked, is projected to continue through 2010. Transitional employees begin or end (or both) employment during a given quarter. Such high turnover is associated with industries generally offering part-time opportunities typified by low wages and fewer benefits. Failure to halt or reverse this general trend means these types of jobs will comprise a larger share of the state's

occupational distribution and must be relied upon more heavily by those wanting to remain in Wyoming.

From both a sociological and economic standpoint this situation is problematic because private charitable and public entities will need to pick up the slack created by low wages and a lack of benefits among a growing portion of the population. Communities will increasingly be threatened with social disorder and decay because of low wages and high employee turnover.

Failure to infuse the economy with high-wage, full-time occupations means that individuals who become skilled through the state's workforce development system (i.e., K-12, community colleges, the University of Wyoming, and other training entities and programs) will encounter the dilemma of limited occupational opportunity in the state. In the coming years these workers may face the decision whether to accept an occupation for which they are overqualified or leave the state in search of better opportunities elsewhere. It is unlikely that skilled labor would accept low-wage, unstable employment in Wyoming when quality employment opportunities exist in the regional or national economy.

A Window of Opportunity

The current national recession and weakened regional economies of bordering states appear to provide a window of opportunity to expand Wyoming's economy through retention of young people and in-migration of former and new residents. It is important that growth in Wyoming take place in underrepresented high wage industries that are not so closely tied to mineral commodities (Harris, 2003b; Henderson & Hauf, 2002). This type of growth will help the state to become less vulnerable to worldwide developments and more competitive even during times when the national and regional economies are strong. This does not mean that proportionately overrepresented industries (e.g., Mining in particular) cannot also continue to grow (even at fairly expansive rates) but only that growth among other underrepresented industries and their associated occupations must take place at a faster rate. Proportional redistribution of Wyoming's industry and occupational employment base will help protect the economy from the instability that comes from an underdiversified economic base and better position Wyoming to retain its skilled workforce when the national and surrounding regional economies rebound.

Upcoming Chapters

Level-change analysis presented in Chapters 2 and 3 focus on the top 50 growth[3] occupations paying at least $18,400 (100% of the federal poverty guideline for a family of four) and requiring postsecondary education. Growing these occupations will provide an outlet for Wyoming's post secondary educational institutions and provide employment more likely to retain individuals within the state. We do not show occupational growth in the state that does not require education beyond the postsecondary level or occupations that pay below the poverty guideline. Chapter 2 presents statewide occupational projections whereas Chapter 3 presents projections for sub-state regions and Metropolitan Statistical Areas. Chapter 4 provides an analysis of industry turnover rates as applied to occupational categories to study potential replacement need. Chapter 5 examines occupational projections for nurses and provides a measure of both

projected turnover as well as the change in demand. Appendix A presents long-term occupational projections. Appendix B includes methodological notes regarding the method by which the projections were produced. The Appendixes are available on Research & Planning's website at <http://doe.state.wy.us/lmi/outlTOC.htm>.

Notes

[1]Even occupations that experience a decline in absolute numbers over time may still offer new employment opportunities due to replacement need caused by various factors (e.g., retirement). For example, absolute employment in Production Occupations may decline from 10,000 to 9,000, representing a net loss of 1,000 jobs over the period. However, if 5,000 of the original 10,000 retire there will still be 4,000 jobs to fill at some point during the forecast period.

[2]One would assume that a workforce with broad competencies in mathematics and science provides the safest skill set with which to adjust and adapt to the way that occupations react to new technology. However, Wyoming is unlikely to maintain a highly skilled but underutilized and underpaid workforce in the face of robust regional and national economic competition.

[3]Top growth is defined as absolute numeric rather than percent change. Given a small base year employment total, large percentage changes can occur with small absolute numeric changes. Although change in growth rates are important, the focus of this document is on identifying the highest volume of growth among a category of occupations that require significant human capital investment and that produce a living-wage outcome.

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Chapter 2. Statewide Occupational Projections

text by: Sara Saulcy, Economist
data and methodology by: Tony Glover, Senior Research Analyst

In this chapter, we examine statewide occupational growth from 2000 to 2010 for all industries based on two criteria: (1) The occupation must typically require at least some postsecondary education and (2) The occupation must pay at least 100 percent of the federally-determined U.S. poverty guideline for a family of four (Thompson, 2003). Occupations meeting these criteria were evaluated in order to facilitate employment and training program administration by entities such as the Wyoming Department of Workforce Services, economic developers, and college curriculum planners. We also present these occupations to give a sense of projected high wage jobs in Wyoming.

We extend our evaluation by discussing factors impacting occupational projections. We also

Definitions of Common Terms

Staffing Pattern - the occupational requirements of an industry. For example, a restaurant might typically employ two managers, five cooks, and eight wait staff. It can be used to estimate either the percentage of workers required per occupation in an industry or typical occupational requirements given a predetermined number of workers.

Detailed Occupation - refers to a specific occupation within a group of occupations. For example, Registered Nurses are a specific occupation within the major occupational group of Healthcare Practitioners & Technical Occupations.

Human Capital - refers to the skills which workers gain through education or experience, and which increase their value in the labor market.

Major Occupational Group - a group of detailed occupations that involve similar tasks or skills. For instance, Lawyers, Court Reporters, Law Clerks, and Paralegals & Legal Assistants are all part of the major group Legal Occupations.

O*NET - related to the Standard Occupational Classification system, the O*NET system is focused on identifying typical occupational skill requirements. This skill classification system replaced the Dictionary of Occupational Titles.

Poverty Level - in 2003, the federal poverty guideline was $18,400 annually for a family of four (Thompson, 2003). We refer to most wages as a percentage of the poverty guideline. For instance, $22,840 is 124 percent of the poverty guideline.

Standard Occupational Classification (SOC) - the occupational classification system upon which this publication is based. It is a method for classifying occupations based on similar skill and task requirements.

examine projected occupational growth by major occupational groups, by typical education requirements, and poverty levels.

Statewide Occupational Projections - 2010

Statewide employment is projected to increase from 217,376 jobs in 2000 to 250,002 by 2010, an overall increase of 32,626 jobs or 15.0 percent (see Table 3.1, page 22). For purposes of this research, we narrowed the analysis to include only those occupations requiring postsecondary education and paying average annual wages of $18,400 or higher. Of the 217,376 jobs in 2000, 27,706 jobs meet the education and income criteria (see Table 2.1 and Table 2.2 on page 9). The number of these jobs is expected to reach 32,498 by 2010.

Text continued on page 11

Table 2.1: Projected Employment Growth by Major Occupational Group in Wyoming for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

SOC[b]	Occupation Group Code and Title	#[c]	Employment 2000	Employment Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	2001 Average Wage Annual	% of Poverty[d]
11-0000	Management	6	7,490	8,722	1,232	16.4%	$27.53	$57,271	311%
13-0000	Business & Financial Operations	2	2,287	2,649	362	15.8%	$20.97	$43,625	237%
15-0000	Computer & Mathematical Science	2	886	976	90	10.2%	$15.89	$33,049	180%
17-0000	Architecture & Engineering	5	1,078	1,497	419	38.9%	$23.57	$49,023	266%
19-0000	Life, Physical, & Social Science	2	483	673	190	39.2%	$14.43	$30,014	163%
21-0000	Community & Social Services	5	1,280	1,606	326	25.4%	$14.75	$30,686	167%
23-0000	Legal	1	663	713	50	7.6%	$27.75	$57,710	314%
25-0000	Education, Training & Library	5	7,470	8,151	681	9.1%	NA	$35,473	193%
27-0000	Arts, Design, Entertainment, Sports & Media	0	0	0	0	0.0%	$0.00	$0	0%
29-0000	Healthcare Practitioner & Technical	11	6,748	8,129	1,381	20.5%	$20.46	$42,544	231%
31-0000	Healthcare Support	1	231	280	49	21.4%	$11.19	$23,270	126%
33-0000	Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000	Food Preparation & Serving Related	1	655	738	83	12.6%	$10.98	$22,840	124%
37-0000	Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000	Personal Care & Service	1	607	717	110	18.2%	$10.58	$22,000	120%
41-0000	Sales & Related	1	ND	ND	76	ND	ND	ND	ND
43-0000	Office & Administrative Support	1	555	668	113	20.4%	$10.21	$21,230	115%
45-0000	Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000	Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000	Installation, Maintenance, & Repair	5	3,406	4,074	668	19.6%	$15.36	$31,946	174%
51-0000	Production	1	1,100	1,295	195	17.7%	$14.58	$30,330	165%
53-0000	Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
	Total	**50**	**27,706**	**32,498**	**4,792**	**17.3%**	**$20.52**	**$41,144**	**224%**

[a]100 percent of the 2003 federal poverty guideline for a family of four.

[b]Standard Occupational Classification.

[c]Number of occupations per group.

[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).

NA - No hourly wage available; annual only.

ND - Not disclosable due to confidentiality of information.

Table 2.2: The 50 Occupations in Wyoming With the Greatest Projected Net Increase in Jobs Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment 2000	Employment Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	2001 Average Wage Annual	% of Poverty[d]
1	11-1021	General and Operations Managers	Bachelor's Degree Plus Experience	4,574	5,337	762	16.7%	$28.18	$58,620	319%
2	29-1111	Registered Nurses	Associate's Degree	3,570	4,274	705	19.7%	$19.04	$39,590	215%
3	49-3023	Automotive Service Technicians and Mechanics	Postsecondary Vocational Training	1,491	1,793	302	20.3%	$12.61	$26,230	143%
4	13-2011	Accountants and Auditors	Bachelor's Degree	1,124	1,381	257	22.9%	$21.12	$43,940	239%
5	25-2021	Elementary School Teachers, except Special Education	Bachelor's Degree	2,516	2,770	254	10.1%	NA	$36,270	197%
6	51-4121	Welders, Cutters, Solderers, and Brazers	Postsecondary Vocational Training	1,100	1,295	195	17.7%	$14.58	$30,330	165%
7	29-2061	Licensed Practical and Licensed Vocational Nurses	Postsecondary Vocational Training	834	1,004	169	20.3%	$13.25	$27,550	150%
8	17-2051	Civil Engineers	Bachelor's Degree	438	605	167	38.1%	$23.72	$49,330	268%
9	25-2031	Secondary School Teachers, except Special and Vocational Education	Bachelor's Degree	2,023	2,183	160	7.9%	NA	$37,500	204%
10	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Postsecondary Vocational Training	823	957	134	16.3%	$16.24	$33,790	184%
11	25-2022	Middle School Teachers, Except Special and Vocational Education	Bachelor's Degree	1,292	1,422	130	10.1%	NA	$36,360	198%
12	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	Postsecondary Vocational Training	835	956	121	14.5%	$19.69	$40,950	223%
13	43-6013	Medical Secretaries	Postsecondary Vocational Training	555	668	113	20.4%	$10.21	$21,230	115%
14	19-4099	Life, Physical, and Social Science Technicians, All Other	Associate's Degree	282	394	112	39.6%	$15.54	$32,320	176%
15	39-9031	Fitness Trainers and Aerobics Instructors	Postsecondary Vocational Training	607	717	110	18.2%	$10.58	$22,000	120%
16	13-1199	Business Operations Specialists, All Other	Bachelor's Degree	1,163	1,268	105	9.0%	$20.82	$43,320	235%
17	11-9111	Medical and Health Services Managers	Bachelor's Degree Plus Experience	547	651	104	19.0%	$24.60	$51,160	278%
18	11-3011	Administrative Services Managers	Bachelor's Degree Plus Experience	600	702	102	17.0%	$20.09	$41,790	227%
19	17-1022	Surveyors	Bachelor's Degree Plus Experience	218	315	96	44.1%	$22.97	$47,780	260%
20	11-3031	Financial Managers	Bachelor's Degree Plus Experience	779	874	95	12.2%	$26.86	$55,870	304%
21	21-1021	Child, Family, and School Social Workers	Bachelor's Degree	262	356	94	35.8%	$12.65	$26,300	143%
22	11-9021	Construction Managers	Bachelor's Degree	510	603	93	18.2%	$25.90	$53,870	293%
23	21-9099	All Other Counselors, Social and Religious Workers	Bachelor's Degree	564	650	85	15.1%	$16.12	$33,540	182%
24	35-1011	Chefs and Head Cooks	Postsecondary Vocational Training	655	738	83	12.6%	$10.98	$22,840	124%
25	25-3999	All Other Teachers, Primary, Secondary, and Adult	Bachelor's Degree	1,191	1,270	79	6.6%	NA	$29,260	159%
26	19-4031	Chemical Technicians	Associate's Degree	201	278	78	38.7%	$12.87	$26,770	145%
27	41-3041	Travel Agents	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
28	11-1011	Chief Executives	Bachelor's Degree Plus Experience	481	556	75	15.7%	$36.82	$76,590	416%
29	21-1015	Rehabilitation Counselors	Master's Degree	184	254	71	38.4%	$12.09	$25,150	137%
30	29-1051	Pharmacists	First Professional Degree	492	561	70	14.1%	$31.57	$65,670	357%
31	29-2034	Radiologic Technologists and Technicians	Associate's Degree	283	350	67	23.7%	$17.34	$36,070	196%
32	17-3022	Civil Engineering Technicians	Associate's Degree	136	203	67	49.3%	$15.16	$31,520	171%
33	29-1123	Physical Therapists	Master's Degree	337	403	66	19.5%	$25.43	$52,900	288%
34	49-2011	Computer, Automated Teller, and Office Machine Repairers	Postsecondary Vocational Training	188	251	64	34.0%	$14.35	$29,850	162%
35	29-2021	Dental Hygienists	Associate's Degree	297	360	63	21.3%	$23.69	$49,270	268%

Table 2.2: The 50 Occupations in Wyoming With the Greatest Projected Net Increase in Jobs Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010 (Continued)

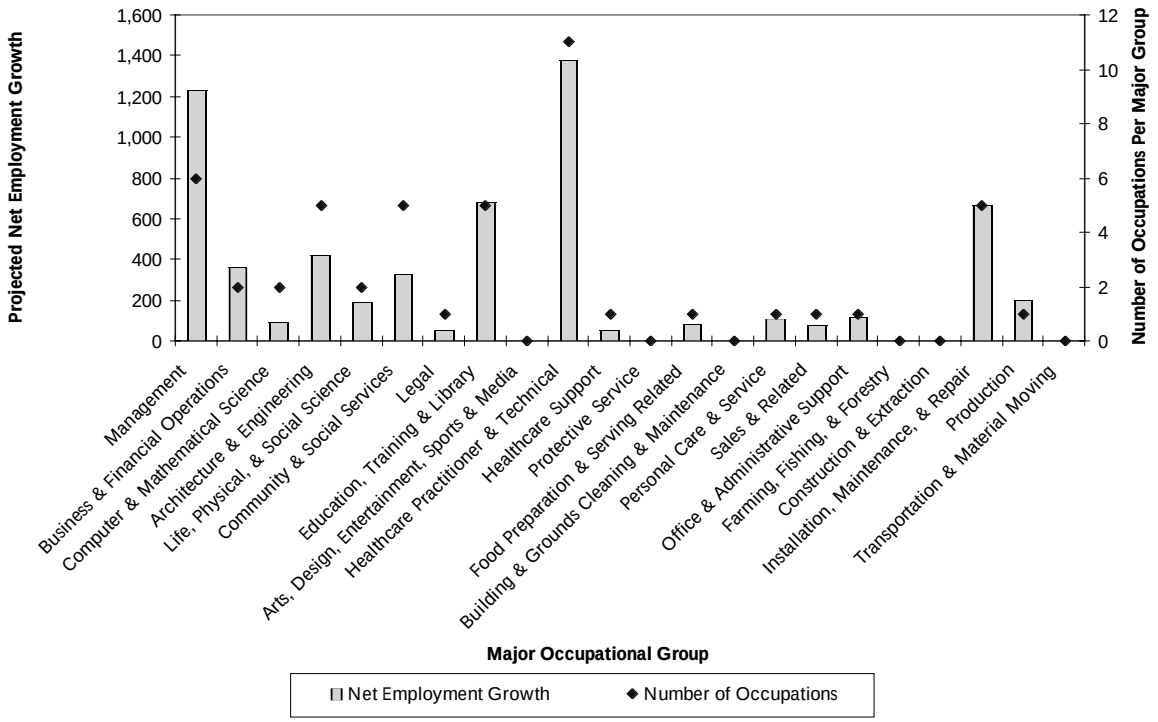
Rank	SOC[b] Code and Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
			2000	Projected 2010	Change Number	Change Percent	Hourly	Annual	% of Poverty[d]
36	25-2041 Special Education Teachers, Preschool, Kindergarten, and Elementary School	Bachelor's Degree	449	506	58	12.8%	NA	$35,800	195%
37	29-2056 Veterinary Technologists and Technicians	Associate's Degree	105	161	56	53.4%	$10.46	$21,760	118%
38	29-2071 Medical Records and Health Information Technicians	Associate's Degree	284	335	52	18.2%	$10.92	$22,710	123%
39	23-1011 Lawyers	First Professional Degree	663	713	50	7.6%	$27.75	$57,710	314%
40	15-1021 Computer Programmers	Bachelor's Degree	280	331	50	17.9%	$20.01	$41,620	226%
41	31-9094 Medical Transcriptionists	Postsecondary Vocational Training	230	280	49	21.4%	$11.19	$23,270	126%
42	17-2171 Petroleum Engineers	Bachelor's Degree	202	250	48	23.8%	$33.47	$69,630	378%
43	29-1062 Family and General Practitioners	First Professional Degree	259	307	48	18.3%	$53.90	$112,120	609%
44	49-2092 Electric Motor, Power Tool, and Related Repairers	Postsecondary Vocational Training	69	117	47	68.3%	$14.53	$30,220	164%
45	29-1131 Veterinarians	First Professional Degree	94	141	47	50.2%	$24.47	$50,900	277%
46	21-1023 Mental Health and Substance Abuse Social Workers	Master's Degree	160	202	42	26.1%	$16.17	$33,630	183%
47	17-3011 Architectural and Civil Drafters	Postsecondary Vocational Training	84	125	41	48.8%	$14.11	$29,340	159%
48	15-1041 Computer Support Specialists	Associate's Degree	606	646	40	6.6%	$13.98	$29,080	158%
49	29-2012 Medical and Clinical Laboratory Technicians	Associate's Degree	194	233	39	20.0%	$13.01	$27,070	147%
50	21-1022 Medical and Public Health Social Workers	Bachelor's Degree	110	145	34	31.0%	$15.12	$31,450	171%
	Total	**Postsecondary Education**	**27,706**	**32,498**	**4,792**	**17.3%**	**$20.52**	**$41,144**	**224%**

[a]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]As defined by the Bureau of Labor Statistics.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA - No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Table 2.2 (see page 9) shows the distribution of the 27,706 jobs used in our analysis among the 50 occupations in Wyoming with the highest projected job increase from 2000 to 2010. General & Operations Managers are projected to have the greatest net employment increase (762 jobs or 16.7%) from 2000 to 2010. Registered Nurses are projected to have the second highest net increase with 705 jobs (19.7%).

As Figure 2.1 illustrates, the Healthcare Practitioner & Technical major group shows the most anticipated growth of any major occupational group (1,381 jobs). It also includes the largest variety of occupations (11) from the list of 50 occupations with the greatest employment increases. Among specific occupations included in the list are Licensed Practical Nurses (ranked 7th) and Pharmacists (ranked 30th). It is not surprising that the list is dominated by healthcare-related occupations given their increasingly important role in the state's economy. "Over the long term, Wyoming faces an aging population as its baby boomers head into retirement. This aging population will likely increase the demand for health services and potentially increase healthcare employment opportunities in the state, as well as job openings, as its workforce retires (Gallagher & McVeigh, 2003, p. xi)."

Figure 2.1: Distribution by Major Occupational Group of the 50 Occupations[a] in Wyoming With the Greatest Projected Net Increase In Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).

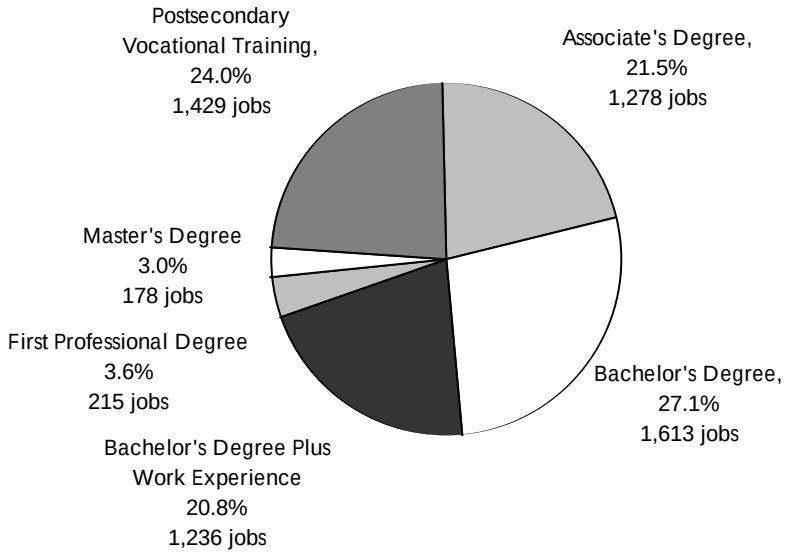
Management is projected to have the second highest growth (1,232 jobs) and the second largest variety of occupations (6). Included in Management are General & Operations Managers and Financial Managers. Management occupations tend to have greater prevalence in those industries or firms that require multiple layers of bureaucracy to manage day-to-day operations. These occupations are concentrated in industries that require large numbers of employees, such as Services and Retail Trade. Large firms in any industry also require more Management occupations because of their complex organizational hierarchy.

With occupational growth concentrated in a few major occupational groups, training providers have the opportunity to develop their curriculum based on anticipated occupational needs. By targeting their training to fast-growing, high-paying occupations, training providers may be able to take advantage of economy of scale to educate a larger number of students at a lower cost. Targeted training reduces the required number of educators and the need for equipment and supplies related to other disciplines.

The educational requirements of the 50 occupations used in our analysis are shown in Figure 2.2. Occupations requiring a Bachelor's degree, such as Accountants and Auditors, are expected to increase by 1,613 jobs. Growth among occupations requiring a Bachelor's degree plus experience is projected to be 1,236 jobs. Combined, these occupations constitute 20 of the 50 occupations and account for 47.9 percent of the growth.

Occupations that require postsecondary vocational training are projected to grow by 1,429 jobs. Automotive Service Technicians & Mechanics (ranked 3rd) and Chefs & Head Cooks (ranked 24th) are among

Figure 2.2: Percentage of Total New Jobs Within the 50 Occupations in Wyoming With the Greatest Projected Net Increase in Employment by Education Requirements



those requiring postsecondary vocational training.

The skills of the labor supply (human capital) are an important factor in occupational growth. In general, a highly skilled workforce is more productive than a less skilled workforce (Parkin, 1998). Education and skills also benefit workers in terms of earnings. Most often the higher the wage level, the more education or job experience required to hold that particular job (Hauf, 2002).

If Wyoming is to increase the number of workers with postsecondary training, and hence higher paying jobs, the state will need to attract industries that use occupations requiring advanced skills. Unless employment opportunities are at least comparable to opportunities elsewhere, the state can expect to continue to lose educated young workers to higher paying industries and jobs in other states. For Wyoming to attract and retain firms that have higher paying jobs, education and training must be a priority.

Figure 2.3 is a summary of the 50 occupations based on poverty guidelines. The poverty guidelines are grouped into ranges of 100 to 129 percent ($18,400 to $23,919 annually), 130 to 184 percent ($23,920 to $34,039 annually), and 185 and higher ($34,040 and higher

Sample Occupational Codes, Titles, and Descriptions

11-1021 General and Operations Managers

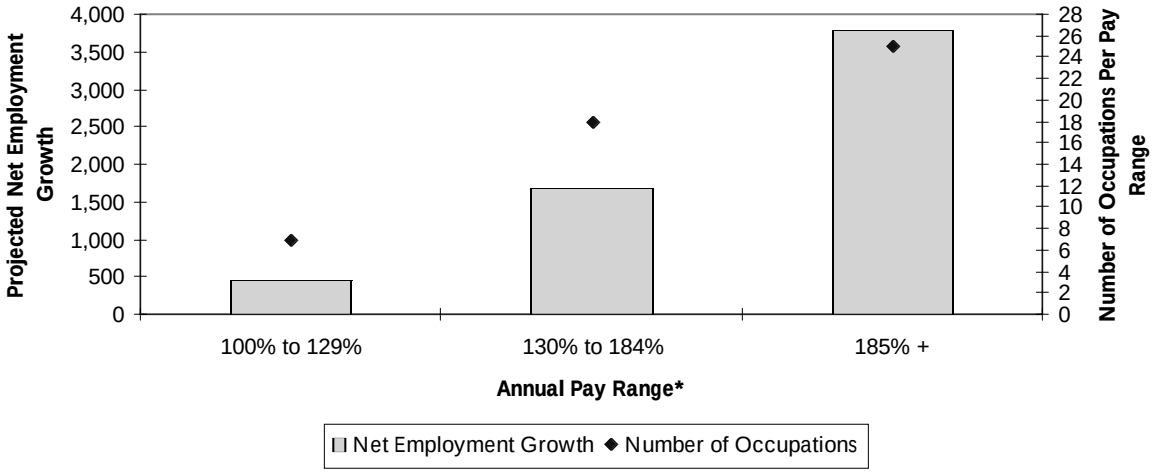
Plan, direct, or coordinate the operations of companies or public and private sector organizations. Duties and responsibilities include formulating policies, managing daily operations, and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing, or administrative services. Includes owners and managers who head small business establishments whose duties are primarily managerial. Excludes "First-Line Supervisors/Managers of Retail Sales Workers" (41-1011) and workers in other small establishments. Illustrative Examples: Industrial Organization Manager; District Manager; Department Store General Manager.

29-2012 Medical and Clinical Laboratory Technicians

Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a Medical Technologist. Illustrative Examples: Blood Bank Technician; Cytotechnician; Serology Technician.

For additional occupational information, including codes, titles, descriptions, and educational requirements, see U.S. Department of Labor, Bureau of Labor Statistics, Standard Occupational Classification (SOC) System at <http://stats.bls.gov/soc/>, and U.S. Department of Labor, Employment and Training Administration, Occupational Information Network Resource Center at <http://www.onetcenter.org>.

Figure 2.3: Distribution by Pay Range of the 50 Occupations in Wyoming With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



*Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

annually) of the federal poverty guideline (Thompson, 2003). For occupations requiring postsecondary education, most occupational growth occurs at or above 130 percent of the poverty guideline, indicating that most individuals with postsecondary education, on average, can expect to earn a living wage as a result of their investment in education.

Half of the 50 occupations shown pay at or above 185 percent of the poverty guideline. Civil Engineers and Mobile Heavy Equipment Mechanics, except Engines are among this group (268% and 223% of the poverty guideline, respectively). Among the 18 occupations paying wages in the range of 130 to 184 percent of the poverty guideline are Welders, Cutters, Solderers, and Brazers (165%) and Civil Engineering Technicians (171%). Medical Secretaries (115%) and Veterinary Technologists & Technicians (118%) are among the seven occupations paying wages in the lowest range (100 to 129%) above the poverty guideline.

Discussion

Although industry growth can be discussed without necessarily referring to occupational growth, the reverse is problematic. Occupational growth is largely a function of the industries in which people work in, and the demand for goods and services produced by those industries.

Industry and occupational growth can only occur if (1) the labor force has or is able to obtain the necessary skills to complete essential tasks, (2) labor can be imported into the state in sufficient quantities through migration (temporarily or permanently; Parkin, 1998), (3) natural increases in the labor force (more births than deaths or retirements) yield more young adults available for work, or (4) individuals not

currently in the labor force (such as retirees or stay-at-home parents) are enticed through wages or other benefits to join the labor market.

In conjunction with industry growth, projected occupational growth is influenced by several factors (U.S. Department of Labor, 2002) including:

- The needs of the general population because of changing demographics
- Change in the mix of industries in the state
- Change in the occupation composition of industries
- Labor intensity of industries
- Technological changes that result in an increase or decrease of certain occupations required in an industry
- Change in occupational skills requirements

Wyoming is likely to face a number of occupational changes because the state has a proportionately higher percentage of individuals in upper age brackets of 45 to 64 and fewer in the lower age brackets of 25 to 34 years of age (Gallagher, Harris, Leonard, Liu, & McVeigh, 2003). There are two consequences of retirement for the labor market. First, retirement creates openings for younger workers, provided that firms choose to hire for positions from which individuals retire. Note that retirement does not necessarily lead to job growth, only the opportunity for other workers to fill those positions. Second, as more workers retire the types of goods and services demanded by the overall population will shift. In particular, health services will increasingly influence the state's economy (Gallagher, et al, 2003). This partly explains why healthcare-related occupations, such as Registered Nurses, are projected to have high growth over the decade.

Despite anticipated changes in the types of goods and services demanded, the overall industry composition, and consequently occupational composition, is unlikely to change dramatically (Gallagher, et al, 2003). As a result, Services will continue to be the dominant industry in Wyoming.

The Services industry employs the most individuals, 36.2 percent of all workers in Wyoming in 2000 (Gallagher, et al, 2003). Similarly, in the U.S., Services employed 30 percent of all workers (U.S. Department of Labor, 2003). In Wyoming two major sub-industries, health and education, employed a combined 42,372 individuals, more than half (50.9%) of the Services industry employment in 2000. By 2010, health and education are expected to employ 49,385 individuals (Gallagher, et al, 2003). However, because of expected additional reductions in school enrollment in most areas of Wyoming and the reduced need for education services, the percentage of employment decreases slightly to 47.5 percent.

Staffing Patterns

Tables 2.3 and 2.4 (see pages 16 and 17) demonstrate how occupational requirements vary by industry. Each Table illustrates a hypothetical firm seeking to hire 125 workers. Table 2.3 shows a firm in oil and gas extraction (SIC 13), while Table 2.4 shows a firm in building materials, hardware, garden supply, and mobile home dealers (SIC 52). As the Tables show, firms in SIC 13 require a more diverse set of occupations (and hence skills) than do firms in SIC 52. Furthermore, there is very little overlap in the types of occupations

Table 2.3: Wyoming Sample Oil and Gas Extraction (SIC 13) Staffing Pattern Assuming 125 Employees in the Firm

SOC[b] Code and Occupation Title	Staffing Level % of Employment	Staffing Level Number of Workers	2001 Average Wage[a] Hourly	2001 Average Wage[a] Annual	2001 Average Wage[a] % of Poverty[c]
53-7073 Wellhead Pumpers	14.7%	18	$17.30	$35,620	194%
53-3032 Truck Drivers, Heavy and Tractor-Trailer	11.6%	15	$14.69	$30,550	166%
47-5099 Extraction Workers, All Other	9.7%	12	$14.02	$29,160	158%
47-5081 Helpers Extraction Workers	9.3%	12	$14.55	$30,270	165%
49-9098 Helpers Installation, Maintenance, and Repair Workers	6.5%	8	$13.03	$27,100	147%
51-8093 Petroleum Pump System Operators, Refinery Operators, and Gaugers	5.7%	7	$22.50	$46,800	254%
17-2171 Petroleum Engineers	5.1%	6	$33.47	$69,630	378%
47-1011 First-Line Supervisors/Managers of Construction Trades and Extraction Workers	4.8%	6	$22.98	$47,790	260%
11-1021 General and Operations Managers	3.8%	5	$28.18	$58,620	319%
43-3031 Bookkeeping, Accounting, and Auditing Clerks	3.6%	5	$10.68	$22,220	121%
43-9061 Office Clerks, General	3.4%	4	$8.95	$18,620	101%
43-6011 Executive Secretaries and Administrative Assistants	2.9%	4	$13.27	$27,590	150%
49-9041 Industrial Machinery Mechanics	1.9%	2	$22.05	$45,870	249%
11-3031 Financial Managers	1.9%	2	$26.86	$55,870	304%
43-1011 First-Line Supervisors/Managers of Office and Administrative Support Workers	1.9%	2	$16.13	$33,560	182%
13-1199 Business Operations Specialists, All Other	1.9%	2	$20.82	$43,320	235%
43-6014 Secretaries, Except Legal, Medical, and Executive	1.7%	2	$9.99	$20,790	113%
19-2042 Geoscientists, Except Hydrologists and Geographers	1.7%	2	$30.63	$63,700	346%
17-3099 All Other Drafters, Engineering, and Mapping Techs.	1.7%	2	$20.28	$42,180	229%
19-4041 Geological and Petroleum Technicians	1.3%	2	$19.58	$40,730	221%
47-2111 Electricians	1.3%	2	$18.63	$38,750	211%
49-1011 First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	1.1%	1	$22.92	$47,670	259%
11-9041 Engineering Managers	0.8%	1	$34.82	$72,420	394%
17-2199 Engineers, All Other	0.6%	1	$25.70	$53,460	291%
49-2095 Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	0.4%	1	$24.58	$51,130	278%
11-9199 Managers, All Other	0.4%	1	$26.34	$57,790	314%
Total	**100.0%**	**125**	**$18.17**	**$37,753**	**205%**

[a]Average wage for Wyoming; not industry-specific.

[b]Standard Occupational Classification.

[c]Based on 18,400 annually for a family of four (100% of the 2003 federal poverty guideline).

Note: Totals may not sum due to rounding.

required for each industry. Only Bookkeeping, Accounting, & Auditing Clerks and General & Operations Managers are common to both industries.

Wages among the two industries are also very different. On average, occupations represented in SIC 13 pay $37,753 annually (205% of the poverty guideline), while occupations in SIC 52 pay $22,672 annually (123% of the poverty guideline). Based on poverty guideline, the lowest paying occupation in SIC 13 (Office Clerks, General) pays 101 percent of the poverty guideline, while the highest paying occupation (Engineering Managers) pays 394 percent

Table 2.4: Wyoming Sample Building Materials, Hardware, Garden Supply, and Mobile Home Dealers (SIC 52) Staffing Pattern Assuming 125 Employees in the Firm

SOC[b] Code and Occupation Title		Staffing Level % of Employment	Staffing Level Number of Workers	2001 Average Wage[a] Hourly	2001 Average Wage[a] Annual	2001 Average Wage[a] % of Poverty[c]
41-2031	Retail Salespersons	41.1%	51	$8.72	$18,130	99%
41-2011	Cashiers	15.5%	19	$7.41	$15,410	84%
41-1011	First-Line Supervisors/Managers of Retail Sales Workers	10.1%	13	$13.53	$28,140	153%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	8.5%	11	$17.20	$35,780	194%
43-5081	Stock Clerks and Order Fillers	7.8%	10	$10.13	$21,080	115%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	6.2%	8	$10.68	$22,220	121%
11-1021	General and Operations Managers	4.6%	6	$28.18	$58,620	319%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	4.6%	6	$9.16	$19,060	104%
43-5071	Shipping, Receiving, and Traffic Clerks	1.6%	2	$10.62	$22,080	120%
	Total	**100.0%**	**125**	**$10.90**	**$22,672**	**123%**

[a]Average wage for Wyoming; not industry-specific.

[b]Standard Occupational Classification.

[c]Based on 18,400 annually for a family of four (100% of the 2003 federal poverty guideline).

Note: Totals may not sum due to rounding.

of the poverty guideline. The lowest paying occupation in SIC 52 (Cashiers) pays 84 percent of the poverty guideline, while the highest paying occupation (General & Operations Managers) pays 319 percent of the poverty guideline. Additionally, the proportion of high wage jobs (at or above 130% of the federal poverty guideline) is much higher in SIC 13 (91.3% of jobs) compared to SIC 52 (23.2% of jobs). Therefore, growth in SIC 52 will produce fewer high-wage occupations than growth in SIC 13.

Tables 2.3 (see page 16) and 2.4 demonstrate the possibility of evaluating industry variations in occupational demand and wages. While staffing patterns have many potential uses, they are especially useful to economic developers and firms looking to expand their businesses. For example, if an economic developer wants to improve wages in an area, then the staffing patterns can be used to help assess which industries will bring in occupations that are most likely to meet specific wage goals. Similarly, if a firm looks to expand into a particular locality, then the firm can evaluate its occupational needs and compare that to the availability of labor.

As technology changes, so will the mix of occupations within industries. Usually technology is focused towards reducing the number of workers required to perform a given set of tasks. Agriculture is perhaps the most conspicuous example of an industry in which the occupational mix required to produce agricultural goods has been, and continues to be, impacted by technology. At the peak in the early to mid-1900s, approximately 90 percent of the U.S. population lived on farms and ranches. Today, less than two percent of the U.S. population is based in Agriculture. Technological improvements in Agriculture are the reason that the

number of workers required to produce agricultural goods has declined so dramatically (Doering, 2000).

While technology has reduced or eliminated the need for certain occupations, such as railroad conductors and engineers (Union Pacific Railroad, 2003), it has had less impact on those occupations where substantial personal contact is required. Services and Retail Trade are two industries that typically demand more association between customers and providers. Consequently, they are generally more labor intensive, as demonstrated by the larger employment levels relative to other industries.

Changing skill needs for occupations also affect occupational growth. Again, much of the change is tied to technological changes (Grover & Martell, 2000). For instance, with computers and related technology becoming more user-friendly, a wider variety of occupations now require familiarity with computers for employment. Occupations ranging from bank tellers, to auto mechanics, to physicians require daily use of computers in their operations. In addition, crossover between technical and non-technical workers has become more common. For example, "The miniaturization of camera equipment has rendered obsolete the cumbersome mobile TV units of the past, replacing the camera operators, sound specialists and support personnel with, for example, single reporters carrying lightweight camcorders, or much smaller crews (International Labour Organization, 2002)."

Other Resources

Occupational projections are but one piece of a complex labor market puzzle. A number of other resources are available for readers to better understand the context in which these occupational projections were developed. The Occupational Employment Statistics program produces estimates of jobs by occupation, as well as information about wage rates. Results of the 2001 Wyoming Wage Survey, including employment estimates and wage information, are available from Research & Planning's website at <http://doe.state.wy.us/LMI/01oespub/toc.htm>. State-by-state 2002 wage estimates are available at <http://www.bls.gov/oes/2002/oessrcst.htm>.

Benefits, such as paid holiday leave, health insurance, and retirement plans are often an important consideration for employers and employees in terms of the overall compensation package that includes wages. For information about benefits employers provide to workers, the results of 2002 Wyoming Benefits Survey are available from our website at <http://doe.state.wy.us/LMI/benefits/bentoc.htm>.

Lastly, Wyoming's labor market does not operate in a vacuum. The economic climate of surrounding states as well the nation can impact the supply and demand for labor. In order to better understand the regional and national context of Wyoming's labor market, we encourage the review of information produced by other states. Links to other state websites can be accessed from our website at <http://doe.state.wy.us/LMI/resource.htm>.

Summary

Occupations are heavily influenced by the industry composition of the state. Demographic factors will heavily influence the goods and services

demanded, and consequently occupational growth. Industries related to healthcare, a focus of attention both in Wyoming and nationally, are forecast to experience relatively high job growth over the next decade as the overall age of the population increases. Other Services industries, including Engineering and Management Services and Business Services, are also expected to experience growth.

Despite the increased focus of the state's economy on providing health care services, the overall mix of industries is unlikely to change substantially. Regardless of industry, education will continue to be an important attribute for workers in search of higher paying jobs, whether the jobs are in Wyoming or elsewhere. When evaluating industry and occupational growth in the state, it is important to understand the regional and national context in which the growth occurs. Wyoming's unique status as an exporter of natural resources will continue to impact the direction of the state's economy.

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Chapter 3. Regional Occupational Projections

text by: Sara Saulcy, Economist
data and methodology by: Tony Glover, Senior Research Analyst

In this chapter we review occupational projections by region (see Map). We focus on the 50 fastest growing occupations that require postsecondary education and pay at least $18,400 a year. For comparison purposes, we also report total growth in each of the six regions. The complete listing of occupations regardless of education or income status are provided in the appendix.

Regional Summary

Total occupational growth in Wyoming is projected to be 32,626 jobs (see Table 3.1, page 22). The Cheyenne Metropolitan Statistical Area (MSA) is projected to have the highest total net growth of the six regions with 6,889 jobs, followed by the Northeast Region with 6,431 jobs. With projected net growth of 1,519 jobs, the Central-Southeast Region is projected to have the lowest net growth.

When examining the 50 occupations with the greatest projected net growth for occupations that pay at least $18,400 (100% of the 2003 federal poverty guideline; Thompson, 2003) and require

Map: Occupational Employment Statistics (OES) Regions of Wyoming

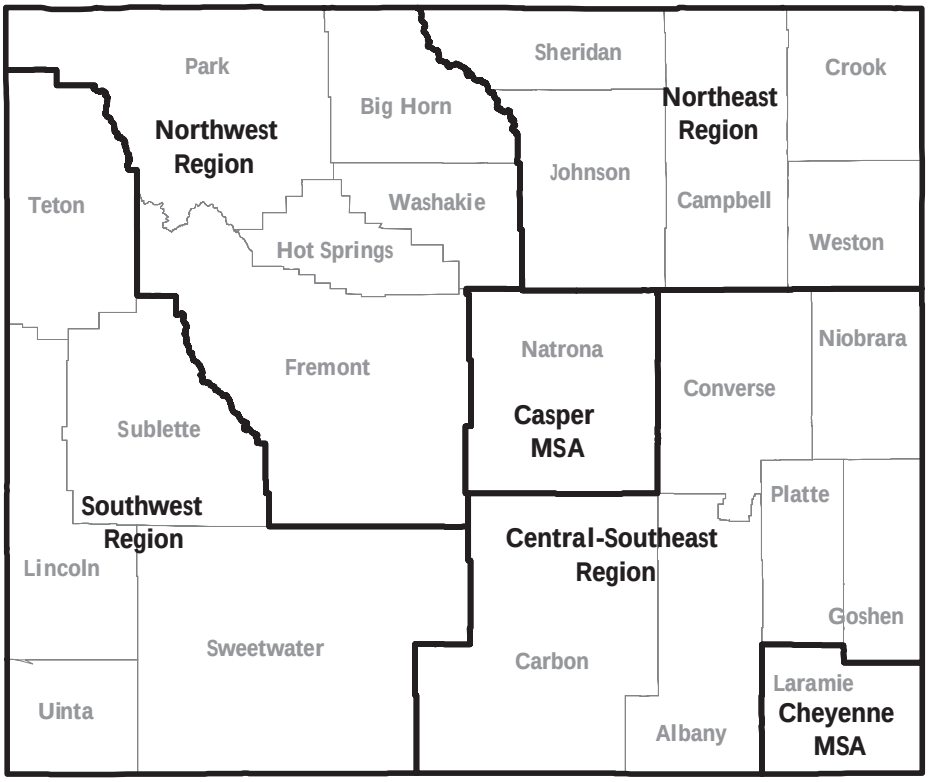


Table 3.1: Projected Total Employment Growth and Average Wage by Wyoming Region, 2000, 2001, and 2010

Region	Employment				2001 Average Wage		
	2000	Projected 2010	Change Number	Change Percent	Hourly	Annual	% of Poverty[a]
Central-Southeast	32,093	33,612	1,519	4.7%	$12.50	$27,551	150%
Northeast	35,686	42,117	6,431	18.0%	$14.34	$30,999	168%
Northwest	33,623	37,306	3,683	11.0%	$12.65	$26,820	146%
Southwest	49,512	58,167	8,655	17.5%	$14.63	$31,224	170%
Casper MSA[b]	30,951	36,400	5,449	17.6%	$13.63	$28,720	156%
Cheyenne MSA[b]	35,511	42,400	6,889	19.4%	$13.74	$28,885	157%
Total	**217,376**	**250,002**	**32,626**	**15.0%**	**$12.50**	**$27,551**	**150%**

[a]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
[b]Metropolitan Statistical Area.

postsecondary education, across the six regions of the state, Registered Nurses ranked no lower than third for net occupational growth over the 2000 to 2010 period. General & Operations Managers ranked no lower than sixth. The Healthcare Practitioner & Technical Occupations major group is generally expected to experience the most substantial gains in employment across regions, largely due to Wyoming's aging population (for a complete discussion of the impact of demographics on occupational growth, see Chapter 2, page 7). The exception is the Northeast Region, where the Installation, Maintenance, & Repair, and Management major groups are expected to outpace growth in the Healthcare Practitioner & Technical Occupations major group due to coalbed methane. Occupations requiring a Bachelor's degree are projected to have the highest growth among education types in all areas of the state except the Casper Metropolitan Statistical Area (MSA). Occupations paying 185 percent of the poverty guideline and higher are projected to see the greatest net occupational growth across the six regions.

Regional Highlights

Central-Southeast

Total net growth in the Central-Southeast Region is projected to be 1,519 jobs, the lowest of the six regions (see Table 3.1). Occupations that pay at or above the poverty guideline and require postsecondary education are projected to grow by 640 jobs (see Table 3.2, page 23). Of the 50 highest growth occupations meeting these criteria, Registered Nurses are projected to have the largest net growth with 83 jobs and Accountants & Auditors are ranked second with 40 jobs (see Table 3.3, page 24).

The Healthcare Practitioner & Technical Occupations major group is

expected to experience the highest net growth in the region, with 160 jobs (see Figure 3.1, page 26). Registered Nurses and Dental Hygienists are among the detailed occupations included in this group. As mentioned previously, changing demographics are a primary reason for the projected increase in these types of occupations. The Life, Physical, & Social Science major group is projected to have the second highest net growth with 107 jobs. Among detailed occupations in this group are Anthropologists & Archeologists and Chemical Technicians, which tie into the research activities of educational institutions in the region. Several occupations in the Architecture & Engineering major group are also represented among the high growth

Text continued on page 27

Table 3.2: Projected Employment Growth by Major Occupational Group in the Central-Southeast Region for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

SOC[b]	Occupation Group Code and Title	#[c]	Employment		Change		2001 Average Wage		
			2000	Projected 2010	Number	Percent	Hourly	Annual	% of Poverty[d]
11-0000	Management	7	959	1,047	88	9.2%	$26.16	$54,406	296%
13-0000	Business & Financial Operations	3	ND	ND	71	ND	ND	ND	ND
15-0000	Computer & Mathematical Science	1	24	31	7	29.2%	$17.06	$35,490	193%
17-0000	Architecture & Engineering	7	221	317	96	43.4%	$22.25	$46,272	251%
19-0000	Life, Physical, & Social Science	7	ND	ND	107	ND	ND	ND	ND
21-0000	Community & Social Services	7	251	312	61	24.3%	$13.00	$27,043	147%
23-0000	Legal	0	0	0	0	0.0%	$0.00	$0	0%
25-0000	Education, Training, & Library	0	0	0	0	0.0%	$0.00	$0	0%
27-0000	Arts, Design, Entertainment, Sports, & Media	0	0	0	0	0.0%	$0.00	$0	0%
29-0000	Healthcare Practitioner & Technical	11	ND	ND	160	ND	$18.53	$38,540	209%
31-0000	Healthcare Support	1	47	53	6	12.8%	$11.46	$23,840	130%
33-0000	Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000	Food Preparation & Serving Related	0	0	0	0	0.0%	$0.00	$0	0%
37-0000	Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000	Personal Care & Service	2	ND	ND	14	ND	ND	ND	ND
41-0000	Sales & Related	1	12	17	5	41.7%	$57.55	$119,700	651%
43-0000	Office & Administrative Support	1	55	66	11	20.0%	$10.73	$22,320	121%
45-0000	Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000	Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000	Installation, Maintenance, & Repair	2	216	228	12	5.6%	$12.01	$24,984	136%
51-0000	Production	0	0	0	0	0.0%	$0.00	$0	0%
53-0000	Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
	Total	**50**	**3,373**	**4,013**	**640**	**19.0%**	**$19.66**	**$40,889**	**222%**

[a]100 percent of the 2003 federal poverty guideline for a family of four.

[b]Standard Occupational Classification.

[c]Number of occupations per group.

[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).

ND - Not disclosable due to confidentiality of information.

Table 3.3: The 50 Occupations in Wyoming's Central-Southeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

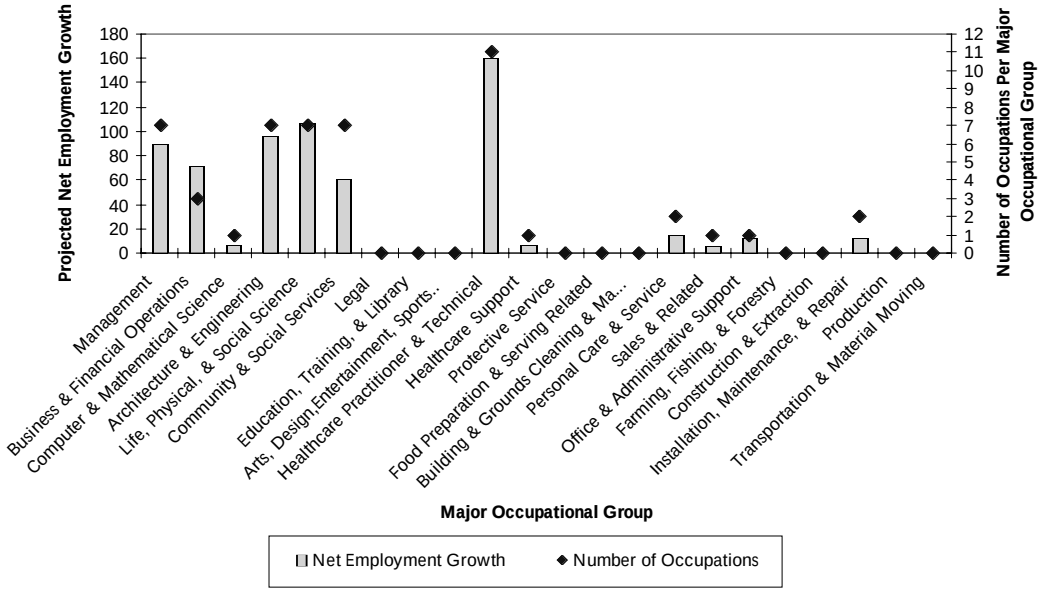
Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
					Projected	Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[d]
1	29-1111	Registered Nurses	Associate's Degree	418	501	83	19.9%	$20.29	$42,200	229%
2	13-2011	Accountants & Auditors	Bachelor's Degree	141	181	40	28.4%	$16.79	$34,930	190%
3	21-1021	Child, Family, & School Social Workers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
4	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Trng.	137	166	29	21.2%	$14.24	$29,620	161%
5	17-1022	Surveyors	Bachelor's Degree	ND	ND	ND	ND	$21.65	$45,040	245%
6	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	565	587	22	3.9%	$27.59	$57,380	312%
7	19-2041	Environmental Scientists & Specialists, Including Health	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
8	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	107	127	20	18.7%	$14.20	$29,540	161%
9	19-3091	Anthropologists & Archeologists	Master's Degree	46	65	19	41.3%	$14.97	$31,130	169%
10	13-1111	Management Analysts	Bachelor's Degree Plus Exp.	ND	ND	ND	ND	ND	ND	ND
11	17-2051	Civil Engineers	Bachelor's Degree	ND	ND	ND	ND	$23.61	$49,110	267%
12	19-4091	Environmental Science & Protection Technicians, Including Health	Associate's Degree	33	50	17	51.5%	$14.79	$30,760	167%
13	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	81	97	16	19.8%	$15.54	$32,330	176%
14	17-3022	Civil Engineering Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
15	17-2081	Environmental Engineers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
16	11-9021	Construction Managers	Bachelor's Degree	ND	ND	ND	ND	$32.34	$67,260	366%
17	11-9111	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	63	76	13	20.6%	$22.32	$46,420	252%
18	11-3031	Financial Managers	Bachelor's Degree Plus Exp.	84	96	12	14.3%	$23.26	$48,390	263%
19	43-6013	Medical Secretaries	Postsecondary Vocational Trng.	54	66	12	22.3%	$10.73	$22,320	121%
20	19-4031	Chemical Technicians	Associate's Degree	45	57	12	26.7%	$12.93	$26,900	146%
21	13-1199	Business Operations Specialists, All Other	Bachelor's Degree	210	222	12	5.7%	$18.03	$37,510	204%
22	17-2041	Chemical Engineers	Bachelor's Degree	22	32	10	45.5%	$25.41	$52,860	287%
23	17-2071	Electrical Engineers	Bachelor's Degree	ND	ND	ND	ND	$25.56	$53,150	289%
24	19-1010	Agricultural & Food Scientists	Bachelor's Degree	18	28	10	55.6%	$14.49	$30,150	164%
25	19-2042	Geoscientists, Except Hydrologists & Geographers	Bachelor's Degree	28	37	9	32.1%	$29.94	$62,280	338%
26	21-9099	All Other Counselors, Social & Religious Workers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
27	39-9032	Recreation Workers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
28	29-2011	Medical & Clinical Laboratory Technologists	Bachelor's Degree	42	50	8	19.0%	$19.94	$41,470	225%
29	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Trng.	141	149	8	5.7%	$12.17	$25,320	138%
30	11-9121	Natural Sciences Managers	Bachelor's Degree Plus Exp.	23	31	8	34.8%	$29.22	$60,780	330%
31	29-2021	Dental Hygienists	Associate's Degree	35	42	7	20.0%	$21.06	$43,800	238%
32	29-2071	Medical Records & Health Information Technicians	Associate's Degree	34	41	7	20.6%	$10.20	$21,220	115%
33	15-1051	Computer Systems Analysts	Bachelor's Degree	24	31	7	29.2%	$17.06	$35,490	193%
34	31-9094	Medical Transcriptionists	Postsecondary Vocational Trng.	47	53	6	12.8%	$11.46	$23,840	130%
35	29-2034	Radiologic Technologists & Technicians	Associate's Degree	28	34	6	21.4%	$16.79	$34,920	190%
36	21-1014	Mental Health Counselors	Master's Degree	ND	ND	ND	ND	$17.57	$36,540	199%
37	39-9031	Fitness Trainers & Aerobics Instructors	Postsecondary Vocational Trng.	ND	ND	ND	ND	$10.22	$21,260	116%

Table 3.3: The 50 Occupations in Wyoming's Central-Southeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010 (Continued)

Rank	SOC[b] Code and Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
			Projected		Change				
			2000	2010	Number	Percent	Hourly	Annual	% of Poverty[d]
38	29-1131 Veterinarians	First Professional Degree	ND	ND	ND	ND	$26.59	$55,310	301%
39	29-1123 Physical Therapists	Master's Degree	27	33	6	22.2%	$25.72	$53,490	291%
40	11-9141 Property, Real Estate, & Community Association Managers	Bachelor's Degree	ND	ND	ND	ND	$10.40	$21,630	118%
41	17-3011 Architectural & Civil Drafters	Postsecondary Vocational Trng.	11	17	6	54.5%	$16.08	$33,450	182%
42	41-3031 Securities, Commodities, & Financial Serv. Sales Agents	Bachelor's Degree	12	17	5	41.7%	$57.55	$119,700	651%
43	21-1015 Rehabilitation Counselors	Master's Degree	16	20	4	25.0%	$12.68	$26,370	143%
44	29-2055 Surgical Technologists	Postsecondary Vocational Trng.	ND	ND	ND	ND	ND	ND	ND
45	49-3031 Bus & Truck Mechanics & Diesel Engine Specialists	Postsecondary Vocational Trng.	76	79	3	3.9%	$11.71	$24,360	132%
46	21-1092 Probation Officers & Correctional Treatment Specialists	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
47	21-1091 Health Educators	Master's Degree	11	14	3	27.3%	$15.31	$31,850	173%
48	29-2053 Psychiatric Technicians	Postsecondary Vocational Trng.	ND	ND	ND	ND	ND	ND	ND
49	21-1013 Marriage & Family Therapists	Master's Degree	ND	ND	ND	ND	ND	ND	ND
50	29-2054 Respiratory Therapy Technicians	Postsecondary Vocational Trng.	10	12	2	20.0%	$13.98	$29,070	158%
	Total	**Postsecondary Education**	**3,373**	**4,013**	**640**	**19.0%**	**$19.66**	**$40,889**	**222%**

[a]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
ND - Not disclosable due to confidentiality of information.

Figure 3.1: Distribution by Major Occupational Group of the 50 Occupations[a] in Wyoming's Central-Southeast Region With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).

Figure 3.2: Percentage of Total New Jobs Within the 50 Occupations in Wyoming's Central-Southeast Region With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010

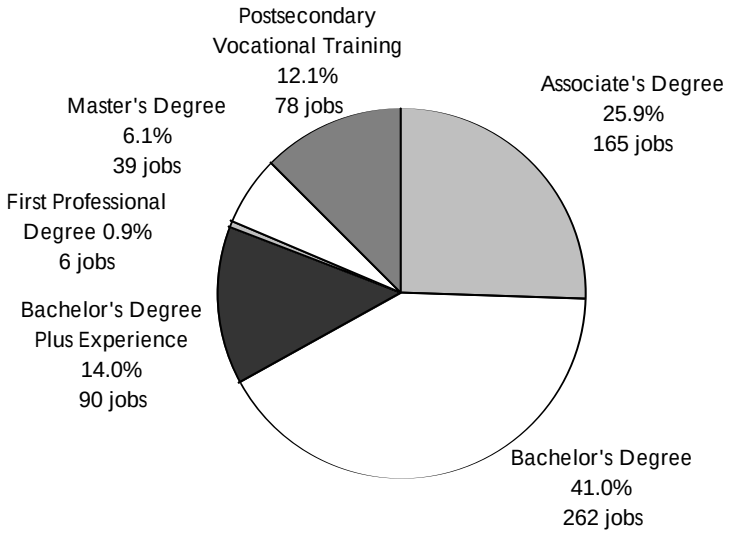
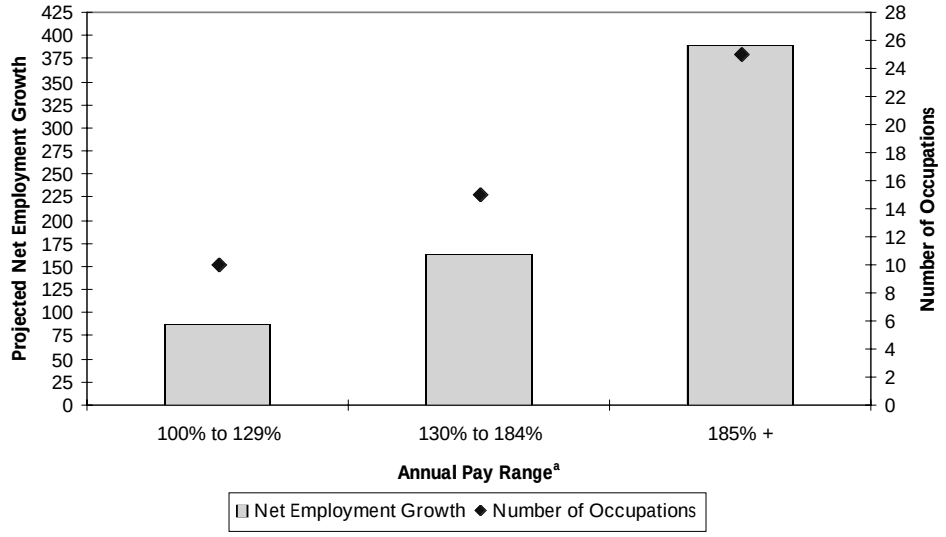


Figure 3.3: Distribution by Pay Range of the 50 Occupations in Wyoming's Central-Southeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

occupations (96 jobs). The Sales & Related major group is projected to have the lowest growth (5 jobs).

Occupations requiring a Bachelor's degree are projected to have the highest growth in the Central-Southeast Region (262 jobs), followed by occupations that require an Associate's degree (165 jobs, see Figure 3.2, page 26).

The greatest net growth (389 jobs) in terms of wages is projected to be in occupations that pay at least 185 percent of the poverty guideline (see Figure 3.3). Among the detailed occupations that pay wages at the 185 percent and higher level are Civil Engineers and Financial Managers. Occupations that pay 130 to 184 percent of the poverty guideline are projected to increase by 163 jobs. Licensed Practical & Vocational Nurses, and Administrative Service Managers are among the detailed occupations that pay wages at this level. Net employment growth is expected to be 88 jobs in occupations that pay 100 to 129 percent of the poverty guideline. Represented in this pay range are the detailed occupations Medical Secretaries and Fitness Trainers & Aerobics Instructors.

Northeast

With average annual employment growth projected to be 18 percent for all occupations regardless of education or income criteria (6,431

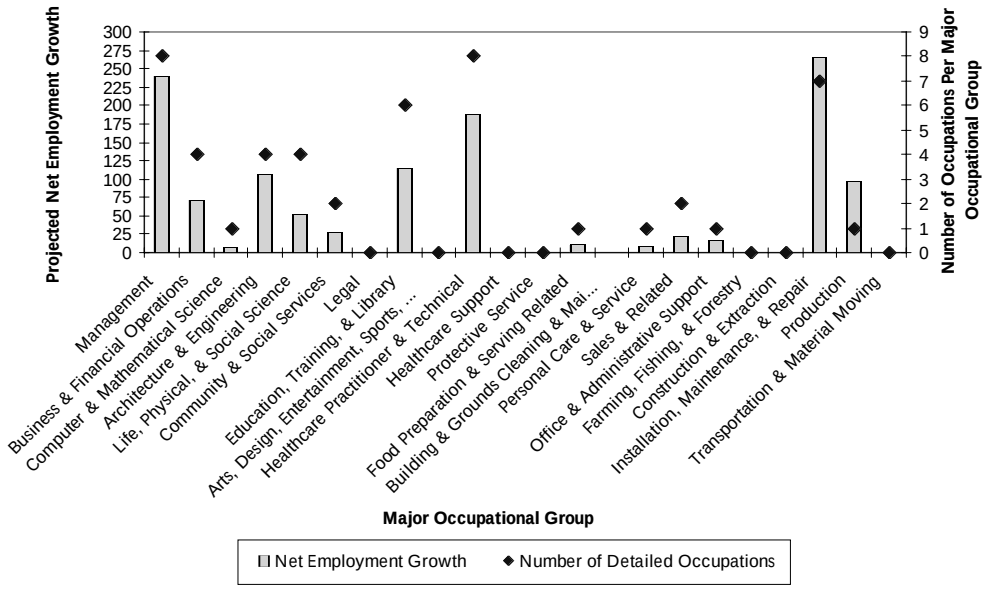
jobs over 10 years; see Table 3.1, page 22), the Northeast Region is projected to be the second fastest growing region behind the Cheyenne MSA (Gallagher, Harris, Leonard, Liu, & McVeigh, 2003). Installation, Maintenance, & Repair is projected to have the highest net growth (266 jobs) followed by Management (241 jobs; see Table 3.4 below and Figure 3.4, page 29). The Northeast Region is the only region where Healthcare Practitioner & Technical Occupations is not projected to have the highest growth. The Northeast Region is second to the Southwest Region in growth of Architecture & Engineering occupations. The highest percentage growth is projected to be in Production occupations (68.5%).

Table 3.4: Projected Employment Growth by Major Occupational Group in the Northeast Region for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

SOC[b] Occupation Group Code and Title	#[c]	Employment 2000	Employment Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	2001 Average Wage Annual	% of Poverty[d]
11-0000 Management	8	1,341	1,581	241	17.9%	$27.60	$57,419	312%
13-0000 Business & Financial Operations	4	ND	ND	71	ND	$22.21	$46,208	251%
15-0000 Computer & Mathematical Science	1	36	43	7	20.7%	$14.44	$30,040	163%
17-0000 Architecture & Engineering	4	235	342	107	45.6%	$22.10	$45,971	250%
19-0000 Life, Physical, & Social Science	4	ND	ND	52	ND	ND	ND	ND
21-0000 Community & Social Services	2	ND	ND	27	ND	$11.67	$24,267	132%
23-0000 Legal	0	0	0	0	0.0%	$0.00	$0	0%
25-0000 Education, Training, & Library	6	1,367	1,482	116	8.5%	NA	$34,005	185%
27-0000 Arts, Design, Entertainment, Sports, & Media	0	0	0	0	0.0%	$0.00	$0	0%
29-0000 Healthcare Practitioner & Technical	8	ND	ND	187	ND	ND	ND	ND
31-0000 Healthcare Support	0	0	0	0	0.0%	$0.00	$0	0%
33-0000 Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000 Food Preparation & Serving Related	1	ND	ND	11	ND	$10.20	$21,210	115%
37-0000 Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000 Personal Care & Service	1	ND	ND	8	ND	ND	ND	ND
41-0000 Sales & Related	2	ND	ND	21	ND	ND	ND	ND
43-0000 Office & Administrative Support	1	118	134	16	13.9%	$10.32	$21,470	117%
45-0000 Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000 Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000 Installation, Maintenance, & Repair	7	ND	ND	266	ND	ND	ND	ND
51-0000 Production	1	143	240	98	68.5%	$15.89	$33,040	180%
53-0000 Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
Total	**50**	**6,254**	**7,480**	**1,226**	**19.6%**	**$20.39**	**$40,688**	**221%**

[a]100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]Number of occupations per group.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.4: Distribution by Major Occupational Group of the 50 Occupations[a] in Wyoming's Northeast Region With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).

For detailed occupations, General & Operations Managers are projected to experience the highest net growth (151 jobs, see Table 3.5, page 30).

The growth in Mining (especially oil and gas extraction) is expected to spur growth across a diverse set of industries. Among these mining-related industries are Construction; Transportation, Communications, & Public Utilities (TCPU); and Wholesale Trade. New power plants and pipeline projects will also contribute to growth in the region (Gallagher, et al., 2003).

Occupations requiring postsecondary vocational training are projected to have the highest net growth among education types (440 jobs, see Figure 3.5, page 32). Only the Southwest Region is expected to have higher growth in occupations requiring this type of education. This is tied to growth in Installation, Maintenance, & Repair, as detailed occupations in this major group usually require postsecondary vocational training. Occupations requiring a Bachelor's degree are projected to have the second highest growth among education types (321 jobs). The smallest growth is projected to be for occupations requiring a Master's degree (20 jobs).

More than half (56.1% or 688 jobs) of the 50 fastest growing occupations

Text continued on page 33

Table 3.5: The 50 Occupations in Wyoming's Northeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment 2000	Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	Annual	% of Poverty[d]
1	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	779	930	151	19.4%	$29.37	$61,090	332%
2	51-4121	Welders, Cutters, Solderers, & Brazers	Postsecondary Vocational Training	143	240	97	67.8%	$15.89	$33,040	180%
3	29-1111	Registered Nurses	Associate's Degree	716	807	91	12.7%	$19.43	$40,420	220%
4	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	Postsecondary Vocational Training	407	495	88	21.6%	$21.55	$44,820	244%
5	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Training	252	318	66	26.2%	$13.57	$28,220	153%
6	17-2051	Civil Engineers	Bachelor's Degree	97	147	50	51.5%	$22.12	$46,010	250%
7	49-2092	Electric Motor, Power Tool, & Related Repairers	Postsecondary Vocational Training	ND	ND	ND	ND	$11.93	$24,820	135%
8	25-3999	All Other Teachers, Primary, Secondary, & Adult	Bachelor's Degree	ND	ND	ND	ND	NA	$32,160	175%
9	49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	Postsecondary Vocational Training	149	185	36	24.2%	$15.65	$32,550	177%
10	13-2011	Accountants & Auditors	Bachelor's Degree	101	130	29	28.7%	$25.08	$52,180	284%
11	17-3022	Civil Engineering Technicians	Associate's Degree	ND	ND	ND	ND	$16.57	$34,460	187%
12	11-9111	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	156	176	20	12.8%	$25.62	$53,290	290%
13	21-1022	Medical & Public Health Social Workers	Bachelor's Degree	ND	ND	ND	ND	$11.52	$23,960	130%
14	13-1199	Business Operations Specialists, All Other	Bachelor's Degree	ND	ND	ND	ND	$23.89	$49,690	270%
15	25-2011	Preschool Teachers, Except Special Education	Bachelor's Degree	35	54	19	54.3%	$10.00	$20,800	113%
16	25-2022	Middle School Teachers, Except Special & Vocational Education	Bachelor's Degree	ND	ND	ND	ND	NA	$36,910	201%
17	11-9021	Construction Managers	Bachelor's Degree	76	94	18	23.7%	$20.80	$43,260	235%
18	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Training	139	156	17	12.2%	$13.18	$27,420	149%
19	29-2071	Medical Records & Health Information Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
20	11-3031	Financial Managers	Bachelor's Degree Plus Exp.	127	143	16	12.6%	$27.71	$57,640	313%
21	29-2056	Veterinary Technologists & Technicians	Associate's Degree	30	46	16	53.3%	$10.88	$22,620	123%
22	43-6013	Medical Secretaries	Postsecondary Vocational Training	118	134	16	13.6%	$10.32	$21,470	117%
23	17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	Bachelor's Degree	60	76	16	26.7%	$30.59	$63,620	346%
24	25-2021	Medical & Health Services Managers	Bachelor's Degree	ND	ND	ND	ND	NA	$37,980	206%
25	19-4031	Chemical Technicians	Associate's Degree	ND	ND	ND	ND	$14.74	$30,660	167%
26	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
27	13-1022	Wholesale & Retail Buyers, Except Farm Products	Bachelor's Degree	51	64	13	25.5%	$16.90	$35,160	191%
28	29-1123	Physical Therapists	Master's Degree	103	116	13	12.6%	$24.92	$51,830	282%
29	49-2021	Radio Mechanics	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
30	19-4091	Environmental Science & Protection Technicians, Including Health	Associate's Degree	51	64	13	25.5%	$9.01	$18,740	102%
31	29-1051	Pharmacists	First Professional Degree	86	98	12	14.0%	$33.88	$70,460	383%
32	41-3021	Insurance Sales Agents	Bachelor's Degree	87	100	13	14.9%	$17.95	$37,330	203%
33	17-3011	Architectural & Civil Drafters	Postsecondary Vocational Training	ND	ND	ND	ND	$13.89	$28,890	157%
34	29-2041	Emergency Medical Technicians & Paramedics	Postsecondary Vocational Training	83	94	11	13.3%	$9.54	$19,840	108%
35	35-1011	Chefs & Head Cooks	Postsecondary Vocational Training	ND	ND	ND	ND	$10.20	$21,210	115%
36	11-2022	Sales Managers	Bachelor's Degree Plus Exp.	40	51	11	27.5%	$29.14	$60,610	329%

Table 3.5: The 50 Occupations in Wyoming's Northeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010 (Continued)

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment 2000	Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	Annual	% of Poverty[d]
37	25-2041	Special Education Teachers, Preschool, Kindergarten, & Elementary School	Bachelor's Degree	57	67	10	17.5%	NA	$29,970	163%
38	19-2041	Environmental Scientists & Specialists, Including Health	Bachelor's Degree	24	34	10	41.7%	$18.36	$38,200	208%
39	49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	Postsecondary Vocational Training	87	97	10	11.5%	$18.74	$38,990	212%
40	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	79	89	10	12.7%	$19.98	$41,570	226%
41	11-1011	Chief Executives	Bachelor's Degree Plus Exp.	74	84	10	13.5%	$29.44	$61,240	333%
42	29-1131	Veterinarians	First Professional Degree	16	25	9	56.3%	$24.84	$51,660	281%
43	13-1051	Cost Estimators	Bachelor's Degree	45	53	8	17.8%	$18.71	$38,920	212%
44	39-5092	Manicurists & Pedicurists	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
45	41-9031	Sales Engineers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
46	25-2031	Secondary School Teachers, Except Special & Vocational Education	Bachelor's Degree	126	134	8	6.3%	NA	$33,890	184%
47	21-1015	Rehabilitation Counselors	Master's Degree	18	25	7	38.9%	$12.03	$25,020	136%
48	15-1041	Computer Support Specialists	Associate's Degree	36	43	7	19.4%	$14.44	$30,040	163%
49	49-2011	Computer, Automated Teller, & Office Machine Repairers	Postsecondary Vocational Training	23	30	7	30.4%	$11.38	$23,670	129%
50	11-9031	Education Administrators, Preschool & Child Care Center/Program	Bachelor's Degree Plus Exp.	14	19	5	35.7%	$15.37	$31,960	174%
		Total	**Postsecondary Education**	**6,254**	**7,480**	**1,226**	**19.6%**	**$20.39**	**$40,688**	**221%**

[a]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.5: Percentage of Total New Jobs Within the 50 Occupations in Wyoming's Northeast Region With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010

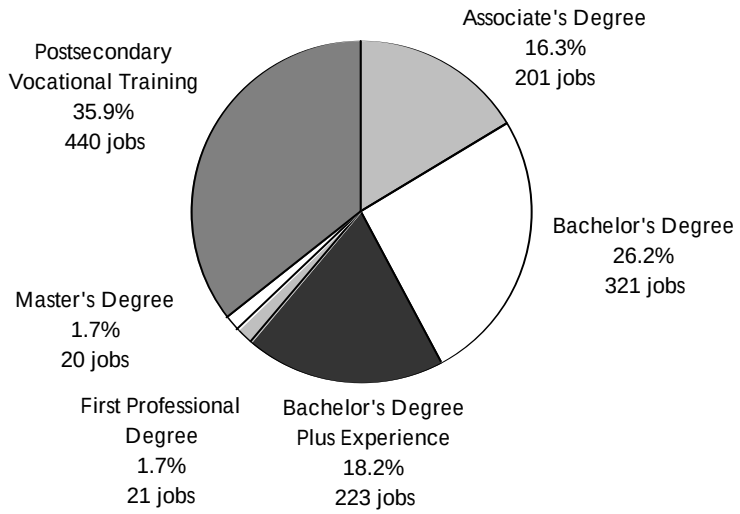
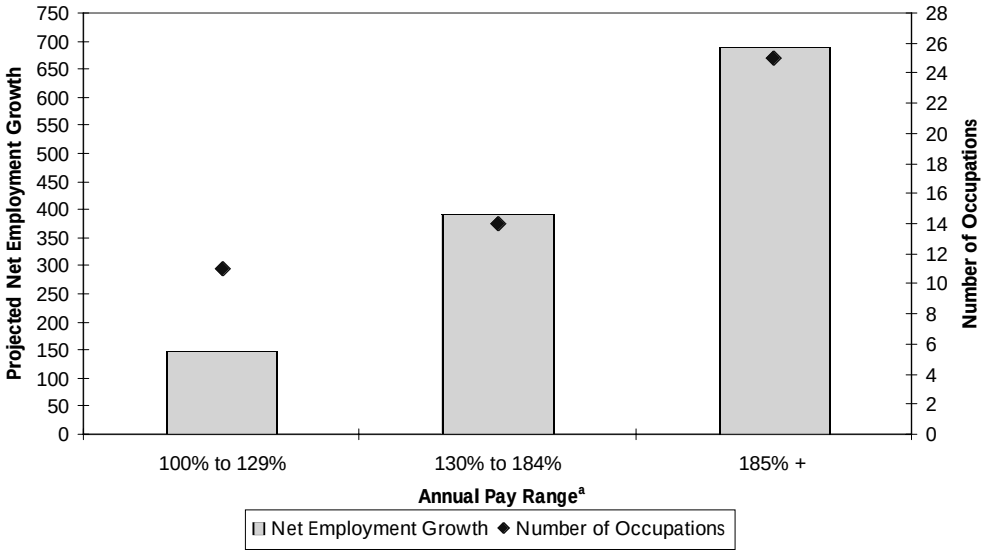


Figure 3.6: Distribution by Pay Range of the 50 Occupations in Wyoming's Northeast Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

Table 3.6: Projected Employment Growth by Major Occupational Group in the Northwest Region for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

SOC[b]	Occupation Group Code and Title	#[c]	Employment		Change		2001 Average Wage		
			2000	Projected 2010	Number	Percent	Hourly	Annual	% of Poverty[d]
11-0000	Management	7	ND	ND	152	ND	$22.70	$47,816	260%
13-0000	Business & Financial Operations	2	ND	ND	33	ND	ND	ND	ND
15-0000	Computer & Mathematical Science	0	0	0	0	0.0%	$0.00	$0	0%
17-0000	Architecture & Engineering	4	ND	ND	54	ND	$27.39	$56,980	310%
19-0000	Life, Physical, & Social Sciences	2	ND	ND	38	ND	ND	ND	ND
21-0000	Community & Social Services	4	303	377	74	24.4%	$14.51	$30,165	164%
23-0000	Legal	1	61	69	8	13.1%	$20.60	$42,840	233%
25-0000	Education, Training, & Library	6	1,422	1,518	96	6.8%	NA	$34,592	188%
27-0000	Arts, Design, Entertainment, Sports, & Media	1	25	30	5	20.0%	$15.85	$32,970	179%
29-0000	Healthcare Practitioner & Technical	14	1,323	1,544	221	16.7%	$20.80	$43,274	235%
31-0000	Healthcare Support	1	40	47	7	17.5%	$10.73	$22,310	121%
33-0000	Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000	Food Preparation & Serving Related	1	176	211	35	19.9%	$10.70	$22,250	121%
37-0000	Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000	Personal Care & Service	0	0	0	0	0.0%	$0.00	$0	0%
41-0000	Sales & Related	2	ND	ND	28	ND	ND	ND	ND
43-0000	Office & Administrative Support	2	ND	ND	24	ND	$10.48	$21,805	119%
45-0000	Farming, Fishing & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000	Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000	Installation, Maintenance, & Repair	3	295	351	56	19.0%	$13.13	$27,307	148%
51-0000	Production	0	0	0	0	0.0%	$0.00	$0	0%
53-0000	Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
	Total	**50**	**5,414**	**6,244**	**831**	**15.3%**	**$19.58**	**$39,408**	**214%**

[a]100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]Number of occupations per group.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

in the Northeast Region pay at least 185 percent of the poverty guideline (see Figure 3.6, page 32), including Mine & Geological Engineers and Physical Therapists. Occupations that pay 130 to 184 percent are expected to grow by 392 jobs. Among detailed occupations that pay in this range are Automotive Service Technicians & Mechanics and Chemical Technicians. Occupations that pay 100 to 129 percent of the poverty guideline are projected to grow by 146 jobs, and include Veterinary Technologists & Technicians and Chefs & Head Cooks.

Northwest

Total occupational growth (regardless of education or income criteria) is projected to be 3,683 jobs

(11.0%; see Table 3.1, page 22). Reflecting the statewide trend, Healthcare Practitioner & Technical Occupations will dominate growth in the region with projected net employment increases of 221 jobs (see Table 3.6, page 33, and Figure 3.7 below). Education, Training, & Library Occupations is anticipated to contribute net growth of 96 jobs.

Registered Nurses have the highest net growth (95 jobs), followed by an increase of 72 jobs for General & Operations Managers (see Table 3.7, page 35). Securities, Commodities, & Financial Services Sales Agents are anticipated to experience relatively high growth in the region (17 jobs) compared to other regions. The Retail Trade and Services industries will likely contribute to much of the occupation growth in the Northwest (Gallagher, et al., 2003).

The 20 occupations in the Northwest Region typically requiring a Bachelor's degree, such as Surveyors and Vocational Education Teachers are projected to have the most growth (328 jobs, see Figure 3.8, page 37). Occupations requiring a Master's degree (e.g., Physical Therapists) or first professional degrees (e.g., Pharmacists) are projected to have the least growth at 44 and 41 jobs, respectively.

Growth is expected to be highest (443 jobs) among occupations paying at least 185 percent of the poverty guideline (see Figure 3.9, page 37).

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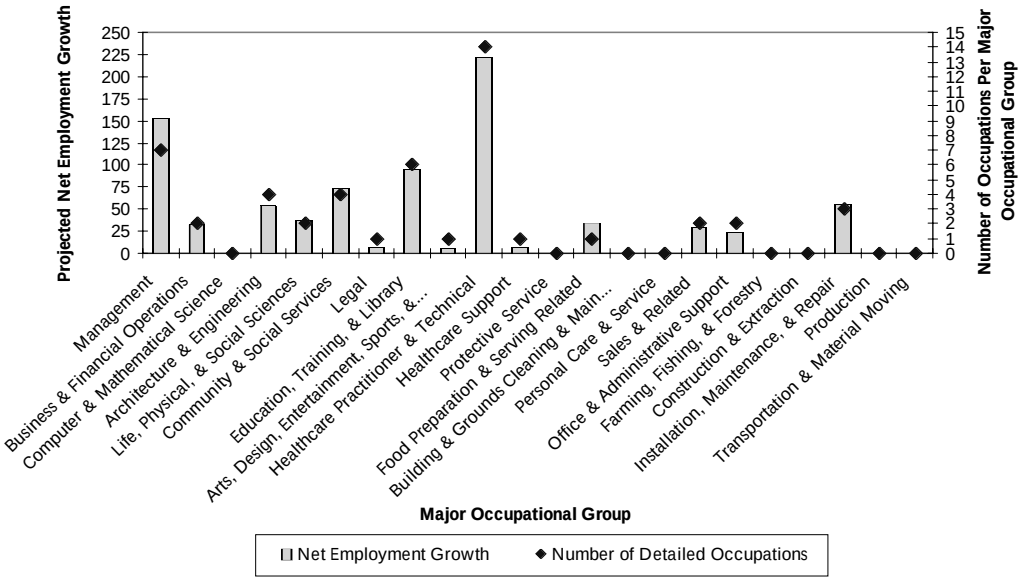
Figure 3.7: Distribution by Major Occupational Group of the 50 Occupations[a] in Wyoming's Northwest Region With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).

Table 3.7: The 50 Occupations in Wyoming's Northwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
					Projected	Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[d]
1	29-1111	Registered Nurses	Associate's Degree	586	681	95	16.2%	$17.92	$37,280	203%
2	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	786	858	72	9.2%	$24.77	$51,520	280%
3	21-9099	All Other Counselors, Social & Religious Workers	Bachelor's Degree	218	270	52	23.9%	$14.41	$29,960	163%
4	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Training	239	285	46	19.2%	$13.31	$27,680	150%
5	35-1011	Chefs & Head Cooks	Postsecondary Vocational Training	176	211	35	19.9%	$10.70	$22,250	121%
6	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Training	181	212	31	17.1%	$12.94	$26,910	146%
7	25-2021	Elementary School Teachers, Except Special Education	Bachelor's Degree	508	538	30	5.9%	NA	$33,970	185%
8	13-2011	Accountants & Auditors	Bachelor's Degree	129	157	28	21.7%	$22.85	$47,540	258%
9	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	32	55	23	71.9%	$16.17	$33,630	183%
10	17-2171	Petroleum Engineers	Bachelor's Degree	ND	ND	ND	ND	$32.74	$68,100	370%
11	25-2031	Secondary School Teachers, Except Special & Vocational Education	Bachelor's Degree	370	392	22	5.9%	NA	$37,590	204%
12	11-9141	Property, Real Estate, & Community Association Managers	Bachelor's Degree	ND	ND	ND	ND	$13.69	$28,480	155%
13	11-9021	Construction Managers	Bachelor's Degree	67	87	20	29.9%	$17.82	$37,070	201%
14	41-3031	Securities, Commodities, & Financial Services Sales Agents	Bachelor's Degree	31	49	18	58.1%	$32.06	$66,690	362%
15	43-6013	Medical Secretaries	Postsecondary Vocational Training	101	118	17	16.9%	$10.14	$21,100	115%
16	17-2051	Civil Engineers	Bachelor's Degree	38	55	17	44.7%	$22.95	$47,740	259%
17	19-2021	Construction Managers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
18	25-2022	Middle School Teachers, Except Special & Vocational Education	Bachelor's Degree	258	273	15	5.8%	NA	$33,880	184%
19	29-1123	Physical Therapists	Master's Degree	77	90	13	16.9%	$23.92	$49,750	270%
20	25-3999	All Other Teachers, Primary, Secondary, & Adult	Bachelor's Degree	ND	ND	ND	ND	NA	$32,140	175%
21	29-1051	Pharmacists	First Professional Degree	84	96	12	14.3%	$31.40	$65,320	355%
22	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	71	83	12	16.9%	$16.19	$33,670	183%
23	29-2021	Dental Hygienists	Associate's Degree	66	77	11	16.7%	$20.09	$41,780	227%
24	11-9151	Medical & Health Services Managers	Bachelor's Degree	47	58	11	23.4%	$17.77	$36,960	201%
25	25-4010	Archivists, Curators, & Museum Technicians	Master's Degree	ND	ND	ND	ND	ND	ND	ND
26	11-9111	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	71	82	11	15.5%	$24.60	$51,160	278%
27	41-3041	Travel Agents	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
28	17-1022	Surveyors	Bachelor's Degree	24	32	8	33.3%	$23.08	$48,010	261%
29	29-1062	Family & General Practitioners	First Professional Degree	51	59	8	15.7%	$56.15	$116,790	635%
30	29-1041	Optometrists	First Professional Degree	ND	ND	ND	ND	ND	ND	ND
31	23-1011	Lawyers	First Professional Degree	61	69	8	13.1%	$20.60	$42,840	233%
32	21-1023	Mental Health & Substance Abuse Social Workers	Master's Degree	ND	ND	ND	ND	ND	ND	ND
33	21-1021	Child, Family, & School Social Workers	Bachelor's Degree	ND	ND	ND	ND	$9.03	$18,780	102%
34	21-1014	Mental Health Counselors	Master's Degree	ND	ND	ND	ND	ND	ND	ND
35	29-2034	Radiologic Technologists & Technicians	Associate's Degree	42	49	7	16.7%	$16.85	$35,040	190%
36	31-9094	Medical Transcriptionists	Postsecondary Vocational Training	40	47	7	17.5%	$10.73	$22,310	121%
37	43-6012	Legal Secretaries	Postsecondary Vocational Training	ND	ND	ND	ND	$11.23	$23,350	ND
38	49-2011	Computer, Automated Teller, & Office Machine Repairers	Postsecondary Vocational Training	20	26	6	30.0%	$14.04	$29,210	159%

Table 3.7: The 50 Occupations in Wyoming's Northwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010 (Continued)

Rank	SOC[b] Code and Occupation Title		Typical Education Requirements[c]	Employment				2001 Average Wage		
				Projected		Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[d]
39	29-1122	Occupational Therapists	Bachelor's Degree	34	40	6	17.7%	$26.52	$55,170	300%
40	29-2011	Medical & Clinical Laboratory Technologists	Bachelor's Degree	37	43	6	16.2%	$19.30	$40,150	218%
41	29-2071	Medical Records & Health Information Technicians	Associate's Degree	36	42	6	16.7%	$10.82	$22,510	122%
42	29-2056	Veterinary Technologists & Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
43	11-9032	Education Administrators, Elementary & Secondary School	Bachelor's Degree Plus Exp.	94	100	6	6.4%	NA	$54,930	299%
44	25-2032	Vocational Education Teachers, Secondary School	Bachelor's Degree	93	99	6	6.5%	NA	$33,130	180%
45	17-3011	Architectural & Civil Drafters	Postsecondary Vocational Training	13	19	6	46.2%	$13.95	$29,020	158%
46	29-1127	Speech-Language Pathologists	Master's Degree	44	50	6	13.6%	$21.15	$43,990	239%
47	29-1069	Physicians & Surgeons, All Other	First Professional Degree	ND	ND	ND	ND	ND	ND	ND
48	27-1024	Graphic Designers	Bachelor's Degree	25	30	5	20.0%	$15.85	$32,970	179%
49	13-2099	Financial Specialists, All Other	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
50	49-3041	Farm Equipment Mechanics	Postsecondary Vocational Training	36	41	5	13.9%	$11.43	$23,780	129%
		Total	**Postsecondary Education**	**5,414**	**6,244**	**831**	**15.3%**	**$19.58**	**$39,408**	**214%**

[a]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.8: Percentage of Total New Jobs Within the 50 Occupations in Wyoming's Northwest Region With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010

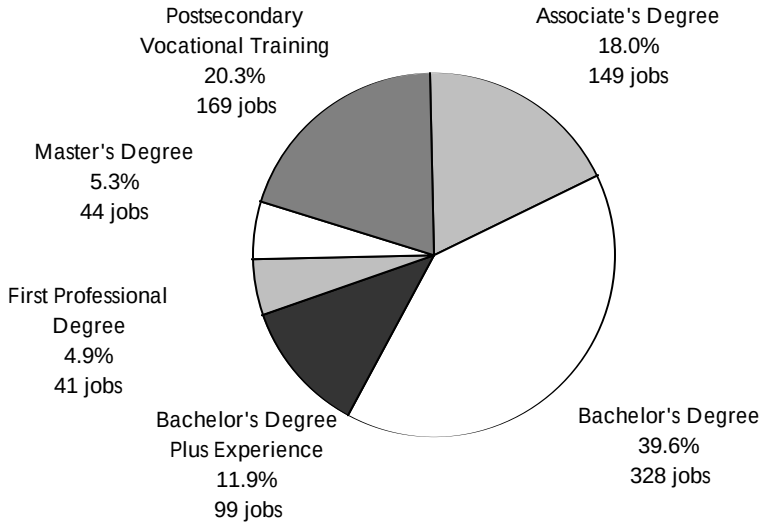
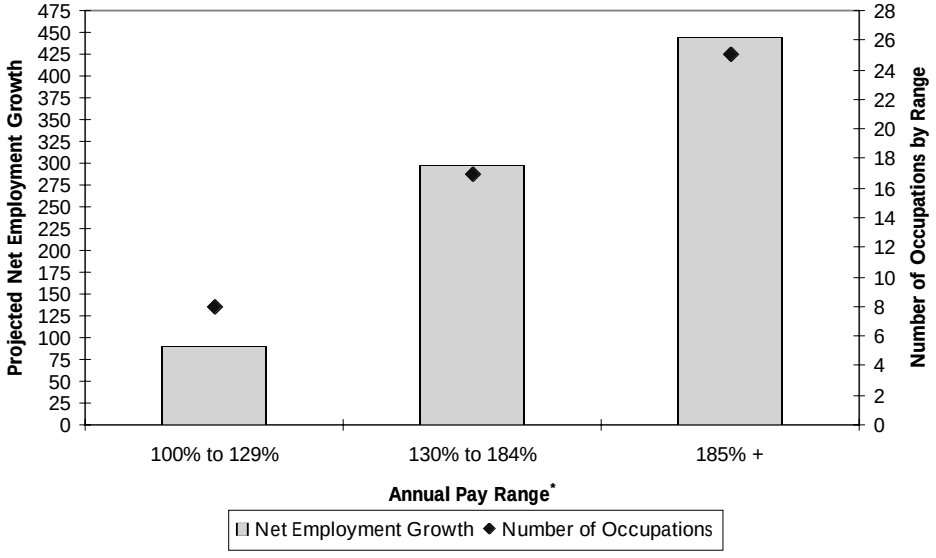


Figure 3.9: Distribution by Pay Range of the 50 Occupations in Wyoming's Northwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

Occupations that pay between 130 percent and 184 percent of the poverty guideline are projected to grow by 299 jobs. Eight occupations that pay 100 percent to 129 percent of the poverty guideline are expected to contribute 89 jobs to net growth.

Southwest

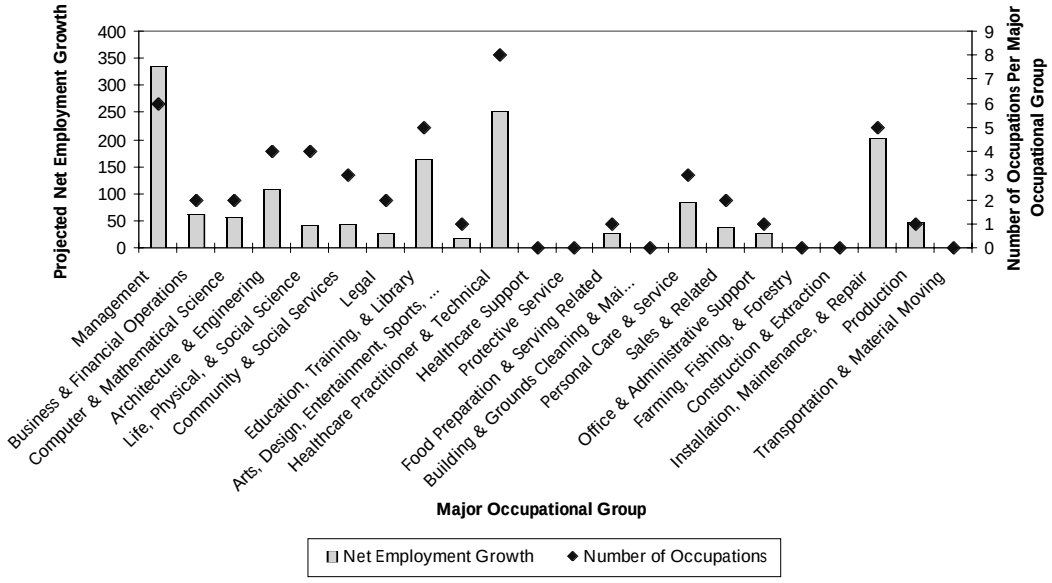
Total occupational growth in the Southwest Region is projected to be 8,655 jobs (see Table 3.1, page 22). For the 50 highest net growth occupations paying at or above the poverty guideline and requiring postsecondary education, Table 3.8 (below) and Figure 3.10 (page 39) show the most occupational growth is expected to occur in Management (334 jobs) and Healthcare Practitioner & Technical Occupations (252 jobs). Education, Training, & Library Occupations and Installation, Maintenance, & Repair Occupations are also expected to experience

Table 3.8: Projected Employment Growth by Major Occupational Group in the Southwest Region for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

SOC[b] Occupation Group Code and Title	#[c]	Employment 2000	Employment Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	2001 Average Wage Annual	% of poverty[d]
11-0000 Management	6	1,586	1,920	334	21.1%	$28.80	$59,904	326%
13-0000 Business & Financial Operations	2	ND	ND	62	ND	$26.47	$55,064	299%
15-0000 Computer & Mathematical Science	2	156	210	54	34.6%	$16.87	$35,091	191%
17-0000 Architecture & Engineering	4	339	448	109	32.2%	$25.81	$53,687	292%
19-0000 Life, Physical, & Social Science	4	145	186	41	28.3%	$17.72	$36,860	200%
21-0000 Community & Social Services	3	124	167	43	34.7%	$13.45	$27,968	152%
23-0000 Legal	2	137	163	26	19.0%	$42.13	$87,622	476%
25-0000 Education, Training, & Library	5	1,535	1,699	164	10.7%	NA	$37,029	201%
27-0000 Arts, Design, Entertainment, Sports, & Media	1	ND	ND	18	ND	$24.73	$51,440	280%
29-0000 Healthcare Practitioner & Technical	8	ND	ND	252	ND	ND	ND	ND
31-0000 Healthcare Support	0	0	0	0	0.0%	$0.00	$0	0%
33-0000 Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000 Food Preparation & Serving Related	1	171	197	26	15.2%	$14.57	$30,290	165%
37-0000 Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000 Personal Care & Service	3	ND	ND	86	ND	$11.82	$24,582	134%
41-0000 Sales & Related	2	ND	ND	38	ND	$13.03	$27,106	147%
43-0000 Office & Administrative Support	1	116	143	27	23.3%	$11.01	$22,910	125%
45-0000 Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000 Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000 Installation, Maintenance, & Repair	5	774	976	202	26.1%	$15.46	$32,164	175%
51-0000 Production	1	203	251	48	23.6%	$16.42	$34,160	186%
53-0000 Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
Total	**50**	**7,166**	**8,696**	**1,530**	**21.4%**	**$21.34**	**$42,815**	**233%**

[a]100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]Number of occupations per group.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.10: Distribution by Major Occupational Group of the 50 Occupations[a] in Wyoming's Southwest Region With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).

relatively high growth (164 jobs and 202 jobs, respectively). Only the Cheyenne MSA is projected to have higher growth in Education, Training, & Library Occupations.

General & Operations Managers are projected to have the highest net growth (201 jobs, see Table 3.9, page 40). Ranked second are Registered Nurses with growth of 127 jobs. Much of the growth in the region is likely to be in the Services and Retail Trade industries (Gallagher, et al., 2003).

Occupations requiring a Bachelor's degree are projected to have the highest growth in the Southwest region (462 jobs) (see Figure 3.11, page 42). Net growth in occupations requiring a Bachelor's degree is second only to the Cheyenne MSA. Also projected to have high growth are occupations that require postsecondary vocational training (446 jobs). This reflects the importance of Mining to the region, and the need for such occupations as Mobile Heavy Equipment Mechanics.

The Southwest Region is projected to have the highest regional growth for occupations paying at least 185 percent of the poverty level (see Figure 3.12, page 42). Growth among occupations paying 130 to 184 percent of the poverty guideline is

Text continued on page 43

Table 3.9: The 50 Occupations in Wyoming's Southwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
				2000	Projected 2010	Change Number	Change Percent	Hourly	Annual	% of Poverty[d]
1	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	956	1,157	201	21.0%	$29.30	$60,940	331%
2	29-1111	Registered Nurses	Associate's Degree	636	763	127	20.0%	$19.07	$39,660	216%
3	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Training	353	459	106	30.0%	$11.22	$23,340	127%
4	25-2031	Secondary School Teachers, Except Special & Vocational Education	Bachelor's Degree	ND	ND	ND	ND	NA	$38,240	208%
5	39-9031	Fitness Trainers & Aerobics Instructors	Postsecondary Vocational Training	212	266	54	25.5%	$12.87	$26,780	146%
6	13-2011	Accountants & Auditors	Bachelor's Degree	223	274	51	22.9%	$26.28	$54,670	297%
7	17-1022	Surveyors	Bachelor's Degree	ND	ND	ND	ND	$23.56	$49,010	266%
8	25-2021	Elementary School Teachers, Except Special Education	Bachelor's Degree	475	524	49	10.3%	NA	$35,890	195%
9	51-4121	Welders, Cutters, Solderers, & Brazers	Postsecondary Vocational Training	203	251	48	23.6%	$16.42	$34,160	186%
10	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	Postsecondary Vocational Training	183	229	46	25.1%	$17.44	$36,280	197%
11	17-2051	Civil Engineers	Bachelor's Degree	ND	ND	ND	ND	$23.96	$49,840	271%
12	11-9021	Construction Managers	Bachelor's Degree	184	219	35	19.0%	$25.56	$53,170	289%
13	11-1011	Chief Executives	Bachelor's Degree Plus Exp.	112	141	29	25.9%	$42.62	$88,650	482%
14	15-1041	Computer Support Specialists	Associate's Degree	87	115	28	32.2%	$14.74	$30,660	167%
15	49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	Postsecondary Vocational Training	178	205	27	15.2%	$19.57	$40,720	221%
16	43-6013	Medical Secretaries	Postsecondary Vocational Training	116	143	27	23.3%	$11.01	$22,910	125%
17	41-3041	Construction Managers	Postsecondary Vocational Training	56	82	26	46.4%	$10.60	$22,050	120%
18	15-1021	Computer Programmers	Bachelor's Degree	70	96	26	37.1%	$19.51	$40,590	221%
19	35-1011	Chefs & Head Cooks	Postsecondary Vocational Training	171	197	26	15.2%	$14.57	$30,290	165%
20	25-2022	Middle School Teachers, Except Special & Vocational Education	Bachelor's Degree	248	274	26	10.5%	NA	$36,560	199%
21	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Training	122	147	25	20.5%	$12.94	$26,920	146%
22	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	101	126	25	24.8%	$16.33	$33,960	185%
23	11-3031	Financial Managers	Bachelor's Degree Plus Exp.	140	162	22	15.7%	$31.16	$64,810	352%
24	11-9111	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	95	117	22	23.2%	$23.65	$49,190	267%
25	29-1051	Pharmacists	First Professional Degree	120	141	21	17.5%	$31.39	$65,280	355%
26	23-1011	Lawyers	First Professional Degree	121	141	20	16.5%	$45.90	$95,460	519%
27	29-2041	Emergency Medical Technicians & Paramedics	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
28	29-2034	Radiologic Technologists & Technicians	Associate's Degree	64	83	19	29.7%	$12.57	$26,140	142%
29	39-9032	Recreation Workers	Bachelor's Degree	67	85	18	26.9%	$9.74	$20,250	110%
30	27-3031	Public Relations Specialists	Bachelor's Degree	ND	ND	ND	ND	$24.73	$51,440	280%
31	17-2171	Petroleum Engineers	Bachelor's Degree	52	70	18	34.6%	$39.59	$82,360	448%
32	29-2056	Veterinary Technologists & Technicians	Associate's Degree	28	44	16	57.1%	$10.14	$21,100	115%
33	49-2099	All Other Electrical & Electronic Equipment Mechanics, Installers, & Repairers	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
34	21-1021	Child, Family, & School Social Workers	Bachelor's Degree	ND	ND	ND	ND	$11.89	$24,730	134%
35	21-1014	Mental Health Counselors	Master's Degree	ND	ND	ND	ND	$17.05	$35,450	193%
36	19-3091	Anthropologists & Archeologists	Master's Degree	35	50	15	42.9%	$16.05	$33,380	181%
37	39-5012	Hairdressers, Hairstylists, & Cosmetologists	Postsecondary Vocational Training	ND	ND	ND	ND	$9.65	$20,070	109%

Table 3.9: The 50 Occupations in Wyoming's Southwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[a] 2000 and 2010 (Continued)

Rank	SOC[b] Code	Occupation Title	Typical Education Requirements[c]	Employment				2001 Average Wage		
				Projected		Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[d]
38	29-1131	Veterinarians	First Professional Degree	ND	ND	ND	ND	$15.50	$32,230	175%
39	25-2041	Special Education Teachers, Preschool, Kindergarten, & Elementary School	Bachelor's Degree	101	115	14	13.9%	NA	$37,900	206%
40	41-3021	Insurance Sales Agents	Bachelor's Degree	ND	ND	ND	ND	$14.64	$30,450	165%
41	19-3031	Clinical, Counseling, & School Psychologists	Bachelor's Degree	54	65	11	20.4%	$22.41	$46,620	253%
42	13-1111	Management Analysts	Bachelor's Degree Plus Exp.	ND	ND	ND	ND	$28.02	$58,280	317%
43	21-1015	Rehabilitation Counselors	Master's Degree	31	42	11	35.5%	$10.37	$21,580	117%
44	29-2012	Medical & Clinical Laboratory Technicians	Associate's Degree	57	67	10	17.5%	$13.00	$27,050	147%
45	19-4021	Biological Technicians	Associate's Degree	36	44	8	22.2%	$14.10	$29,340	159%
46	49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
47	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	22	29	7	31.8%	$14.55	$30,270	165%
48	23-9099	All Other Legal & Related Workers	Bachelor's Degree	17	22	5	29.4%	$14.02	$29,160	158%
49	17-3011	Architectural & Civil Drafters	Postsecondary Vocational Training	ND	ND	ND	ND	$14.71	$30,590	166%
50	25-3999	All Other Teachers, Primary, Secondary, & Adult	Bachelor's Degree	ND	ND	ND	ND	NA	$28,930	157%
		Total	**Postsecondary Education**	**7,166**	**8,696**	**1,530**	**21.4%**	**$21.34**	**$42,815**	**233%**

[a]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[b]Standard Occupational Classification.
[c]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[d]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.11: Percentage of Total New Jobs Within the 50 Occupations in Wyoming's Southwest Region With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010

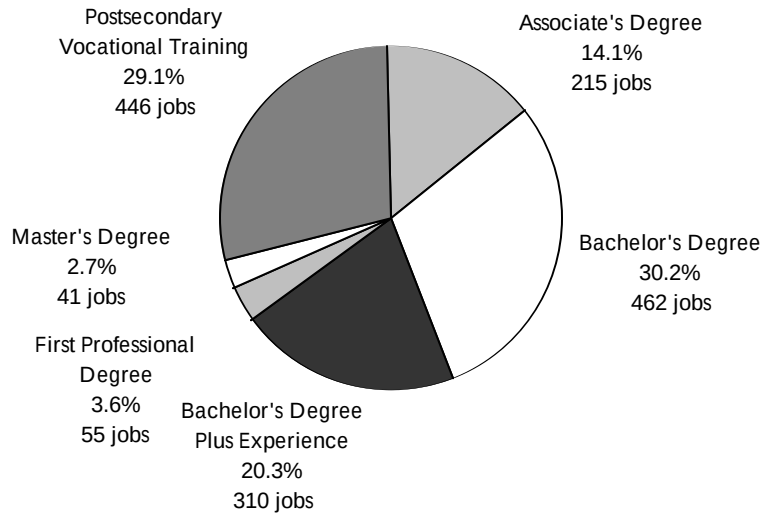
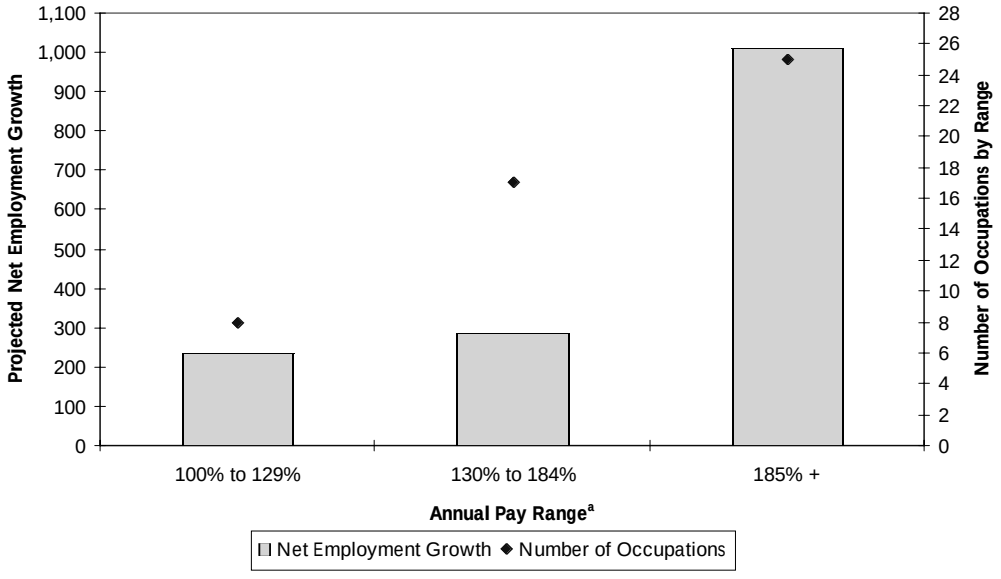


Figure 3.12: Distribution by Pay Range of the 50 Occupations in Wyoming's Southwest Region With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

expected to be 283 jobs. The lowest growth is in occupations paying 100 to 129 percent (237 jobs).

Casper MSA

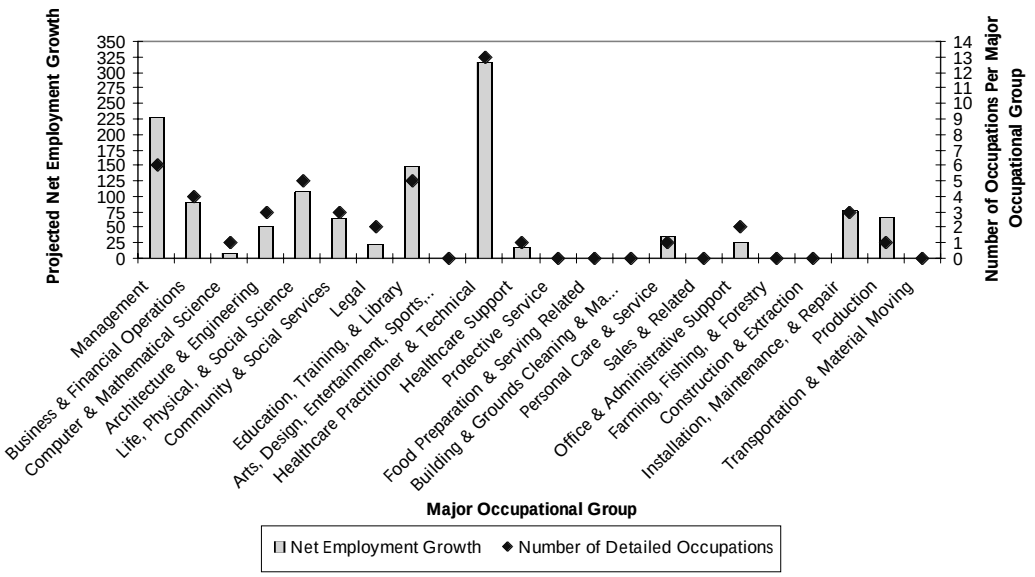
The Casper MSA is expected to experience total occupational growth of 5,449 jobs (see Table 3.1, page 22). It is one of three regions in the state where Manufacturing is anticipated to experience better than average growth (Gallagher, et al., 2003). Growth in Healthcare Practitioner & Technical Occupations is expected to be the highest of any major occupational group (318 jobs; see Table 3.10 below and Figure 3.13, page 44). Most of the growth is likely to occur in Services, which is

Table 3.10: Projected Employment Growth by Major Occupational Group in the Casper MSA[a] for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

		Employment				2001 Average Wage		
			Projected	Change				% of
SOC[c]	Occupation Group Code and Title	#[d]	2000	2010	Number	Percent	Hourly	Annual	Poverty[e]
11-0000	Management	6	ND	ND	228	ND	ND	ND	ND
13-0000	Business & Financial Operations	4	ND	ND	91	ND	ND	ND	ND
15-0000	Computer & Mathematical Science	1	54	61	7	13.0%	$14.40	$29,960	163%
17-0000	Architecture & Engineering	3	ND	ND	51	ND	$19.10	$39,724	216%
19-0000	Life, Physical, & Social Science	5	200	308	108	54.0%	$16.02	$33,327	181%
21-0000	Community & Social Services	3	ND	ND	64	ND	ND	ND	ND
23-0000	Legal	2	137	160	23	16.8%	$28.04	$58,329	317%
25-0000	Education, Training, & Library	5	817	964	147	18.0%	NA	$37,588	204%
27-0000	Arts, Design, Entertainment, Sports, & Media	0	0	0	0	0.0%	$0.00	$0	0%
29-0000	Healthcare Practitioner & Technical	13	1,116	1,434	318	28.5%	$19.87	$41,331	225%
31-0000	Healthcare Support	1	55	73	18	32.7%	$11.14	$23,180	126%
33-0000	Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000	Food Preparation & Serving Related	0	0	0	0	0.0%	$0.00	$0	0%
37-0000	Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000	Personal Care & Service	1	116	151	35	30.2%	$10.89	$22,660	123%
41-0000	Sales & Related	0	0	0	0	0.0%	$0.00	$0	0%
43-0000	Office & Administrative Support	2	ND	ND	27	ND	$10.88	$22,618	123%
45-0000	Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000	Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000	Installation, Maintenance, & Repair	3	ND	ND	78	ND	ND	ND	ND
51-0000	Production	1	376	443	67	17.8%	$13.48	$28,040	152%
53-0000	Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
	Total	**50**	**5,501**	**6,762**	**1,261**	**22.9%**	**$20.75**	**$42,635**	**232%**

[a]Metropolitan Statistical Area.
[b]100 percent of the 2003 federal poverty guideline for a family of four.
[c]Standard Occupational Classification.
[d]Number of occupations per group.
[e]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.13: Distribution by Major Occupational Group of the 50 Occupations[a] in the Casper MSA[b] With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).
[b]Metropolitan Statistical Area.

projected to have better than average job growth (Gallagher, et al., 2003). Casper ranks second to the Cheyenne MSA for projected growth in Healthcare Practitioner & Technical Occupations. As in other areas of the state, Management occupations are also projected to add a relatively high number of jobs to the Casper MSA (228 jobs).

Among the 50 occupations requiring postsecondary education and paying at least 100 percent of the poverty guideline with the greatest projected growth, Registered Nurses are ranked first followed by General & Operations Managers (see Table 3.11, page 45).

Figure 3.14 (see page 47) illustrates that Casper MSA growth is projected to be highest among those occupations requiring an Associate's degree (341 jobs). This suggests the importance of Wyoming's community colleges to Casper MSA employers. The lowest growth is projected to be occupations requiring a first professional degree (32 jobs).

Occupations that pay 185 percent and higher of the poverty guideline are projected to have the highest growth at 785 jobs (see Figure 3.15, page 47). Occupations paying 130 to 184 percent are projected to grow by

Text continued on page 49

Table 3.11: The 50 Occupations in the Casper MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

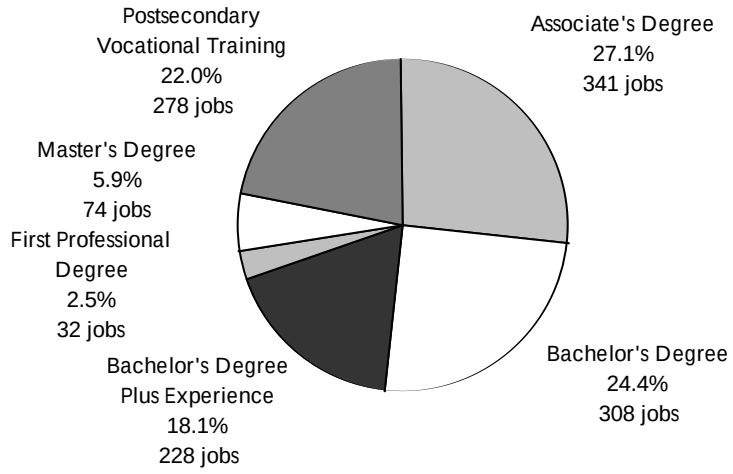
Rank	SOC[c] Code	Occupation Title	Typical Education Requirements[d]	Employment				2001 Average Wage		
				Projected		Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[e]
1	29-1111	Registered Nurses	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
2	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	788	933	145	18.4%	$28.98	$60,280	328%
3	51-4121	Welders, Cutters, Solderers, & Brazers	Postsecondary Vocational Training	376	443	67	17.8%	$13.48	$28,040	152%
4	25-2021	Elementary School Teachers, Except Special Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
5	19-4031	Chemical Technicians	Associate's Degree	88	139	51	58.0%	$11.78	$24,510	133%
6	13-2011	Accountants & Auditors	Bachelor's Degree	214	261	47	22.0%	$22.32	$46,420	252%
7	49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	Postsecondary Vocational Training	222	265	43	19.4%	$16.70	$34,730	189%
8	25-2011	Preschool Teachers, Except Special Education	Bachelor's Degree	68	105	37	54.4%	$9.14	$19,010	103%
9	39-9031	Fitness Trainers & Aerobics Instructors	Postsecondary Vocational Training	116	151	35	30.2%	$10.89	$22,660	123%
10	21-1015	Rehabilitation Counselors	Master's Degree	70	104	34	48.6%	$10.23	$21,280	116%
11	11-9111	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	ND	ND	ND	ND	ND	ND	ND
12	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Training	248	275	27	10.9%	$11.66	$24,240	132%
13	17-2051	Civil Engineers	Bachelor's Degree	58	83	25	43.1%	$24.45	$50,860	276%
14	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	55	80	25	45.5%	$21.43	$44,580	242%
15	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Training	87	111	24	27.6%	$12.46	$25,920	141%
16	25-2022	Middle School Teachers, Except Special & Vocational Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
17	25-2031	Construction Managers	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
18	13-2052	Personal Financial Advisors	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
19	29-2021	Dental Hygienists	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
20	29-1064	Obstetricians & Gynecologists	First Professional Degree	ND	ND	ND	ND	ND	ND	ND
21	21-1023	Mental Health & Substance Abuse Social Workers	Master's Degree	ND	ND	ND	ND	ND	ND	ND
22	31-9094	Medical Transcriptionists	Postsecondary Vocational Training	55	73	18	32.7%	$11.14	$23,180	126%
23	43-6013	Medical Secretaries	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
24	11-3031	Medical & Health Services Managers	Bachelor's Degree Plus Exp.	130	146	16	12.3%	$31.77	$66,080	359%
25	17-3022	Civil Engineering Technicians	Associate's Degree	ND	ND	ND	ND	$10.74	$22,330	121%
26	29-1126	Respiratory Therapists	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
27	19-2031	Chemists	Bachelor's Degree	ND	ND	ND	ND	$18.51	$38,500	209%
28	13-1199	Business Operations Specialists, All Other	Bachelor's Degree	144	158	14	9.7%	$20.34	$42,310	230%
29	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	68	81	13	19.1%	$20.90	$43,480	236%
30	23-1011	Lawyers	First Professional Degree	85	98	13	15.3%	$35.88	$74,630	406%
31	29-2012	Medical & Clinical Laboratory Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
32	29-1122	Occupational Therapists	Bachelor's Degree	44	56	12	27.3%	$23.98	$49,880	271%
33	29-2053	Psychiatric Technicians	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
34	11-1011	Chief Executives	Bachelor's Degree Plus Exp.	55	67	12	21.8%	$41.88	$87,100	473%
35	11-3040	Human Resources Managers	Bachelor's Degree Plus Exp.	55	66	11	20.0%	$22.46	$46,710	254%
36	29-1123	Physical Therapists	Master's Degree	37	48	11	29.7%	$27.36	$56,900	309%
37	21-9099	All Other Counselors, Social & Religious Workers	Bachelor's Degree	88	99	11	12.5%	$15.27	$31,750	173%
38	23-2011	Paralegals & Legal Assistants	Associate's Degree	52	62	10	19.2%	$15.18	$31,570	172%
39	19-3091	Anthropologists & Archeologists	Master's Degree	ND	ND	ND	ND	ND	ND	ND

Table 3.11: The 50 Occupations in the Casper MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

Rank	SOC[c] Code and Occupation Title	Typical Education Requirements[d]	Employment				2001 Average Wage		
			2000	Projected 2010	Change Number	Change Percent	Hourly	Annual	% of Poverty[e]
40	43-6012 Legal Secretaries	Postsecondary Vocational Training	56	66	10	17.9%	$12.39	$25,760	140%
41	29-2034 Radiologic Technologists & Technicians	Associate's Degree	35	45	10	28.6%	$21.41	$44,520	242%
42	13-1051 Cost Estimators	Bachelor's Degree	60	70	10	16.7%	$20.92	$43,510	236%
43	17-3011 Architectural & Civil Drafters	Postsecondary Vocational Training	17	27	10	58.8%	$14.25	$29,630	161%
44	29-2041 Emergency Medical Technicians & Paramedics	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
45	29-2056 Veterinary Technologists & Technicians	Associate's Degree	15	23	8	53.3%	$10.01	$20,820	113%
46	49-3041 Farm Equipment Mechanics	Postsecondary Vocational Training	ND	ND	ND	ND	ND	ND	ND
47	15-1041 Computer Support Specialists	Associate's Degree	54	61	7	13.0%	$14.40	$29,960	163%
48	19-3021 Market Research Analysts	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
49	29-2071 Medical Records & Health Information Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
50	25-2012 Kindergarten Teachers, Except Special Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
	Total	**Postsecondary Education**	**5,501**	**6,762**	**1,261**	**22.9%**	**$20.75**	**$42,635**	**232%**

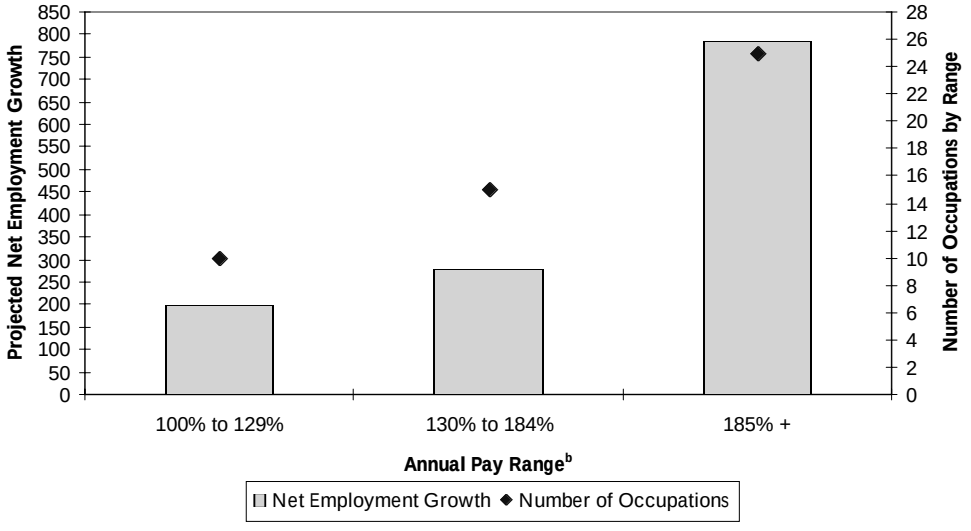
[a]Metropolitan Statistical Area.
[b]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[c]Standard Occupational Classification.
[d]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[e]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA-No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.14: Percentage of Total New Jobs Within the 50 Occupations in the Casper MSA[a] With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010



[a]Metropolitan Statistical Area.

Figure 3.15: Distribution by Pay Range of the 50 Occupations in the Casper MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Metropolitan Statistical Area.

[b]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

Table 3.12: Projected Employment Growth by Major Occupational Group in the Cheyenne MSA[a] for the 50 Occupations With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

SOC[c]	Occupation Group Code and Title	#[d]	Employment 2000	Employment Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	2001 Average Wage Annual	% of Poverty[e]
11-0000	Management	5	1,276	1,542	266	20.8%	$27.22	$56,613	308%
13-0000	Business & Financial Operations	5	869	1,007	138	15.9%	$18.28	$38,019	207%
15-0000	Computer & Mathematical Science	2	247	283	36	14.6%	$19.31	$40,161	218%
17-0000	Architecture & Engineering	4	94	151	57	60.6%	$24.60	$51,165	278%
19-0000	Life, Physical, & Social Science	1	ND	ND	23	ND	$14.65	$30,470	166%
21-0000	Community & Social Services	3	104	145	41	39.4%	$15.39	$32,024	174%
23-0000	Legal	1	251	269	18	7.2%	$24.17	$50,280	273%
25-0000	Education, Training, & Library	6	1,209	1,466	257	21.3%	NA	$36,196	197%
27-0000	Arts, Design, Entertainment, Sports, & Media	0	0	0	0	0.0%	$0.00	$0	0%
29-0000	Healthcare Practitioner & Technical	13	1,382	1,714	332	24.0%	$19.88	$41,345	225%
31-0000	Healthcare Support	1	33	42	9	27.3%	$12.61	$26,230	143%
33-0000	Protective Service	0	0	0	0	0.0%	$0.00	$0	0%
35-0000	Food Preparation & Serving Related	0	0	0	0	0.0%	$0.00	$0	0%
37-0000	Building & Grounds Cleaning & Maintenance	0	0	0	0	0.0%	$0.00	$0	0%
39-0000	Personal Care & Service	1	38	52	14	36.8%	$9.17	$19,070	104%
41-0000	Sales & Related	0	0	0	0	0.0%	$0.00	$0	0%
43-0000	Office & Administrative Support	2	172	201	29	16.9%	$10.13	$21,077	115%
45-0000	Farming, Fishing, & Forestry	0	0	0	0	0.0%	$0.00	$0	0%
47-0000	Construction & Extraction	0	0	0	0	0.0%	$0.00	$0	0%
49-0000	Installation, Maintenance, & Repair	5	665	793	128	19.2%	$15.27	$31,766	173%
51-0000	Production	1	49	74	25	51.0%	$10.14	$21,090	115%
53-0000	Transportation & Material Moving	0	0	0	0	0.0%	$0.00	$0	0%
	Total	**50**	**6,419**	**7,793**	**1,375**	**21.4%**	**$20.37**	**$41,304**	**224%**

[a]Metropolitan Statistical Area.

[b]100 percent of the 2003 federal poverty guideline for a family of four.

[c]Standard Occupational Classification.

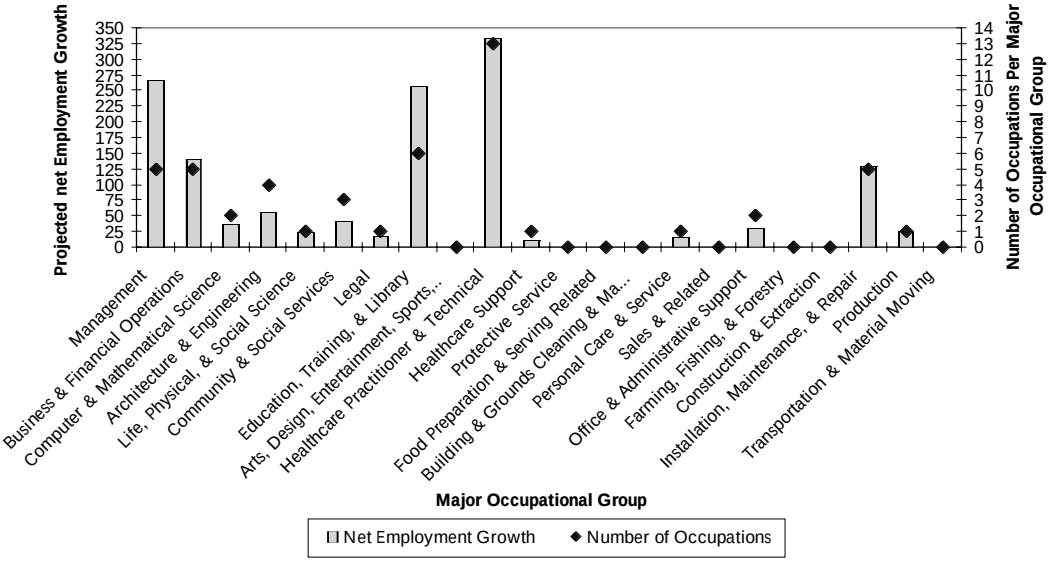
[d]Number of occupations per group.

[e]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).

NA-No hourly wage available; annual only.

ND - Not disclosable due to confidentiality of information.

Figure 3.16: Distribution by Major Occupational Group of the 50 Occupations[a] in the Cheyenne MSA[b] With the Greatest Projected Net Increase in Employment, 2000 and 2010



[a]Includes occupations requiring postsecondary education that pay average annual wages of at least $18,400 (100% of the federal poverty guideline for a family of four).
[b]Metropolitan Statistical Area.

279 jobs, while occupations paying 100 to 129 percent are projected to grow by 196 jobs.

Cheyenne MSA

The Cheyenne MSA is expected to have the highest occupational growth (6,889 jobs) of any region in Wyoming (see Table 3.1, page 22). Of Wyoming's six regions, the Cheyenne MSA is projected to have the highest growth (332 jobs) in Healthcare Practitioner & Technical occupations (see Table 3.12, page 48 and Figure 3.16, above). Growth in Management is second only to the Southwest Region (266 jobs). Education, Training, & Library occupations are also expected to have relatively high growth at 257 jobs.

Of the detailed occupations, General & Operations Managers are expected to have the highest growth (171 jobs; see Table 3.13, page 50). Registered Nurses rank second with 148 jobs.

Occupations that require a Bachelor's degree are projected to grow by 525 jobs, the most of the six regions (see Figure 3.17, page 52). The Cheyenne MSA is second behind the Casper MSA in growth of occupations that require an Associate's degree (276 jobs). Occupations that require a Master's degree are expected to experience the lowest growth at 34 jobs.

Text continued on page 53

Table 3.13: The 50 Occupations in the Cheyenne MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

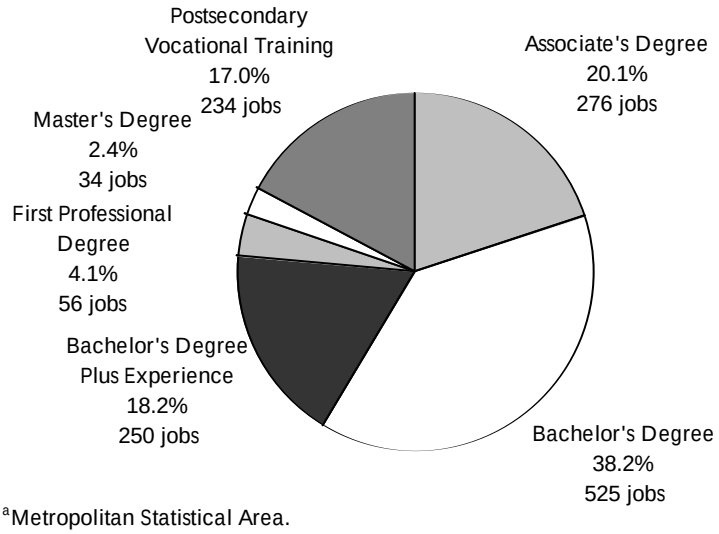
Rank	SOC[c] Code	Occupation Title	Typical Education Requirements[d]	Employment				2001 Average Wage		
				Projected		Change				
				2000	2010	Number	Percent	Hourly	Annual	% of Poverty[e]
1	11-1021	General & Operations Managers	Bachelor's Degree Plus Exp.	703	874	171	24.3%	$28.32	$58,910	320%
2	29-1111	Registered Nurses	Associate's Degree	626	775	149	23.8%	$19.05	$39,620	215%
3	25-2021	Elementary School Teachers, Except Special Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
4	13-2011	Accountants & Auditors	Bachelor's Degree	319	380	61	19.1%	$16.71	$34,750	189%
5	25-2031	Secondary School Teachers, Except Special & Vocational Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
6	13-1199	Business Operations Specialists, All Other	Bachelor's Degree	397	448	51	12.8%	$20.43	$42,500	231%
7	25-2022	Middle School Teachers, Except Special & Vocational Education	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
8	49-3023	Automotive Service Technicians & Mechanics	Postsecondary Vocational Training	262	310	48	18.3%	$13.67	$28,430	155%
9	29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary Vocational Training	172	214	42	24.4%	$13.03	$27,110	147%
10	49-2011	Computer, Automated Teller, & Office Machine Repairers	Postsecondary Vocational Training	79	108	29	36.7%	$21.64	$45,010	245%
11	49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	Postsecondary Vocational Training	146	173	27	18.5%	$12.60	$26,210	142%
12	11-3011	Administrative Services Managers	Bachelor's Degree Plus Exp.	202	229	27	13.4%	$25.09	$52,180	284%
13	11-1011	Chief Executives	Bachelor's Degree Plus Exp.	114	141	27	23.7%	$35.98	$74,840	407%
14	11-3031	Financial Managers	Bachelor's Degree Plus Exp.	144	169	25	17.4%	$24.60	$51,160	278%
15	51-4121	Welders, Cutters, Solderers, & Brazers	Postsecondary Vocational Training	49	74	25	51.0%	$10.14	$21,090	115%
16	43-6013	Medical Secretaries	Postsecondary Vocational Training	110	135	25	22.7%	$9.59	$19,950	108%
17	21-1021	Construction Managers	Bachelor's Degree	50	73	23	46.0%	$17.28	$35,940	195%
18	19-4099	Life, Physical, & Social Science Technicians, All Other	Associate's Degree	ND	ND	ND	ND	$14.65	$30,470	166%
19	15-1041	Computer Support Specialists	Associate's Degree	136	157	21	15.4%	$17.83	$37,080	202%
20	25-2041	Special Education Teachers, Preschool, Kindergarten, & Elementary School	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
21	17-2051	Civil Engineers	Bachelor's Degree	43	63	20	46.5%	$25.59	$53,230	289%
22	29-1062	Family & General Practitioners	First Professional Degree	96	116	20	20.8%	$46.41	$96,530	525%
23	29-1051	Pharmacists	First Professional Degree	86	105	19	22.1%	$29.98	$62,370	339%
24	29-2034	Medical & Health Services Managers	Associate's Degree	72	91	19	26.4%	$14.12	$29,370	160%
25	49-3011	Aircraft Mechanics & Service Technicians	Postsecondary Vocational Training	103	121	18	17.5%	$18.20	$37,870	206%
26	23-1011	Lawyers	First Professional Degree	251	269	18	7.2%	$24.17	$50,280	273%
27	17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	Bachelor's Degree	ND	ND	ND	ND	$33.13	$68,920	375%
28	11-9151	Social & Community Service Managers	Bachelor's Degree	114	130	16	14.0%	$18.69	$38,880	211%
29	25-3999	All Other Teachers, Primary, Secondary, & Adult	Bachelor's Degree	94	110	16	17.0%	NA	$21,460	117%
30	15-1021	Computer Programmers	Bachelor's Degree	111	127	16	14.4%	$21.12	$43,920	239%
31	29-1127	Speech-Language Pathologists	Master's Degree	43	58	15	34.9%	$21.57	$44,870	244%
32	17-2072	Electronics Engineers, Except Computer	Bachelor's Degree	ND	ND	ND	ND	$19.84	$41,270	224%
33	29-2021	Dental Hygienists	Associate's Degree	ND	ND	ND	ND	$24.62	$51,210	278%
34	39-9032	Recreation Workers	Bachelor's Degree	38	52	14	36.8%	$9.17	$19,070	104%
35	13-1073	Training & Development Specialists	Bachelor's Degree	42	54	12	28.6%	$15.94	$33,160	180%
36	29-9199	Health Professionals & Technicians, All Other	Associate's Degree	ND	ND	ND	ND	ND	ND	ND

Table 3.13: The 50 Occupations in the Cheyenne MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education and Paying Average Annual Wages of at Least $18,400,[b] 2000 and 2010

Rank	SOC[c] Code	Occupation Title	Typical Education Requirements[d]	Employment 2000	Projected 2010	Change Number	Change Percent	2001 Average Wage Hourly	Annual	% of Poverty[e]
37	29-2071	Medical Records & Health Information Technicians	Associate's Degree	54	65	11	20.4%	$12.11	$25,190	137%
38	21-1015	Rehabilitation Counselors	Master's Degree	ND	ND	ND	ND	ND	ND	ND
39	13-2072	Loan Officers	Bachelor's Degree	83	93	10	12.0%	$15.91	$33,080	180%
40	29-2011	Medical & Clinical Laboratory Technologists	Bachelor's Degree	45	55	10	22.2%	$15.45	$32,140	175%
41	29-2056	Veterinary Technologists & Technicians	Associate's Degree	19	29	10	52.6%	$10.99	$22,860	124%
42	31-9094	Medical Transcriptionists	Postsecondary Vocational Training	33	42	9	27.3%	$12.61	$26,230	143%
43	29-2012	Medical & Clinical Laboratory Technicians	Associate's Degree	35	43	8	22.9%	$10.68	$22,220	121%
44	21-1011	Substance Abuse & Behavioral Disorder Counselors	Master's Degree	ND	ND	ND	ND	ND	ND	ND
45	25-9199	Library, Museum, Training, & Other Education Workers, All Other	Bachelor's Degree	ND	ND	ND	ND	ND	ND	ND
46	49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	Postsecondary Vocational Training	77	83	6	7.8%	$15.30	$31,830	173%
47	13-1071	Employment, Recruitment, & Placement Specialists	Bachelor's Degree	29	35	6	20.7%	$16.16	$33,600	183%
48	17-3022	Civil Engineering Technicians	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
49	29-1126	Respiratory Therapists	Associate's Degree	ND	ND	ND	ND	ND	ND	ND
50	43-6012	Legal Secretaries	Postsecondary Vocational Training	63	67	4	6.3%	$11.09	$23,060	125%
		Total	**Postsecondary Education**	**6,419**	**7,793**	**1,375**	**21.4%**	**$20.37**	**$41,304**	**224%**

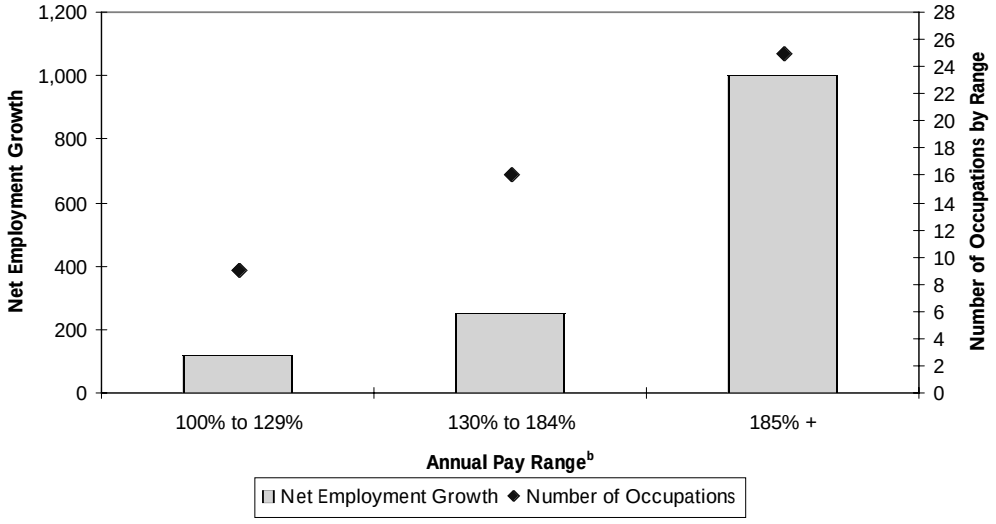
[a]Metropolitan Statistical Area.
[b]Represents 100 percent of the 2003 federal poverty guideline for a family of four.
[c]Standard Occupational Classification.
[d]As defined by the U.S. Department of Labor, Bureau of Labor Statistics.
[e]Based on $18,400 annually for a family of four (100% of the 2003 federal poverty guideline).
NA - No hourly wage available; annual only.
ND - Not disclosable due to confidentiality of information.

Figure 3.17: Percentage of Total New Jobs Within the 50 Occupations in the Cheyenne MSA[a] With the Greatest Projected Net Increase in Employment by Education Requirements, 2000 to 2010



[a]Metropolitan Statistical Area.

Figure 3.18: Distribution by Pay Range of the 50 Occupations in the Cheyenne MSA[a] With the Greatest Projected Net Increase in Employment Requiring Postsecondary Education, 2000 to 2010



[a]Metropolitan Statistical Area.
[b]Based on $18,400 annually for a family of four (the 2003 federal poverty guideline).

Occupations paying at least 185 percent of the poverty guideline are projected to have the highest growth (1,003 jobs) of the pay ranges shown in Figure 3.18 (page 52). For occupations paying between 130 and 184 percent of the poverty guideline, projected growth is 252 jobs. Occupations paying from 100 to 129 percent are expected to grow by 120 jobs.

Summary

There is a certain amount of continuity of occupational growth across regions, such as for General & Operations Managers, and Registered Nurses. However, there is also a divergence of occupational needs across regions that is dictated by the regional industry composition. Mining has a major influence on the dynamics of regional occupational growth, especially in the Northeast and Southwest regions. Services, particularly health care services and Retail Trade will be major drivers of occupational growth in every region.

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Chapter 4. Identifying Labor Supply Challenges

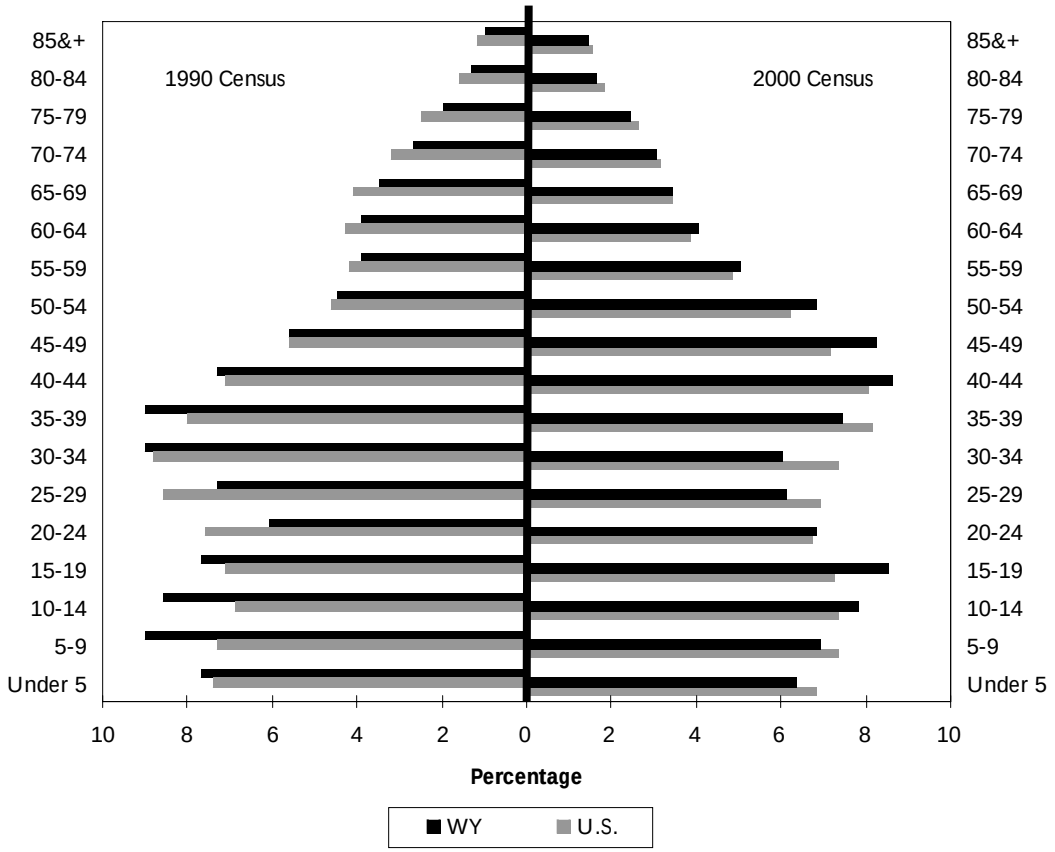
by: Mark Harris, Ph.D.

Previous chapters have focused on net employment growth as the source of demand for new workers. However, there are other reasons that change the demand for workers. The decline in labor supply can be associated with outmigration, and an aging workforce.

Labor shortages are a difficulty faced by many states and localities. Economic development is hindered when there are too few workers with required skills. Targeted training can eliminate the skills problem, assuming that trained workers are willing to stay. The difficulty with availability is more challenging. Site selectors require an available pool of skilled labor in an area before the relocation or creation of new businesses.[1]

Economic development in Wyoming currently faces challenges with both labor skill and availability. The Wyoming Business Council (Wyoming Economic Development Act, 1998) and the Wyoming Workforce Development Council (State of Wyoming, 1998) were

Figure 4.1: Wyoming and U.S. Population Distribution by Age Group, 1990 and 2000



Source: U.S. Census Bureau.

created to specifically address these interrelated issues in the state. This chapter illuminates demographic and economic challenges surrounding labor availability in Wyoming.

Demographic Challenges

According to the U.S. Census Bureau (2000), compared to the nation 25- to 39-year-olds are proportionately underrepresented in Wyoming while 40- to 64-year-olds are overrepresented (Figure 4.1, see page 55). The underrepresentation of 25- to 39-year-olds may foretell future labor shortages as they age.

The shortages seen in the Census are also mirrored in Wyoming's Wage Records data.[2] Wage Records data indicate that the projected aging of the baby boom generation (those born between 1946 and 1964, age 46 to 64 in 2010) will not only cause a labor shortage of 13,525 workers age 26 to 37 by 2010 but also cause a labor surplus of 18,310 for workers age 56 to 64 (Figure 4.2). As long as the leading edge of the baby boom adapts to changes in technology by acquiring new skills, and employers are willing to pay the additional compensation required by more experienced workers, it does not appear that there will be significant baby boom caused labor shortages in the near future (18,310-13,525 = 4,785 surplus). Figure 4.3 (see page 57) indicates that more experienced workers (5+ years of experience) receive higher levels of compensation across all age categories. As baby boomers retire beyond 2010, however, a serious labor shortage may occur unless Wyoming's economy is able to retain its current workforce and attract younger workers.

Economic Challenges

Wyoming is currently in a unique economic situation. The state has relatively low unemployment (Table 4.1, see page 58) and over-the-year employment growth has remained

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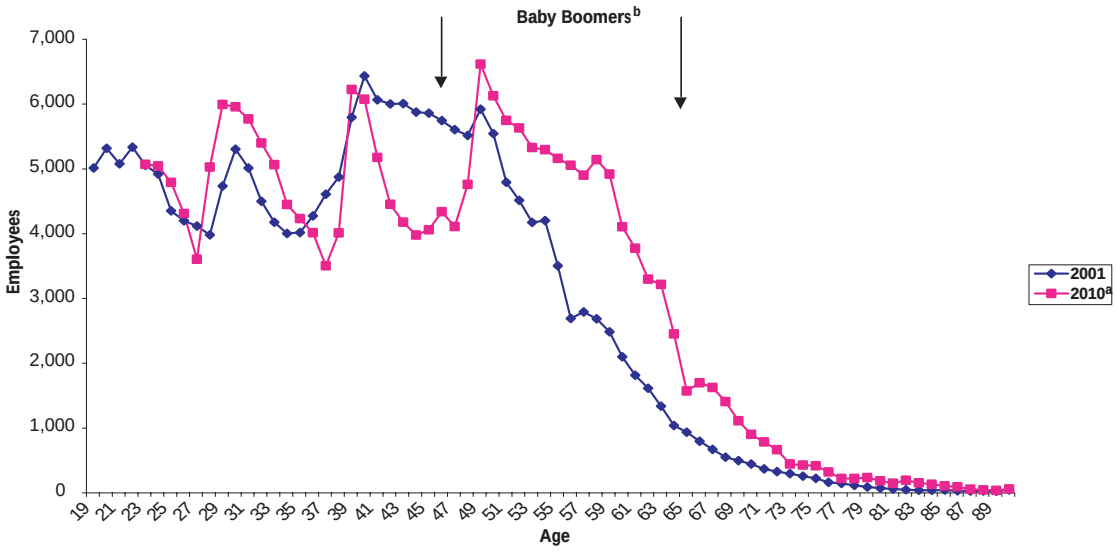
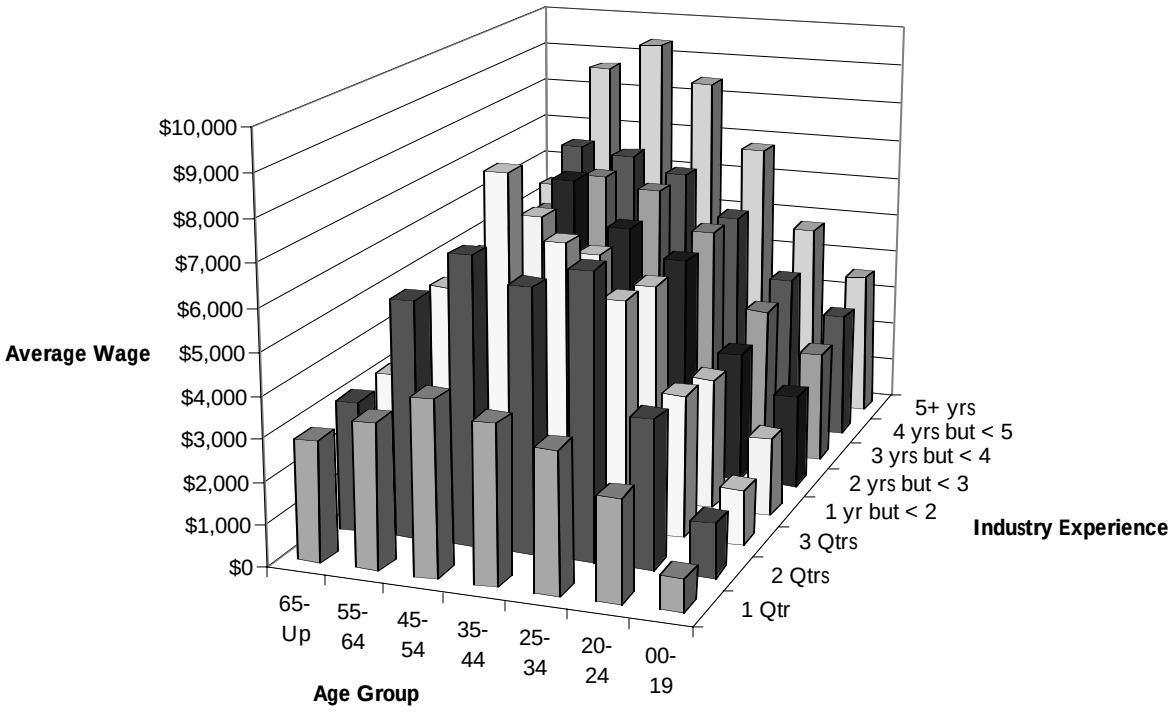
Figure 4.2: Distribution of Employees by Age, 2001 and 2010[a]

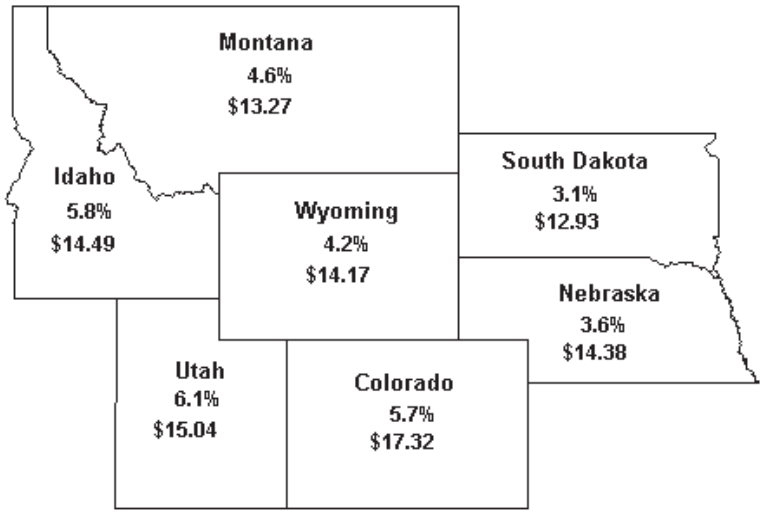


[a]Projected.
[b]Individuals born between 1946 and 1964.

Figure 4.3: Average Wage in All Industries by Age Group and Experience, 3rd Quarter 2001



Map 4.1: Unemployment Rates (2002)[a] and Mean Hourly Wages (2001)[b] for Wyoming and Neighboring States

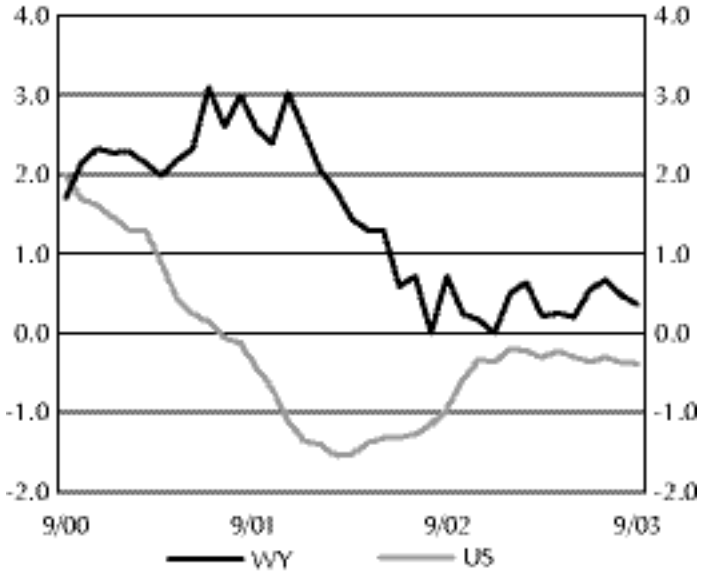


[a]Source: Bureau of Labor Statistics Local Area Unemployment Statistics (LAUS) program, 2002 data.
[b]Source: Bureau of Labor Statistics Occupational Employment Statistics (OES) program, 2001 data (most current).

Table 4.1: State Unemployment Rates, September 2003 (Seasonally Adjusted)

State	Unemp. Rate
Puerto Rico	11.8
Oregon	8.0
Alaska	7.8
Washington	7.6
Michigan	7.4
Illinois	7.1
Texas	6.5
California	6.4
New York	6.4
North Carolina	6.4
South Carolina	6.4
District of Columbia	6.1
Louisiana	6.1
New Mexico	6.1
United States	**6.1**
Arkansas	6.0
Kentucky	5.8
New Jersey	5.8
Ohio	5.8
West Virginia	5.8
Massachusetts	5.7
Wisconsin	5.7
Arizona	5.6
Colorado	5.6
Alabama	5.5
Idaho	5.5
Missouri	5.4
Tennessee	5.4
Mississippi	5.3
Pennsylvania	5.3
Florida	5.2
Indiana	5.2
Nevada	5.2
Oklahoma	5.1
Utah	5.1
Connecticut	5.0
Maine	4.9
Montana	4.9
Kansas	4.7
Iowa	4.6
Minnesota	4.6
New Hampshire	4.5
Rhode Island	4.5
Delaware	4.4
Georgia	4.4
Maryland	4.3
Vermont	4.3
Hawaii	4.2
Nebraska	4.0
Wyoming	**4.0**
North Dakota	3.7
Virginia	3.7
South Dakota	3.4

Figure 4.4: Nonagricultural Employment Growth (Percent Change Over Previous Year)



positive (Figure 4.4). In contrast, the nation is experiencing relatively high unemployment (Table 4.1) and job growth has been sharply negative (Figure 4.4). For the time being, this gives Wyoming somewhat of an advantage in retaining and attracting younger workers. However, when national job growth returns to a normal level competition for younger workers will increase. Map 4.1 (see page 57) indicates that while Wyoming currently has lower unemployment than several states (Colorado, Idaho, Montana, and Utah), it also has lower average wages than several surrounding states (Colorado, Idaho, Nebraska, and Utah). Should unemployment drop in the near future in surrounding states, Wyoming will again be at a competitive compensation disadvantage for retaining and attracting skilled young persons, particularly in comparison to the larger urban centers located in Colorado and Utah.

Conclusion

Younger age categories are proportionately underrepresented in Wyoming's population. This same demographic pattern is also demonstrated in the workforce. As baby boomers move into retirement, it will leave a shortage of younger workers. Older workers may fill this void in the near future (up to 2010), but it is unlikely that the

deficiency will be filled by older workers when baby boomers themselves move into typical retirement age.

Younger workers may be more willing to relocate to Wyoming during the current regional and national economic recession. However, without competitive compensation, it is unlikely that these individuals will remain in Wyoming when the regional and national economies rebound.

Notes

[1]Historical employment data on commuting and relocating patterns of workers may shed more light on availability concerns and assist sparsely populated areas in making a stronger case for the relocation or creation of new business.

[2]Wage Records is an administrative database. Each employer in the state who has employees covered under Unemployment Insurance, by law, must submit quarterly tax reports to the state showing each employee's Social Security Number (SSN) and wages earned in the quarter. Wage Records has a two-quarter time lag (e.g., wage information for first quarter employees is generally not available until third quarter).

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Chapter 5. Transaction Data (Turnover): An Application to Occupational Projections and a Strategy for Estimating Replacement Need at the State Level for Registered Nurses

by: Tony Glover, Senior Analyst, Research & Planning

Research & Planning released a two part series in 2002 on the nursing occupation in Wyoming (Glover, 2002, September and October). This chapter elaborates on the analyses presented in the two part "Nursing in Wyoming" series. Traditional projections strategies capture historic trends in employment by industry and identify a level of employment at some future point in time. This chapter moves beyond traditional techniques by incorporating a strategy for the analysis of labor supply within the health services industry and subsequently a detailed analysis of registered nurses (RNs) within Wyoming's labor market. Further, it demonstrates a means of linking the role of supply from educational institutions to the stock, flow, and adequacy of supply relative to the projected demand for nurses. Accomplishing this task, with respect to a particular occupation, requires access to current and historic education, licensing, and employment records.

We begin with an introduction to the concepts of turnover, or transactions, and cite references for interested individuals to explore the subject in more detail. Then we analyze turnover by describing the various employee/employer transactions that define turnover-related behaviors for two industries in Wyoming, health services (SIC 80)[1] and hotels & other lodging places (SIC 70),[2] demonstrating that the use of labor is industry specific. Although we explore the general relationship of one occupation (RNs) to Wyoming's labor market, there are industry-specific differences underlying our occupational analysis. For example, Glover found RN turnover in hospitals is much lower than in nursing care facilities (2002).

Using data from the Wyoming State Board of Nursing (WSBN) and our Wyoming Wage Records,[3] we apply transaction concepts (e.g., exit, entry) to the analyses of occupational projections. The results suggest that some projected demand for RNs in Wyoming over the next decade will come from employment growth throughout all industries. However, the greatest number of job openings will result from a decline in the supply of new RNs and an increase in the number of RNs leaving Wyoming's labor force (e.g., for other markets, retirement). If these issues are not addressed, the state can expect to be approximately 700 RNs short of the demand by 2006.

Introduction to the Employment Transaction Types that Impact Turnover

Turnover may be the most familiar transaction activity. It has been

operationally defined by the Bureau of Labor Statistics as the ratio of the number of individuals leaving jobs to the number of jobs available (2002, July). However, exiting represents just one form of employee/employer interaction. Therefore we define transactions in terms of the expanded relationships between an employee and an employer at a point in time.

All of the measures discussed in this chapter are based on data collected quarterly from employers for

Table 5.1: Persons to Employer Transactions in Wyoming's Health Services Industry[a] by Transaction Type, 1993 to 2001

		Transaction Type				
Year	Quarter	Both (B)	Continuous (C)	Entry (E)	Exit (X)	Total
1993	1	402	11,882	1,343	1,045	14,672
	2	449	11,857	1,652	1,368	15,326
	3	709	11,862	1,662	1,647	15,880
	4	714	11,926	1,443	1,598	15,681
1994	1	467	12,266	1,606	1,103	15,442
	2	537	12,385	1,745	1,487	16,154
	3	793	12,382	1,781	1,748	16,704
	4	651	12,688	1,512	1,475	16,326
1995	1	783	12,919	1,859	1,281	16,842
	2	1,019	13,013	2,117	1,765	17,914
	3	970	13,077	2,024	2,053	18,124
	4	909	13,116	1,502	1,985	17,512
1996	1	568	13,104	1,385	1,514	16,571
	2	633	12,722	1,582	1,767	16,704
	3	682	12,596	1,700	1,708	16,686
	4	809	12,606	1,721	1,690	16,826
1997	1	636	13,101	1,696	1,226	16,659
	2	609	13,250	1,902	1,547	17,308
	3	749	13,305	1,784	1,847	17,685
	4	656	13,542	1,490	1,547	17,235
1998	1	590	13,566	1,500	1,466	17,122
	2	845	13,064	1,762	2,002	17,673
	3	954	12,866	1,746	1,960	17,526
	4	848	12,753	1,875	1,859	17,335
1999	1	1,390	13,097	1,522	1,531	17,540
	2	1,164	12,435	2,185	2,184	17,968
	3	1,242	12,752	2,443	1,868	18,305
	4	838	13,256	2,057	1,939	18,090
2000	1	989	13,518	1,813	1,795	18,115
	2	717	13,584	1,997	1,747	18,045
	3	973	13,533	2,245	2,048	18,799
	4	915	13,767	1,968	2,011	18,661
2001	1	776	14,102	1,768	1,633	18,279
	2	1,069	13,106	2,160	2,764	19,099
	3	1,306	13,016	2,174	2,250	18,746
	4	1,120	12,925	2,832	2,265	19,142

[a]Standard Industrial Classification (SIC) 80.

Unemployment Insurance (UI) tax and Wage Records reports. The measures are divided into four transaction types: (1) Exits, (2) Entries, (3) Both, and (4) Continuous. An Exit (X) occurs when an individual leaves employment with an employer. The second transaction, Entry (E),[4] occurs when an individual who was not working for an employer is hired. The third, Both (B),[5] is a combination of the first two, an Entry and an Exit within a given time period. For example, an individual who goes to work for an employer (Entry) in January and Exits in February is considered Both for the first quarter of the year (January to March). The last transaction type, Continuous (C), describes the most stable relationship between an employee and employer. An employee who works for the employer in the current (reference) quarter, worked for the employer in the previous quarter, and continues to work for the employer in the subsequent quarter is considered a continuous employee.

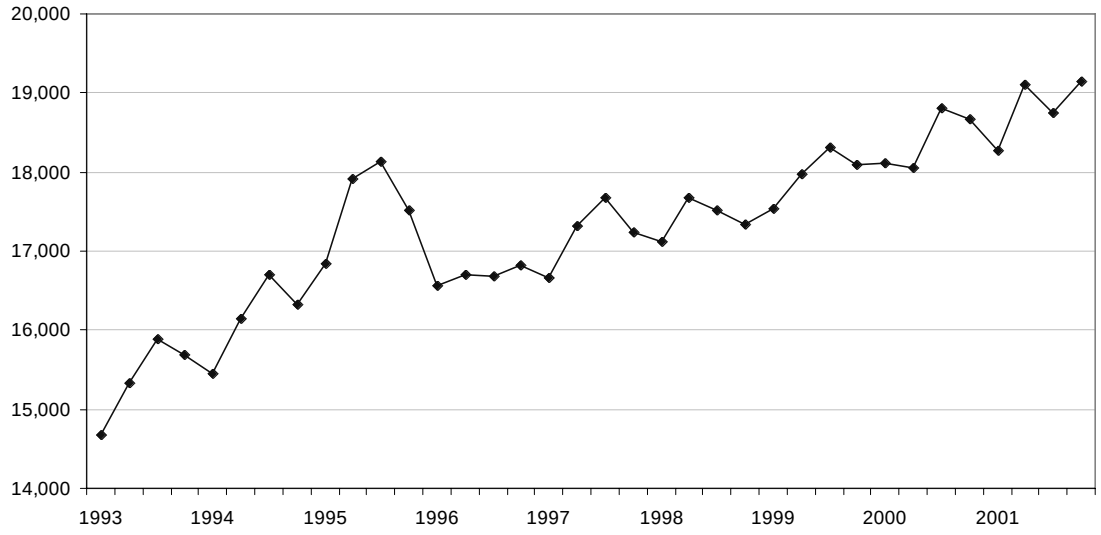
The cumulative number of transactions (total transactions) is the sum of all Entries, Exits, Both, and Continuous. For example, the total transactions in fourth quarter 1996 (1996Q4) was 264,403. Just as an employer may have several transactions based on the number of workers, workers may have multiple transactions if they have more than one employer at the same time.

Industry Analysis

Table 5.1 (see page 62) presents the distribution of all transactions among each transaction type from 1993Q1 to 2001Q4 in Wyoming's health services

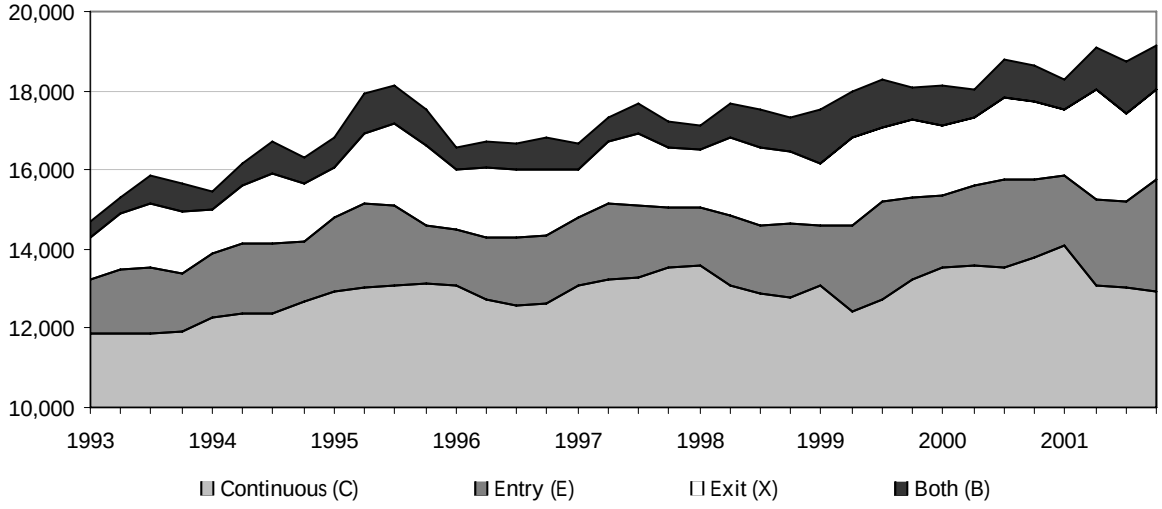
Text continued on page 64

Figure 5.1: Total Persons to Employer Transactions in Wyoming's Health Services Industry,[a] 1993 to 2001



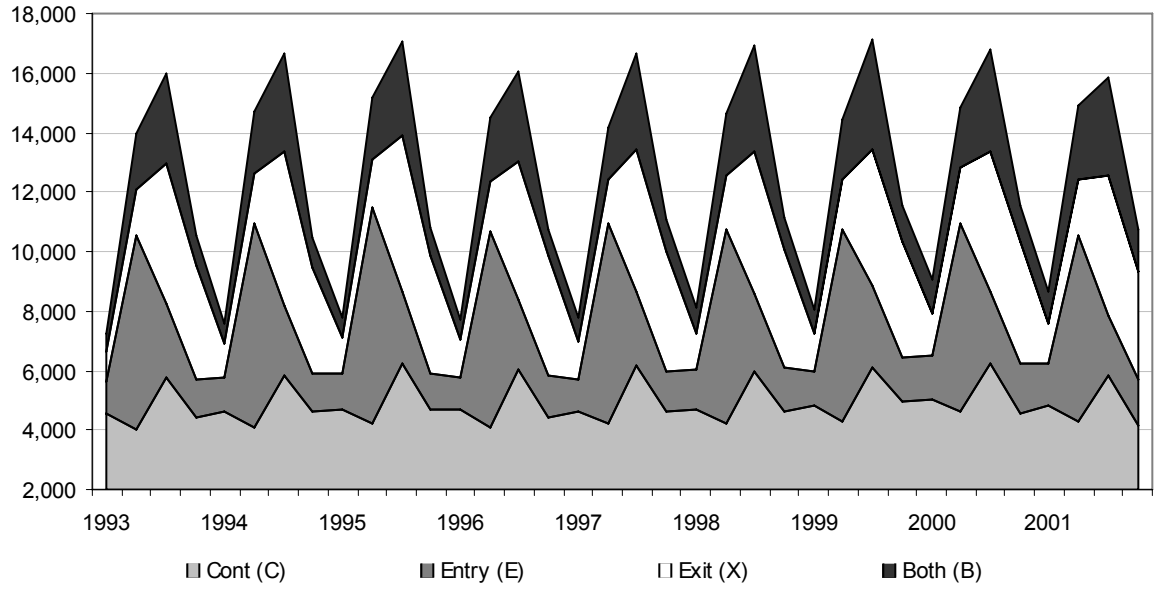
[a]Standard Industrial Classification (SIC) 80.

Figure 5.2: Total Persons to Employer Transactions in Wyoming's Health Services Industry[a] by Transaction Type, 1993 to 2001



[a]Standard Industrial Classification (SIC) 80.

Figure 5.3: Persons to Employer Transactions in Wyoming's Hotels & Other Lodging Places[a], 1993 to 2001



[a]Standard Industrial Classification (SIC) 70.

industry (SIC 80) for all occupations. Figure 5.1 (see page 63) shows the total transactions by year and quarter in SIC 80. Typical projection techniques would find the best possible fit to the trend line in Figure 5.1 and project the series to a point in the future. The projected series then represents the anticipated employment growth in the health services industry.

Figure 5.2 (see page 64) shows that continuous employment comprises the largest portion of the total transactions

Table 5.2: Second Order Employer Level Transactions in Wyoming's Health Services Industry[a] by Transaction Component, 1993 to 2001

		Second Order Persons to Employer Transaction Component								
		Carry Overs			Losses			Additions		
Year	Quarter	Continuous in Prior Quarter (C in Q-1)	Entry in Prior Quarter (E in Q-1)	Total	Both in Prior Quarter (B in Q-1)	Exit in Prior Quarter (X in Q-1)	Total	Both in Current Quarter (B in Q0)	Entry in Current Quarter (E in Q0)	Total
1993	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11,882	1,343	13,225	-402	-1,045	-1,447	449	1,652	2,101
	3	11,857	1,652	13,509	-449	-1,368	-1,817	709	1,662	2,371
	4	11,862	1,662	13,524	-709	-1,647	-2,356	714	1,443	2,157
1994	1	11,926	1,443	13,369	-714	-1,598	-2,312	467	1,606	2,073
	2	12,266	1,606	13,872	-467	-1,103	-1,570	537	1,745	2,282
	3	12,385	1,745	14,130	-537	-1,487	-2,024	793	1,781	2,574
	4	12,382	1,781	14,163	-793	-1,748	-2,541	651	1,512	2,163
1995	1	12,688	1,512	14,200	-651	-1,475	-2,126	783	1,859	2,642
	2	12,919	1,859	14,778	-783	-1,281	-2,064	1,019	2,117	3,136
	3	13,013	2,117	15,130	-1,019	-1,765	-2,784	970	2,024	2,994
	4	13,077	2,024	15,101	-970	-2,053	-3,023	909	1,502	2,411
1996	1	13,116	1,502	14,618	-909	-1,985	-2,894	568	1,385	1,953
	2	13,104	1,385	14,489	-568	-1,514	-2,082	633	1,582	2,215
	3	12,722	1,582	14,304	-633	-1,767	-2,400	682	1,700	2,382
	4	12,596	1,700	14,296	-682	-1,708	-2,390	809	1,721	2,530
1997	1	12,606	1,721	14,327	-809	-1,690	-2,499	636	1,696	2,332
	2	13,101	1,696	14,797	-636	-1,226	-1,862	609	1,902	2,511
	3	13,250	1,902	15,152	-609	-1,547	-2,156	749	1,784	2,533
	4	13,305	1,784	15,089	-749	-1,847	-2,596	656	1,490	2,146
1998	1	13,542	1,490	15,032	-656	-1,547	-2,203	590	1,500	2,090
	2	13,566	1,500	15,066	-590	-1,466	-2,056	845	1,762	2,607
	3	13,064	1,762	14,826	-845	-2,002	-2,847	954	1,746	2,700
	4	12,866	1,746	14,612	-954	-1,960	-2,914	848	1,875	2,723
1999	1	12,753	1,875	14,628	-848	-1,859	-2,707	1,390	1,522	2,912
	2	13,097	1,522	14,619	-1,390	-1,531	-2,921	1,164	2,185	3,349
	3	12,435	2,185	14,620	-1,164	-2,184	-3,348	1,242	2,443	3,685
	4	12,752	2,443	15,195	-1,242	-1,868	-3,110	838	2,057	2,895
2000	1	13,256	2,057	15,313	-838	-1,939	-2,777	989	1,813	2,802
	2	13,518	1,813	15,331	-989	-1,795	-2,784	717	1,997	2,714
	3	13,584	1,997	15,581	-717	-1,747	-2,464	973	2,245	3,218
	4	13,533	2,245	15,778	-973	-2,048	-3,021	915	1,968	2,883
2001	1	13,767	1,968	15,735	-915	-2,011	-2,926	776	1,768	2,544
	2	14,102	1,768	15,870	-776	-1,633	-2,409	1,069	2,160	3,229
	3	13,106	2,160	15,266	-1,069	-2,764	-3,833	1,306	2,174	3,480
	4	13,016	2,174	15,190	-1,306	-2,250	-3,556	1,120	2,832	3,952

[a]Standard Industrial Classification (SIC) 80.

occurring in health services. To exhibit the relative stability of SIC 80, Figure 5.3 (see page 64) displays the same data for Wyoming's hotels & other lodging places industry (SIC 70). In comparing these two Figures, it is apparent that employers in these two industries have different hiring and layoff patterns. Due to the highly seasonal nature of the hotels & other lodging places industry, employers must pick up a large number of employees during the summer months. However, it is not economically feasible for the employers to maintain these employees in the winter with the decline in tourism. In contrast, since the health services industry has little or no seasonal variation, it is more able to retain its employees continuously.

Persons to Employer Transaction Data: Application to the Health Services Industry

This section describes the components of change in the number of transactions and discusses their impact on the number of total transactions. The objective is to assign the relevant transaction type (i.e., Entry, Exit, Both, and Continuous) to three classes of behavior that explain the change in the number of total transactions from one quarter to the next. The three classes, which fall under the heading of Second Order Transaction Classes, are: (1) Carry Over Transactions from Last Quarter (Carry Overs), (2) Losses from Last Quarter (Losses), and (3) Additions from Current Quarter (Additions). The sum of the Carry Overs and Additions equals the total transactions for the quarter of interest (Q0). Further, the difference between Additions and Losses equals the net change (i.e., gain or loss in employment) in the total transactions from the quarter prior to the quarter of interest (Q-1 to Q0).

The ability to identify the transaction components responsible for a change in the number of total transactions allows us to better understand the way employers use labor to cope with changes in demand. To the extent we can identify some action on the employers part (e.g., advertising vacancies) or to the extent there is a Workforce Development structural element at work (e.g., job order requested), we might suggest that these transactions are employer initiated.

Carry Overs (stocks) are a combination of two transaction types from the prior quarter (Q-1), Entries and Continuous. Entries are individuals who were hired and maintained employment with the employer the next quarter. Continuous employees are individuals who were with the employer the quarter prior, as well as the current (reference) and subsequent quarters. Table 5.2 (see page 65) reflects the data from Table 5.1 (see page 62) placed under the relevant transaction component. For example, the Carry Over total is the sum of the Entries and Continuous for the specified quarter. At a point in time this worker/employer segment does not have an impact on the increase or decrease in the total transactions as these are accounted for by changes in the next two categories discussed (Losses and Additions).

The second transaction component represents individuals who are no longer with the employer in the reference quarter, but were employed by that employer in the quarter prior.

As with Carry Overs, Losses (flows) are composed of two transaction types from the previous quarter, Both and Exits. Recall that Both represents an individual who was hired by and left an employer during the same quarter. While individuals in the Both category have a relatively loose current attachment to a specific employer, a review of Figure 5.3 (see page 63) demonstrates that some industries (e.g., hotels & other lodging places) are fairly dependent upon this type of employee. Both is included in the Losses component (see Table 5.2, page 64) because these individuals are no longer part of the current total transactions but were part of the total transactions in the prior quarter. The Losses total is the sum of the number of Boths and Exits from the prior quarter.

The Additions (flows) component represents individuals who were hired by an employer during the current quarter. Additions are composed of two transaction types from the current quarter, Both and Entry. Whereas, Losses included Both from the prior quarter (Q-1), Additions include Both from the current quarter (Q0). The total Additions is the sum of the Boths and Entries from the current quarter.

Stock and flow calculations were repeated for each year and quarter in Table 5.2 (page 65). Recall that the sum of the Carry Over total and the Additions total is equal to the total transactions in each quarter. For example, in 1993Q2 there were 13,225 Carry Overs and 2,101 Additions, which sum to 15,326 total transactions for 1993Q2 (see Table 5.1, page 62). Further, the sum of the Additions total and the Losses total equals the net gain or loss in total transactions from the prior quarter to the quarter of interest (Q-1 to Q0). In the calculation for 1993Q2, Additions (2,101) plus Losses (-1,447) equals a net gain of 654. To this point we have identified the components that create changes in the number of total transactions with all employers at a given point in time. In the next section we will apply these techniques to a detailed analysis of RNs working in Wyoming.

Persons to Market Transaction Data: Application to Occupational Projections

The foundation of this analysis is the combination of two data sets. The first, Wyoming's Wage Records, is collected quarterly. It captures the number of individuals by Social Security Number (SSN), employers by Unemployment Insurance (UI) account number, and wages for all UI covered employment in the state. This analysis uses data from 1992Q1 to 2002Q1. The second, the Wyoming State Board of Nursing (WSBN) licensed RNs dataset, provides records of SSN and date of license issue for all active licensed RNs in the state from 1992 to 2001. The combination of these two data sets allows us to apply the turnover analysis techniques to a specific subset of Wyoming's labor market. The subset in this case is RNs, but these techniques could be applied to any population for which data is available.

The previous section of this chapter introduced the typical application of transactional data. For example, an individual leaving one employer and being hired by another employer in the same quarter contributes one Entry

Table 5.3a: Person to Employer Level Transactions

In this example, Pat is given three employers. The Tables below explain the different levels of aggregation for Transaction Type calculations. For this example, the beginning of time is 1992Q1 and the end of time is 2001Q4. The first time Pat appears in Wage Records as a registered nurse is 1995Q1 and the last is 1999Q4.

Person to Employer Level Transactions

Year	1995				1996				1997				1998				1999			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	< Time Begins in 1992Q1																			Time Ends in 2001Q4 >
Pat's Work History with A-OK Hospital																				
Pat's Work History with Dandy-Do Hospital																				
Pat's Work History with Al's Nursing Home																				
Transaction Type A-OK Hospital			B		E	X			E	C	C	C	C	X					B	
Transaction Type Dandy Do Hospital			E	C	X		E	C	C	X										B
Transaction Type Al's Nursing Home	B															E	C	C	X	
Aggregate Person to Employer Level Transactions by Category: Entries (E)			1		1		1		1							1			1	
Exits (X)					1	1				1				1						
Both (B)	1		1																1	1
Continuous (C)				1				1	1	1	1	1	1				1	1		
Total	1	0	2	1	2	1	1	1	2	2	1	1	1	1	0	1	1	1	2	1

Table 5.3b: Person to Market Transactions

Person to Market Level Transactions

Year	1995				1996				1997				1998				1999			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	< Time Begins in 1992Q1																			Time Ends in 2001Q4 >
Pat's Work in Wyoming's Labor Force																				
Transaction Type in Labor Force	B		E	C	C	C	C	C	C	C	C	C	C	X		E	C	C	C	X
Aggregate Labor Force Transactions by Category: Entry (E)			1													1				
Exit (X)														1						1
Both (B)	1																			
Continuous (C)				1	1	1	1	1	1	1	1	1	1				1	1	1	
Total	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1

Table 5.3c: Person to Market Transactions by Expanded Transaction Types

Person to Market Transactions by Expanded Transaction Types

Year	1995				1996				1997				1998				1999			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	< Time Begins in 1992Q1																			Time Ends in 2001Q4 >
Pat's Work in Wyoming's Labor Force																				
Transaction Type in Labor Force	BF		E	C	C	C	C	C	C	C	C	C	C	X		E	C	C	C	XL
Aggregate Labor Force Transactions by Category — Determinate Transactions: Entry First (EF)																				
Both First (BF)	1																			
Both First and Last (BFL)																				
Both Last (BL)																				
Exit Last (XL)																				1
Attached Transactions: Both (B)																				
Continuous (C)				1	1	1	1	1	1	1	1	1	1				1	1	1	
Entry (E)			1													1				
Exit (X)														1						
Total	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1

and one Exit in that quarter or two total transactions. In this section, we are not concerned with the internal (within Wyoming) turnover from employer to employer. What we are concerned with is whether or not an RN is attached to or available to work in Wyoming's labor market.

The easiest way to describe the difference between Person to Employer Level Transactions (all transactions with all employers) and Person to Market Level Transactions (any transaction with any employer) is to examine Tables 5.3a and 5.3b). We introduce Hypothetical Pat for the first

Table 5.4: Person to Labor Force Transactions in Wyoming for Registered Nurses (RNs) by Expanded Transaction Types, 1992 to 2001

		Determinate Labor Force Transactions					Attached Labor Force Transactions				
		First Entries		First Entry and Permanent Exit	Permanent Exits		Attached RNs				RNs Working
Year	Quarter	EF	BF	BFL	BL	XL	B	C	E	X	Total
1992	2	29	2	0	0	7	7	1,707	39	33	1,824
	3	217	7	21	0	9	4	1,734	47	32	2,071
	4	58	2	3	1	14	12	1,944	43	40	2,117
1993	1	60	4	2	2	17	3	1,995	33	33	2,149
	2	50	0	4	0	20	7	2,026	33	42	2,182
	3	225	3	7	1	27	4	2,043	39	39	2,388
	4	74	1	6	2	20	4	2,241	46	46	2,440
1994	1	64	2	2	2	22	5	2,305	33	34	2,469
	2	32	2	1	0	28	11	2,327	40	47	2,488
	3	249	7	11	1	16	5	2,346	49	37	2,721
	4	80	5	3	1	38	6	2,563	45	43	2,784
1995	1	53	2	1	3	30	3	2,618	37	40	2,787
	2	111	6	1	3	45	12	2,603	47	60	2,888
	3	158	3	10	2	53	4	2,657	48	51	2,986
	4	52	4	8	4	46	7	2,740	56	77	2,994
1996	1	54	3	3	1	40	4	2,751	56	57	2,969
	2	76	4	1	1	57	8	2,709	66	95	3,017
	3	118	8	10	2	41	5	2,743	73	67	3,067
	4	53	3	4	4	41	10	2,816	83	77	3,091
1997	1	54	4	2	1	29	5	2,865	75	58	3,093
	2	70	2	6	2	45	12	2,892	84	57	3,170
	3	126	2	3	3	66	4	2,914	89	66	3,273
	4	54	1	5	4	29	11	3,032	67	68	3,271
1998	1	66	0	2	3	45	1	3,012	58	96	3,283
	2	71	2	3	18	66	15	2,931	71	139	3,316
	3	149	6	6	3	60	9	2,930	90	83	3,336
	4	68	3	5	6	54	15	3,016	127	99	3,393
1999	1	37	2	2	7	44	11	3,086	82	81	3,352
	2	58	0	5	15	69	11	3,019	115	117	3,409
	3	141	6	9	7	69	15	3,053	97	70	3,467
	4	59	5	5	10	63	8	3,152	129	76	3,507
2000	1	57	1	4	11	50	11	3,195	100	95	3,524
	2	46	1	4	3	80	10	3,195	92	77	3,508
	3	147	4	9	6	83	7	3,193	119	57	3,625
	4	52	4	4	8	69	7	3,259	95	131	3,629
2001	1	62	0	0	7	59	7	3,279	69	68	3,551

time in this paper. Pat will be used to demonstrate concepts in other publications in the future. For demonstration purposes, in Tables 5.3a and 5.3b Pat is the only RN working in Wyoming. Pat became a licensed RN in Wyoming during the first quarter of 1995 (1995Q1) and the last time Pat appeared in Wyoming Wage Records was 1999Q4.

Table 5.3a (see page 68) shows Pat's Person to Employer Level Transactions with Pat's three employers during Pat's

duration of employment in Wyoming's labor market. In any given quarter Pat can have more than one transaction if Pat has more than one employer. This is another representation of the analysis found in Tables 5.1 and 5.2 (see pages 62 and 65).

Table 5.3b shows Pat's Person to Market Level Transactions in Wyoming. Note that Pat's activity is measured relative to the market as a whole rather than on the number of employers Pat had transactions during any given quarter. For example, Table 5.3a Pat had two employers in 1997Q1 and 1997Q2. Table 5.3b shows that Pat was working in Wyoming during 1997Q2. The transition from Employer Level to Market Level is necessary this analysis concerns only the number of RNs working in Wyoming, the number of RNs coming into Wyoming's labor market, and the number leaving.

Some of the data presented in Table 5.4 (see page 69) are similar to data in Table 5.1 (see page 62), for example the transaction types Entry (E), Exit (X), Both (B), and Continuous (C). However, whereas an Entry in Table 5.1 can represent an individual who was working for another employer in the previous quarter, an Entry in Table 5.4 represents an RN who did not work (in Wyoming) in the previous quarter. Further, an Exit in Table 5.4 represents an RN who did not work in Wyoming in the subsequent quarter. For purposes of definition, the transaction types discussed in this paragraph (E, X, B, C) are defined in Table 5.4 as attached transactions because we know that although the individuals may leave work for a number of quarters, they also return to Wyoming's labor force.

There are two extended data elements in Table 5.4 that build on prior definitions, First and Last. Entry First (EF) represents RNs who have just been licensed in Wyoming and are making their first entry to Wyoming's Market as employed Licensed RNs. Conversely, Exit Last (XL) are RNs who have been working in Wyoming who subsequently never again (between 1992Q1 and 2001Q1) appear in Wyoming's labor force. Following the same logic, Both First and Last (BFL) are RNs who become licensed in Wyoming but never appear in Wyoming after that initial quarter. The transaction types discussed in this paragraph (EF, BF, BFL, BL, XL) are referred to as determinate transactions because these types are the only ones that determine the change in the number of available RNs in Wyoming at a point in time.

The data in Table 5.4 (see page 69) were projected 20 quarters (5 years) beyond 2001Q1. The data were then assigned to two of the Second Order Transaction Classes discussed earlier (Carry Overs, Additions, and Losses), while maintaining the components of whether the activity was Attached or Determinate. The bullets below list our previous definitions from Table 5.2 (see page 64) and the definitions required to create Table 5.5 (see page 71).

- Previous Definitions in Table 5.2
  - Losses = -1 * (B + X) from Q-1
  - Addition = (B + E) from Q0

- Definitions to Maintain Attached and Determinate Categories in Table 5.5
  - Attached Losses = -1 * (BF + B + X) from Q-1

Text continued on page 71

Table 5.5: Second Order Person to Labor Force Transaction Components of Registered Nurses (RNs) in Wyoming, Base and Projected Quarters, 1992 to 2006

	Year	Quarter	Losses			Additions			Projection 1	Flow		Projection 2
			Attached Loss	Determinate Loss	Total Loss	Attached Addition	Determinate Addition	Total Additions	Total RNs Working	Attached	Deteminate	Total RNs Working Based on Flow Data
Base History	1992	2							1,824			1,824
		3	-42	-7	-49	51	245	296	2,071	9	238	2,071
		4	-43	-30	-73	56	63	119	2,117	13	33	2,117
	1993	1	-54	-18	-72	38	66	104	2,149	-16	48	2,149
		2	-40	-21	-61	40	54	94	2,182	0	33	2,182
		3	-49	-24	-73	44	235	279	2,388	-5	211	2,388
		4	-46	-35	-81	52	81	133	2,440	6	46	2,440
	1994	1	-51	-28	-79	40	68	108	2,469	-11	40	2,469
		2	-41	-26	-67	51	35	86	2,488	10	9	2,488
		3	-60	-29	-89	55	267	322	2,721	-5	238	2,721
		4	-49	-28	-77	52	88	140	2,784	3	60	2,784
	1995	1	-54	-42	-96	43	56	99	2,787	-11	14	2,787
		2	-45	-34	-79	62	118	180	2,888	17	84	2,888
		3	-78	-49	-127	54	171	225	2,986	-24	122	2,986
		4	-58	-65	-123	67	64	131	2,994	9	-1	2,994
	1996	1	-88	-58	-146	61	60	121	2,969	-27	2	2,969
		2	-64	-44	-108	75	81	156	3,017	11	37	3,017
		3	-107	-59	-166	80	136	216	3,067	-27	77	3,067
		4	-80	-53	-133	97	60	157	3,091	17	7	3,091
	1997	1	-90	-49	-139	81	60	141	3,093	-9	11	3,093
		2	-67	-32	-99	98	78	176	3,170	31	46	3,170
		3	-71	-53	-124	96	131	227	3,273	25	78	3,273
		4	-72	-72	-144	82	60	142	3,271	10	-12	3,271
	1998	1	-80	-38	-118	62	68	130	3,283	-18	30	3,283
		2	-97	-50	-147	104	76	180	3,316	7	26	3,316
		3	-156	-87	-243	102	161	263	3,336	-54	74	3,336
		4	-98	-69	-167	148	76	224	3,393	50	7	3,393
	1999	1	-117	-65	-182	100	41	141	3,352	-17	-24	3,352
		2	-94	-53	-147	141	63	204	3,409	47	10	3,409
		3	-128	-89	-217	119	156	275	3,467	-9	67	3,467
		4	-91	-85	-176	147	69	216	3,507	56	-16	3,507
	2000	1	-89	-78	-167	122	62	184	3,524	33	-16	3,524
		2	-107	-65	-172	105	51	156	3,508	-2	-14	3,508
		3	-88	-87	-175	132	160	292	3,625	44	73	3,625
		4	-68	-98	-166	110	60	170	3,629	42	-38	3,629
	2001	1	-142	-81	-223	83	62	145	3,551	-59	-19	3,551
Projected		2	-75	-66	-141	111	58	168	3,586	36	-8	3,579
		3	-121	-96	-217	112	165	276	3,667	-9	69	3,639
		4	-98	-100	-197	121	56	176	3,675	23	-44	3,618
	2002	1	-117	-92	-209	103	44	147	3,644	-14	-48	3,556
		2	-103	-85	-189	118	56	174	3,657	15	-30	3,541
		3	-127	-104	-231	119	163	282	3,738	-8	58	3,591
		4	-104	-108	-211	128	53	182	3,747	25	-55	3,561
	2003	1	-123	-100	-223	110	42	152	3,715	-13	-58	3,490
		2	-109	-93	-203	126	53	179	3,729	16	-40	3,466
		3	-133	-112	-245	126	160	287	3,810	-6	48	3,508
		4	-110	-116	-226	136	51	187	3,818	26	-65	3,469
	2004	1	-129	-108	-237	118	40	157	3,787	-11	-69	3,389
		2	-115	-101	-217	133	51	184	3,800	18	-50	3,357
		3	-139	-120	-259	134	158	292	3,881	-5	38	3,390
		4	-116	-124	-240	143	49	192	3,889	28	-75	3,343
	2005	1	-135	-116	-251	125	37	162	3,858	-10	-79	3,254
		2	-121	-109	-231	140	49	189	3,871	19	-61	3,212
		3	-145	-128	-273	141	156	297	3,952	-4	28	3,236
		4	-122	-132	-254	151	47	197	3,961	29	-85	3,180
	2006	1	-141	-124	-265	132	35	167	3,929	-9	-89	3,082

- Determinate Losses = -1 * (BFL + BL + XL) from Q-1
- Attached Addition = (B + E + BL) from Q0
- Determinate Addition = (EF + BF + BFL) from Q0

Attached Losses

BF, B, and X from the quarter prior (Q-1) represent individuals who were working in the prior quarter, not working in the current quarter, but return to the labor force at a later time.

Determinate Losses

BFL, BL, and XL from the quarter prior (Q-1) represent individuals who were working in the prior quarter, not working in the current quarter, and never return to the labor force.

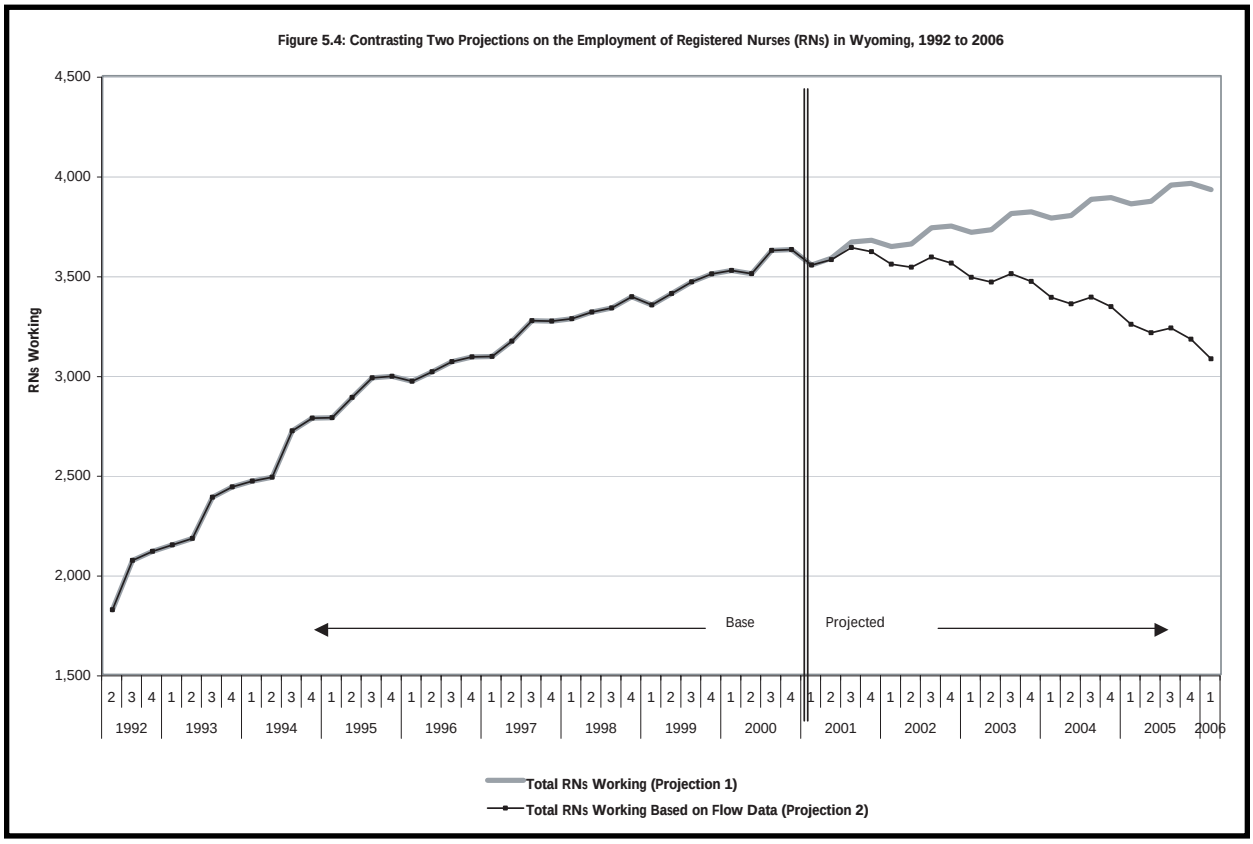
Attached Additions

B, E, and BL from the current quarter (Q0) represent individuals who were not working in the prior quarter, working in the current quarter and had been in Wyoming's labor force as an RN at some point in the past.

Determinate Additions

EF, BF, and BFL from the current quarter (Q0) represent individuals who began working in the current quarter who had never been in the labor force as an RN in the past.

Lastly, two new columns Attached Flow and Determinate Flow are presented. Attached Flow is the result of Attached Additions and Attached Losses while Determinate Flow is the



result of Determinate Additions and Determinate Losses (1992Q3 = -42 + 51 = 9).

Projection 1 and Projection 2

The base periods for the projections are the quarters from 1992Q1 to 2001Q1. All data beyond 2001Q1 are the result of statistical projection techniques using the base period data from Table 5.4 (see page 69). Of the data presented in Table 5.5 (see page 71), we focus on total RNs working (Projection 1) and total RNs working based on flow data (Projection 2).

Projection 1 (total RNs working) is a typical projection based on historic data and represents the projected demand of RNs due to employment growth. Projection 1 simply looks at the number, or level, of RNs in the past and determines the future number of RNs based on this trend. A review of data presented in the Projection 1 column of Table 5.5 tells the tale we expect. There was fast growth at the beginning of the decade with the number of RNs working in the state increasing from approximately 2,000 in 1992 to 3,000 in 1995 (a period of four years). This growth slowed toward the end of our base period with the number of RNs increasing from nearly 3,000 in 1995 to 3,500 in 2000 (a period of six years). Even with deceleration in growth in the number of RNs added to our state, the trend continues to increase the number of RNs working and our projected data follows suit. Lastly, Projection 1 makes the assumption that the supply of RNs was meeting the demand for RNs during the base period (1992Q2 to 2000Q4).

Projection 2 is the total number of RNs working in Wyoming based on flow data. Recall that our original intention in identifying the Second Order Transaction Groups (Carry Overs, Additions, and Losses) was to enable us to apply the transaction types to actual changes in the number of transactions and in this case the number of RNs working. The formula for this calculation follows:

- Formula 1 for Projection 2
  - Total RNs in Q0 = Total RNs in Q-1 + Total Additions in Q0 + Total Losses in Q0

The last two statements in Formula 1 (Total Additions in Q0 + Total Losses in Q0) represent the flow of RNs. Further, to determine the components impacting the future demand for RNs in Wyoming, we have broken flow into attached and determinate flow. Therefore, Formula 1 was transformed and restated as Formula 2.

- Formula 2 for Projection 2
  - Total RNs in Q0 = Total RNs in Q-1 + Attached Flow in Q0 + Determinate Flow in Q0

Testing the formula against the base data from 1992Q4 and 1993Q1, we find that 2,149 (Total RNs 1993Q1) is equal to 2,117 (Total RNs 1992Q4) minus 16 (Attached Flow 1993Q1) plus 48 (Determinate Flow 1993Q1). From this we can ascertain that the increase in the number of RNs working in Wyoming from 1992Q4 to 1993Q1 was a function of more first time entries (determinate additions), than permanent exits (determinate losses). Following this logic and using our starting period of 1992Q2, we use the

flow data to determine the next quarters' Total RNs for the remaining periods through 2006Q1 (see the examples below).

- Method Used to Fill Projection 2 (Total RNs Working Based on Flow Data)
  - Total RNs 1993Q2 = (2,149 + 0 + 33) = 2,182
  - Total RNs 1993Q3 = (2,182 - 5 + 211) = 2,388
  - Total RNs 1993Q4 = (2,388 + 6 + 46) = 2,440
  - Total RNs 2001Q1 = (3,629 - 59 - 19) = 3,551
  - Total RNs 2001Q2 = (3,551 + 36 - 8) = 3,579
  - Total RNs 2001Q3 = (3,579 - 9 + 69) = 3,639

What We Learn from Figures 5.4 and 5.5

Figure 5.4 (see page 72) shows the contrast between the two projection methods. By definition, the two methods of calculating the number of RNs working in Wyoming are a one-to-one match during the base period. Beginning in 2001, our two projection techniques diverge with Projection 1 continuing to grow, and Projection 2 showing a decline in the number of RNs working in Wyoming. Figure 5.5 (see page 75), which shows the attached flow and the determinate flow, demonstrates that attached flow has no impact on the RNs available in the long run because those who leave eventually return. However, the determinate flow illustrates the rapid growth at the beginning of our base period and the subsequent deceleration in the number of RNs during the end of our base period. Further, the determinate flow suggests that the state will soon experience an outflow in the number of RNs available.

Why We Need Both Projections to Anticipate a Future Registered Nurse Shortage

Figure 5.6 (see page 75) isolates the projected data from 2001Q1 to 2006Q1 and includes both of the projected time series. The change in total RNs (Projection 1) from 2001Q1 to 2006Q1 represents the projected demand for additional RNs due to employment growth. Total RNs based on flow data (Projection 2) shows the increasing shortages that will be created by a decline in the number of licensed RNs (determinate additions) and the increasing number of RNs permanently leaving the state (determinate losses). The difference between these two projected time series is the anticipated RN shortage.

Using the data provided in Table 5.5 (see page 71) and contrasting the four quarter average for total RNs in 2001 against the four quarter average of 2005, we can expect the number of RNs needed in Wyoming to grow by 291 (assuming that the supply of RNs was meeting the demand for RNs during the base period). Focusing on total RNs based on flow data, we can expect the number of available RNs to decline by 377 during the same time period. The sum of these two numbers predicts that Wyoming will be 668 RNs short by 2005.

Conclusions

Industrial projections are often a slippery slope as many economic

Text continued on page 76

Figure 5.5: Attached Versus Determinate Flow of Registered Nurses (RNs) in Wyoming, 1992 to 2006

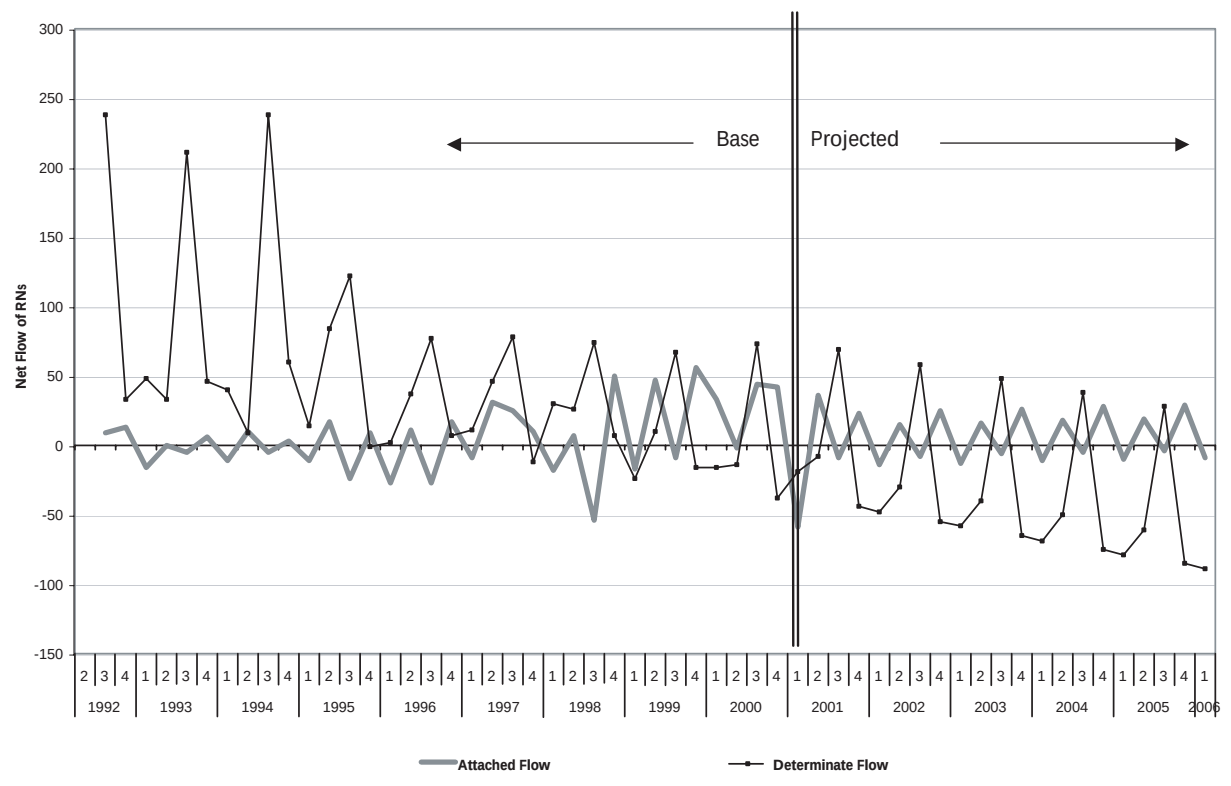
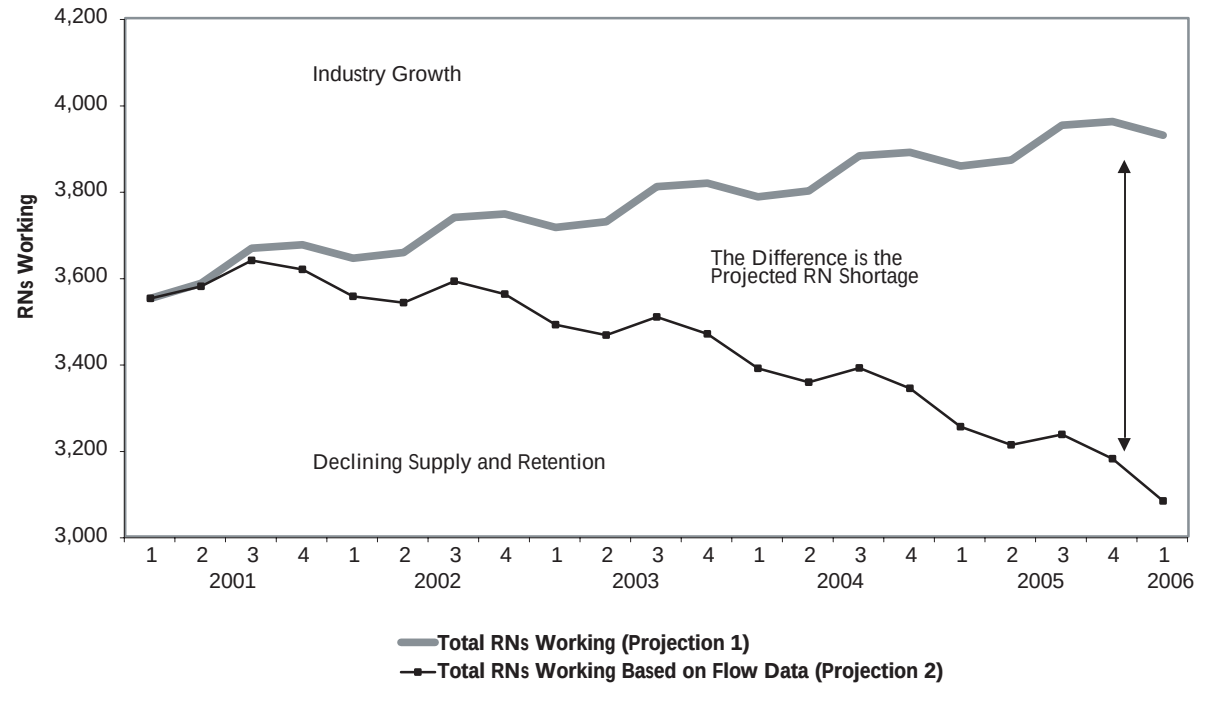


Figure 5.6: Projected Shortage of Registered Nurses (RNs) in Wyoming



factors impact the level of employment. For example, R&P's 1998 to 2008 projections for the oil & gas industry (SIC 13) anticipated declining employment over the decade. In reality, due to the recent coal bed methane development, employment doubled from 1999 to 2001. There are numerous external activities which may reverse the anticipated shortage of RNs available in Wyoming. In recent years, Congress passed the Nurse Reinvestment Act (2002) and state legislators created the Wyoming Investment in Nursing Program (2003). These programs offer incentives to prospective nursing students such as paid educational expenses in return for working in critical need areas.

While this analysis focused on RNs, similar methodology could be applied to a diverse set of research questions. One question currently of interest is the effect of the aging Wyoming population on industries that rely heavily on younger workers. As R&P currently captures demographic data, we could isolate the components of the past and projected trends in the utilization of younger workers.

Another question of interest, related to recent growth in the oil & gas industry, is whether the rapid growth in employment is a result of stable employment opportunities or temporary labor. By isolating two derivative components of flow, as we did with RNs in this study, it is possible to weigh the factors responsible.

Notes

[1]The health services industry is defined as firms in Standard Industrial Classification (SIC) 80. It includes offices and clinics of health practitioners, nursing care facilities, hospitals, medical/dental laboratories, and home health care services.

[2]The hotels & other lodging places industry is defined as firms in Standard Industrial Classification (SIC) 70. It includes hotels, motels, rooming and boarding houses, campgrounds, and RV parks.

[3]Wage Records is an administrative database. Each employer in the state that has employees covered under Unemployment Insurance, by law, must submit quarterly tax reports to the state showing each employee's Social Security Number and wages earned. Research & Planning use these data for statistical analysis.

[4]Entry is expanded to include two distinct entry behaviors in the referenced documentation. Entry Newhire identifies an individual who did not work for the employer in the four prior quarters. Entry Rehire is an individual who had worked for the employer at some point in the prior four quarters. For the purposes of this chapter, the distinction is not needed.

[5]Both is expanded to include two distinct behaviors in the referenced documentation. Both Newhire identifies an individual who did not work for the employer in the four prior quarters. Both Rehire is an individual who had worked for the employer at some point in the prior four quarters. For the purposes of this chapter, the distinction is not needed.

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Editor's Note: The Appendixes are available on Research & Planning's website at <http://doe.state.wy.us/lmi/outlTOC.htm>.

Appendix A presents long-term statewide and regional occupational projections (2000 to 2010).

Appendix B includes methodological notes regarding the method by which the projections were produced.